Globalizing trends and Canada's economic future

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Of the many factors that will shape Canada's economic future, the central ones are identified by Bradford De Long. They are growing interdependence and our own abilities to sustain economic growth. A third trend is growing concern about striking a balance between the benefits of interdependence and the perceived costs of reduced domestic policy autonomy, the unease many individuals feel about loss of control over their lives and the unequal burdens faced, for example, by marginalized productive factors like immobile unskilled labour.

Since many of the participants in this conference will focus on the productivity challenge which is central to our ability to sustain economic growth, I will focus on a particular aspect of interdependence -- the increasing significance of financial instability -- and on the future of the nation state. De Long wrote before the Asian financial and economic crisis; since then concerns about the costs of interdependence for states and individuals have grown.

1. Growing interdependence

The speed of onset and the magnitude of the 1997-98 world financial crisis dramatized the impace of cross-border capital flows on interdependence. Up to now, we have become familiar with the effects of goods, services, technology and information moving more freely because of three major influences:

throughout much of the postwar period, western governments have dismantled barriers to trade and FDI which move goods, services and technology across borders;

since the 1970s the macroeconomic revolution has reduced the size of public sectors, producing smaller governments, balanced budgets and a wave of privatization, stimulating FDI flows and cross-border acquisitions;

since 1989, the erasure of the divisions between the two deeply different economic systems with the end of the cold war has propelled hungry new competitors into world markets.

Today, a fourth factor, the information and communications technology (ICT) revolution, is transforming global linkages. As De Long points out, it is not globalization itself that is new. It is

the ICT revolution which is changing the way we do business, and during the past decade has made it possible to move capital almost instantaneously across borders in large amounts.

The impact of capital flows on economic linkages and the transmission of economic disturbances has changed the face of external adjustment from adjustment on the current account, with which we are familiar, to adjustment on the capital account which moves swiftly beyond borders. Up to the 1990s integration occurred primarily through trade and FDI flows, particularly among neighboring economies, which grew faster than economies did. Intraregional trade exploded, helped along by trade agreements and rapid growth. Forty percent of North American trade is intra-regional. In the European Union, this number is 70 percent. In East Asia it is around 50 percent. Since the FTA was implemented in 1989, Canada's exports to the United States have grown 196 percent while US exports to Canada have grown 154 percent (Dobson 1999). FDI flows have also burgeoned. As production internationalized in the 1986-95 period, global FDI stocks grew to twice the size of gross fixed capital formation. The top 100 MNEs now control over 20 percent of global foreign assets. China and the United States are the top recipients of FDI, with more than 80 percent of China's inward FDI stock originating within East Asia (UNCTAD 1998).

Adjustment in this kind of world used to occur primarily through the current account as economic disturbances were transmitted through trade flows and commodity prices. But the ICT revolution has occurred first and fastest in the financial sector. Private capital now flows rapidly around the globe and, before the recent crisis, to emerging market economies from capital surplus economies in Japan and the European Union. Economic disturbances in the emerging market economies are transmitted across borders and regions through capital markets. In this kind of world, countries that attend diligently to the economic fundamentals, that in the past would have implied exchange rate stability, today can be overwhelmed by short term capital surges and reversals. Financial and economic crises have become systemic rather than localized.

Thus, the open economy "trilemma" is re-emerging as integration of capital markets limits nations' choices of exchange rate regimes and monetary policies. Countries cannot simultaneously fix exchange rates, have open capital markets and independent monetary policies. Sooner or later independent monetary policy will require either capital constraints or floating

exchange rates. Or if a country chooses open capital markets and fixed exchange rates, it must give up monetary policy independence.

For the foreseeable future, we will see renewed debate about exchange rate regimes and international monetary cooperation. The mainstream conclusion from the recent financial crisis is that integration into world capital markets is irreversible, so floating exchange rates should be the norm of the new financial "architecture". Unless they are locked into a permanently fixed arrangement such as a monetary union. Relative to the resources available to central banks, market forces are now overwhelming.

Yet not everyone is convinced. The small open export-oriented economies in Southeast Asia which before the crisis had de facto pegs to the US dollar and were forced to set their currencies afloat (with the exception of Malaysia which pegged its currency to the dollar during the height of its crisis) are studying the possibility of a new common basket peg. In Latin America, the Argentinian government has proposed dollarization in order to achieve greater policy credibility.

Others are debating regional monetary cooperation: in Latin America, a southern cone monetary union has been proposed. In Canada (but not the United States) North American monetary union is being debated. Still others argue that reduced volatility among the G-3 currencies, the yen, dollar and euro, is the most fundamental route to greater currency stability among their closest neighbors and trading partners.

I will return to the implications of these developments below.

2. The nation state and geoeconomics

The second trend is a growing concern that national sovereignty is being eroded by the discipline imposed on governments by financial markets (Thomas Friedman's (1999) golden strait jacket). This is a common theme in the globalization debate. Some have enthused about the global economy as one in which the border is erased; others gloomily predict the withering away of the nation state.

Three points stand out about these concerns. First, a monotonic trend towards complete globalization (and economic homogenization) is by no means inevitable. Governments do have political choice. They may not (and perhaps should not) accept the golden strait jacket. The role

of government has been pruned back in a number of countries, often with very positive consequences for dynamism in the private sector. But governments will have to respond to shifts in comparative advantage and competitiveness by providing assistance to groups who must adjust, or cannot adjust, or governments will face a growing backlash against further openness. For demographic reasons, government's role will also be focused on providing for the health and social needs of aging populations. Thus, governments' propensity to tax will persist, but there will be competitive pressures to restructure tax systems to broaden them and make their impacts on incomes, payrolls and consumption more neutral (Mintz 1998).

Second, there may be limits to the strength of international linkages through trade or capital flows, and to their advantages. There is no systematic evidence that increasing trade integration *among* economies to levels seen *within* economies will lead to substantial productivity improvements. Furthermore, as Feldstein and Horioka demonstrated in the 1980s, domestic savings rates are closely correlated with national investment rates, which implies that capital flows are not tightly integrated across borders. Helliwell and McKitrick (1998) confirm those results among OECD data a decade later. At least among the industrialized countries, the existing degree of openness may suffice. National economic fabrics may be "a much tighter weave" than the globalenthusiasts first thought (Helliwell 1998).

Third, these points suggest that in looking ahead we should ask ourselves which states will dominate the global economy? The current strength of the US economy will be undermined in the years ahead by the current account imbalance that is currently building and by the prospect, with the birth of the euro, of greater currency instability due to substantial portfolio movements. The United States will be still be a world leader 25 years hence, but its population, GNP and currency primacy will be eclipsed by the EU. China and India will be major players -- as well as muslim central Asia (which has the fastest-growing populations and may well possess a major share of the world's oil reserves). So we will be in a different world from the one we have been used to in which no one was particularly concerned about these players.

3. Implications

There are two major implications. First, for the forseeable future, we will live with more financial volatility than in the recent past. Second, global institutional solutions will be limited by

continued demand for national political autonomy, which, with other factors, will limit the trend to complete globalization of goods, services and capital.

Continued financial volatility will put more pressure on the international financial institutions, the International Monetary Fund, Bank for International Settlements and the new Financial Stability Forum as well as a host of sectoral coordinating bodies, to cooperate in encouraging sound domestic policies and less crisis-prone types of capital flows.

For countries, the search for restored financial stability will be through exchange rate arrangements. This is an old debate which quickly becomes theological and to which there is no one answer since we don't have a world central bank. The choices are essentially political. The debate has two levels, global and regional. Should we try to nail down the three major currencies since their volatility affects the rest of us? Fixed arrangements are out of the question but some sort of target zone arrangements are possible, depending on whether there is the will to coordinate monetary policies in the three major economies. There is no sign of the political will to make this happen outside of Japan which has major problems conducting macroeconomic policy. The durability of the euro has yet to be demonstrated and Europeans are still preoccupied with adapting their new administrative arrangements to international diplomacy. Finally, the United States has shown no official interest in closer monetary cooperation.

At the regional level, East Asians and Latin Americans are debating ways to tie down floating exchange rates, but these are no panacea to prevent financial crises. They are part of a package of reforms necessary in emerging market economies, in particular curbing borrowing in foreign currencies, sequencing the integration of domestic financial markets into world markets, creating procedures for orderly settlement of international debts and conducting sound macroeconomic policies.

Second, one of the major conclusions from the recent financial crisis is that global solutions will be limited by continued preferences for domestic autonomy. Outside of North America and the European Union, governments are reluctant to grant central banks independence, which is essential for effective international monetary cooperation; the goals of monetary policy are diverse; trade patterns among potential partners are still quite diverse and the effects of common external shocks are diverse. Thus, while the economic case for fixing

exchange rates rather than leaving them to float is relatively straightforward to make, the politics imply “not now”.

NAMU is inevitable if the rest of the world moves towards three main currency areas. But that condition is far from becoming a reality. NAMU is also a long way off. Asymmetry between Canada and the United States is one reason; Canadians would prefer a regional central bank with political accountability, which Americans currently consider unthinkable; Canadian monetary and exchange policies have served Canada’s economic objectives rather well. It is useful to remind ourselves that EMU would not have happened if there had not been a clear political goal (eventual political union) and strong political will to make it happen. Latin Americans are willing to forego monetary autonomy, not in order to integrate, but because they are unable to conduct sound monetary policy on their own. The NAMU debate is even possible because Canadians have come to realize that interdependence has reduced economic policy autonomy. And the prospect of a weakened United States with huge current account imbalances and a more volatile dollar suggests the possibility of a resurgence of protectionism, which could also influence Canadian attitudes in favor of faster policy-induced integration.

Finally, even as Canada’s economy becomes more integrated -- or because it becomes more integrated -- with the US economy, Canada should diversify its economic diplomacy beyond the US. Japan, our second largest trading partner, is and will continue to be world’s second largest wealthy market. Two-way trade with Japan is 2/3 what a gravity model predicts it should be between two such economies; US trade is 2 times what the model would predict. Japan is going through a unique period of restructuring and review of its place in the world. It is now open to bilateral trade arrangements. We should elevate the level of interaction to a strategic level (from one preoccupied with irritants) and seek to remove most obstacles to trade and FDI by 2010, the APEC target for free trade in the area.It is time to replace the traditional “rocks and wood for cars and electronics” exchange with an ICT-based exchange of services as well as goods (Dobson 1999).

We already have a special relationship with China, but we should have no illusions; it will be a medium-sized economy for the forseeable future; two-way trade will be much less sophisticated than that with Japan. China’s short term prospects are sobering, although it is

possible to be quite optimistic about the longer term. China is experiencing an environmental meltdown; it has growing internal strains from unemployment, income inequality and corruption. And its increasingly vocal populace is intensely nationalistic.

Less is known about Central Asia, but we continue to neglect it at our peril. The muslim republics have some of the world's highest population growth rates; it is likely that they have substantial oil reserves and their nationalism is growing. They will influence world oil markets, which will affect Canadian interests, and nationalism in the Central Asian region will be a source of political uncertainty for the foreseeable future.

4. Conclusions

The "new" ICT-driven globalization is not necessarily unstoppable if its costs, in terms of increased volatility, inequality and unfairness, are perceived to outweigh its benefits. Canadians benefit from their economic openness, but need to invest more in creating the conditions for long term success. We have reduced our vulnerability to financial volatility with public sector reforms. But we will experience more shocks, such as rising US protectionism and greater dollar volatility in the next few years. These shocks could increase the political attractiveness of closer economic links to the US dollar or a regional currency, but ways will have to be found to ensure the accountability of the regional monetary authority. At the same time, we should invest in developing counterweights to US economic dominance, with the wider links we are already forging in the western hemisphere, but also by deepening our linkages with the Asian economies, particularly Japan.

References

De Long, J. Bradford. 1998. "Canada in the 21st Century". *Industry Canada Research Publications Program*. Paper No. 1. Ottawa: Industry Canada.

Dobson, Wendy. 1999. "The Future of the Japan-Canada Economic Relationship". www.mgmt.utoronto.ca/news/newrelease.htm/.

Feldstein, Martin and C. Horioka. 1980. "Domestic Saving and International Capital Flows". *Economic Journal* 90:314-29.

Helliwell, John F. 1998. *Do National Borders Matter?* Washington DC: Brookings Institution.

---- and Ross McKitrick. 1998. "Comparing Capital Mobility Across Provincial and National Borders". *NBER Working Paper*. Cambridge, Mass: NBER.

Mintz, Jack. 1998. “Is National Tax Policy Viable in the Face of Global Competition?” *Working Papers.* University of Toronto: Institute for International Business.

Canada 2015 :
the governance challenge

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Introduction

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"What economists need most is humility"

Bill Emmott

Introduction

Bradford DeLong (1998) has identified the process of global economic integration and a general productivity slowdown as the two dominant forces shaping the world scene over the 1980-2015 period. He has suggested that these two broad trends have had and will continue to have important impacts on Canada: (1) globalization entails large-scale international capital flows, a crisis of the labour movement as a consequence of labour being the least mobile factor of production, and a decline in Canada's macro-economic autonomy; (2) the productivity slowdown has already had major consequences: reduction in the rate of growth of real income per capita, the end of the expansion of the welfare system, and a challenge to social democracy. And from his analyses, DeLong has derived some generic scenarios (power shift to East Asia, rising inequality and the end of free trade, increasingly virulent financial crises).

Interesting though these scenarios may be, they are not without reminding one of 16th century maps – elegant but not very helpful to navigation.

The rate of return on the production of speculative forecasts being rather low, what is needed is a modest effort at validating these trends in a rough manner and much effort at developing an effective strategy to deal fruitfully with these forces.

In the first section, I sketch a conceptual framework to guide our analysis. In the following sections, I probe the existing tensions between the two dominant forces and the mediating structures likely to attenuate their impacts on Canada, but also to provide Canada with a greater degree of leverage on the world scene. In the final section, I explain why Canada is still in denial about the potentially deleterious effects of both the globalization and the productivity crises, and consequently does not feel the need for putting in place the distributed governance system and the mediating structures that would appear to be required.

1. A framework

Even in the old world of hierarchical and somewhat partitioned governance, the boundaries economy, polity and society were never well-defined either conceptually or statistically: they did not correspond to a rigid frontier, but rather to a wavering and evolving fracture zone between subsets of organizations and institutions integrated by different mechanisms but co-evolving in some manner. This has become even more true in the new world of horizontal and interactive governance. Any discussion of Canada's economic challenges for the 21st century is fraught with references to Canada's "political" economy, and no discussion of the declining standard of living or of the growing polarization of household income distribution can avoid mentioning the transformation of the Canadian family and other social institutions. Any useful framework must therefore deal with the economy, the society, and the polity as an integrated whole.

Kenneth Boulding has proposed a simple conceptual scheme to map out this difficult terrain (Boulding 1970): a triangle containing three generic ensembles of organizations and institutions dominated more or less by different mechanisms of integration: *quid pro quo exchange* in B (market economy), *coercion and redistribution* in C (polity), and *gift or solidarity or reciprocity* in A (community and society). Each of these mechanisms of integration in its purest form is located at one of the apexes; all the inner territory represented organizations and institutions embodying different mixes of these integrative mechanisms. A lightly modified version of this sort of triangle is presented in Figure 1.

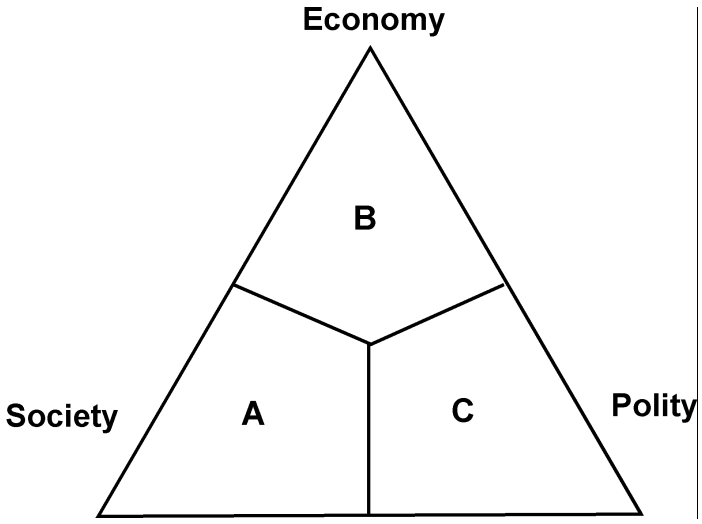

Figure 1

A stylization of the organizational terrain of many modern socio-political economies would reveal that society (A), economy (B), and polity (C) each occupy roughly one third of the terrain, and that the central point is a rough approximation of the center of gravity of the organizational triangle. This does not correspond to the statistical portrait emerging from official agencies, mainly because zone A activities are grossly under-reported: activities in the home, within not-for-profit associations, and in general beyond the market and the state, are poorly recorded and remain largely underground.

These three sectors have not always had equal valence, and need not have a similar weight. A century ago, the C portion was quite limited and the Canadian scene was dominated by the other two sets of organizations. From the late 19th century to the 1970s, government grew in importance to the point where probably half of the *measured* activities fell into the general ambit of state and state-related activities at the end of the period. More recently, there has been a vigorous counter-movement of privatization and deregulation that has caused a reduction of the state sector, and a reverse shift of the boundaries (Paquet 1999a).

There has been, in parallel with these swings (giving more valence to one or another of the family

of integration mechanisms), a tendency for the new socio-economy to trigger the development of an ever larger number of *mixed* institutions, blending these different mechanisms to some extent (market-based public regulation, public-private-social partnering, etc.) in order to provide the necessary signposts and orientation maps in this new confused world. The three sectors have become more and more intermingled. This has translated in the recent past into a much denser filling in of the Boulding triangle with mixed institutions capable of providing the basis for cooperation, harmonization, concertation, and even co-decision involving agents or organizations from the three sectors (Laurent et Paquet 1998). Indeed, the new broad forces in the economic environment have generated pressure to put in place a more *distributed* governance system, a system built on the highest and best use of the mechanisms of the three sectors, and on the broadest possible distribution of power over the range of stakeholders within these sectors.

It is my hypothesis that a more distributed governance system can serve as a very effective mediating structure capable not only of limiting the negative impacts of the forces of globalization and productivity slowdown, but also of enhancing the capacity of the Canadian socio-economy to have more influence and more effectiveness on the world scene.

2. The globalization/regionalization-regime nexus

The global integration movement has been well documented. Between 1987 and 1997, the volume of world trade has nearly doubled, and foreign direct investment has more than doubled between 1990 and 1997. As a result of this more globalized context, there has been an increase in the turbulence of the international world environment and in the fragility and vulnerability of all national socio-economies forced to adjust continually to external shocks in this more highly integrated world economy.

This being said, globalization has neither been as pervasive as is often claimed and nor has it been accepted in the different segments of the world economy as an unmixed blessing, i.e. without some counter-movements. First, the elusive "national character" of production, trade and investment has remained important. This is the Helliwell-McCallum effect showing that the intensity of the intra-national trade flows is dramatically more important than trade flows between regions of different nations given the distance between these sub-national segments and their economic size (Helliwell 1998). There is a similar "home bias" in capital markets that has been very well documented (de la Mothe and Paquet 1998). Secondly, there has been a strong expansion of intra-regional patterns of trade and investment within each region of the Triad. The proliferation of these loosely-coupled regional economic zones and of sectoral regime agreements (which is the sectoral equivalent of regional groupings) have contributed significantly to tempering the impact of the globalizing forces and to insulating groups of countries from the cyclonics emanating from the global system. These patterns of regionalization have not emerged organically. They have been to a great extent orchestrated by transformative states (Weiss 1998). Finally, the North-South chasm is still alive and well, and globalization has not reduced it much.

The most daring of these experiments has been the European regional integration movement. This has been the cumulative effect of all sorts of developments – from the minimalization of obstacles to intra-regional trade, investment, immigration, etc.to the elaboration of particular protocols pertaining to competition policy or sub-national regions powers to enter into agreements with other sub-national units in other countries, to the creation of a single currency and central bank – has brought into existence a distinctive European entity.

The European Union has succeeded in increasing importantly the degree of internalization of trade and investment flows and as a consequence to render the European group of countries less directly vulnerable to crises elsewhere, but it has also freed its own sub-national units and regions from the obligatory constraint of responding to all external challenges in a uniform one-size-fits-all way by allowing these sub-national units to develop agreements and even to sign treaties with other sub-national units of other countries if this provides them with a greater ability to react fruitfully to external shocks.

Many have claimed that such regional/sectoral groupings have resulted in a loss of allocative efficiency as a consequence of the impediments to trade and investment flows that they have erected for countries outside the group. However, there has been a gain in *multistability* of the overall system as a result of the partitioning of the world system in a multiplicity of these semi-disconnected zones.

A mutistable system is one in which a greater ability to adapt is ensured through discontinuities between sub-systems – an adjustment called for by a shift in some essential variables being delegated, so to speak, to a partial system enabling the overall process to adjust to important shocks in the environment in a manner that would have been either impossible or very time-consuming had the overall process been forced to adjust in toto (Ashby 1960; Paquet 1978).This has reduced considerably the probability of the whole system crashing as a result of a systemic crisis spreading to the whole system. A comparison of the impact of the 1930s crash and its propagation throughout the world with the impact of the Japanese crash of the early 1990s shows that the latter was contained much more and was resolved faster (Emmott 1999:17).

The regional zone/regime strategy amounts to a limitation of the dominium of the market place over the world economy through governance mechanisms imposing restraints on flows of commerce and capital across borders into the "regional zone" *and* ensuring some collaborative action on the part of this clutch of countries vis-à-vis the rest of the world.

Canada has joined one such regional grouping in North American over the last decade, and this has generated an increase in the concentration of Canada's trade with the USA. This increased trade has undoubtedly had a dampening effect on the pains of labour market restructuring that have been triggered by shocks elsewhere in the world system. But it has not increased Canada's geo-political power over its own future since Canada and Mexico have remained very much "satellite economies" vis-à-vis the United States in a hub-and-spoke type arrangement.

One way for Canada to gain more influence on its own future is to ensure that a broader regional

economic zone containing all of the Americas is constructed. In such a club, Canada might be able to develop alliances with other significant middle-range economies of the Americas to ensure that the "regional zone" does not only serve the interest of the dominant economies (the United States in the North and Brazil in the South), but also those of other significant partners. According to Daudelin and Dosman (1998), this is the only if indirect way in which Canada can increase its geo-political importance on the world scene.

This "hemispheric governance strategy" has been articulated in Canada in 1989. Canada has joined the Organization of American States and has participated in many summits where this strategy has been slowly unfolding. By 2005, it is planned that 34 of the 35 countries of the Americas (Cuba excepted) will become members of a free trade area. However,Canada may not have been promoting this strategy actively enough, and it may not have necessarily done it in the right way.

This is not to deny that there has been action on this front. It has not translated yet into a significant growth of the relative importance of Canada's trade with Latin America and the Caribbeans (LAC). Over the last decade, Canada's trade with the LAC has remained a bit under 2% of its total trade. But the stock of Canadian direct investment abroad in thenLAC has doubled over the last decade: from 8.3% in 1989 to 17.2% in 1998. This is a harbinger of foreign trade to come since foreign trade follows foreign investment. But it is important to note that two thirds of this direct investment is is Bermuda and the Caribbeans and that the pace at which Canada would appear to invest in Latin America is relatively slow when compared to what the European strategy.

Moroever, Canada is not taking action domestically to take advantage of its own potentially greater valence in the free trade scheme of the Americas. The Canadian knowledge and competence base about Latin America is limited, and the "winning conditions" for greater penetration of LAC markets have not been analyzed extensively. Indeed, hemispherically distributed governance is neither promoted nor even discussed openly, so Canada is unlikely to be in a position to take full advantage of this new distributed governance scheme when it materializes.

Instead of promoting in a persistent but sensitive way the development of a stronger mediating structure binding the Americas together and the design of a strategy to take advantage of the synergies and opportunities for increased leverage it offers, Canada is currently tempted to scatter its efforts in a diffuse way in all sorts of directions. The unfocused nature of Team Canada's activities illustrates this sort of scattered approach that may not only disperse ineffectively scarce resources but end up putting Canada in a multiplicity of bilateral dependencies built on dyadic engagements with dominant economies like the USA and Japan. This is unlikely to foster either the development of mediating structures capable of protecting Canada from international cyclonics or the development of a stronger geo-political power base for Canada.

A sensitive and effective way to promote hemispheric governance does not simply suggest an extension of the North American free trade agreement to the rest of the Americas. This approach is unlikely to succeed as larger economies in the South, notably Brazil, are unwilling to become a

spoke to the USA's hub. Rather, what is likely to generate a consensus is the proliferation of ad hoc functional arrangements negotiated in a variety of arenas as a "disaggregating response of sovereign states to the complexity of a highly interconnected world" (Falk 1999).

These arrangements entail a devolution and dispersion of authority, and the participation in the rule-making of private, public and civic sector representatives. While it may not square well with the promotion of a single agreement as the United States would like to see the 2005 process evolve, the progress via this piecemeal approach might serve as a reasonable way to test whether middle-power countries like Canada (in alliance with other middle-power countries) may be able to gain an influence within the Americas. Influencing the process itself would be a meaningful test case.

3. The productivity/government-business-society nexus

The worldwide productivity slowdown is also well documented. In the case of Canada, average productivity growth was over 2% in the 1960s while in the period from 1979 to 1997, the average rate of growth of productivity was 0.3%. This has been rather important since these numbers would indicate that Canadians could double their standard of living every 35 years at the former rate, while at the more recent rate, it would take 230 years.

The roots of this productivity slowdown have been sought in a variety of economistic sources like the increase in oil prices or changes in the capital/output ratio. This has led many observers to argue that there is nothing to this slowdown that could not be cured by freer trade and *extensive growth* efforts through more human and physical capital. But this is too reductionist a perspective.

In a knowledge-based economy, additional human and physical capital does not suffice. Much depends on the development of forms of organization designed for effective learning. The lack of *intensive growth* (based on a capacity for continuous innovation and on the requisite development of organizational capital) is at the source of the productivity slowdown.In this new world, the conflictive activities of government, business ans society are dysfunctional: new collaborative ways in which the sectors cooperate and co-evolve are at the core of an effective learning economy (Paquet 1998).

This latter message flows from studies like the one produced by the Public Policy Forum (1993) that emphasized the lack of good government-business relations as a major source of the productivity slack, or from the work that has more recently pointed to the decline in social capital as a probable cause of productivity slowdown (Paquet and Roy 1998). These studies have drawn attention to the fact that the source of our lack of productivity growth might be ascribable to the lack of smooth interaction and co-evolution among the three sectors of the Boulding triangle.

For these observers, the root cause of the productivity slowdown has much more to do with the inadequacy of what Alfred Marshall called "organizational capital". As he put it "capital consists in a great part of knowledge and organization; and of this some part is private property and other part is not" (Marshall 1920: 138). Brian Loasby has shown that for Marshall organizational capital

referred both to the internal organization of the units and to the network of relationships (region, district, etc.) within which it is embedded , and the set of capabilities they embody (Loasby 1991).

Coherence and innovation demand forms of organization that are capable of some co-ordination of economic activities but not too much, so that some discretion is left for discovery and learning. A lack of productivity is evidence that the organizational capital is not capable of generating both the requisite coherence and the right unbalance that triggers innovation. Nothing less than a massive investment in re-organization and new organizational capital can solve the problem (Granovetter 1973; de la Mothe and Paquet 1999).

Triangle-wide governance would appear to hold the key to a useful response to the productivity slowdown. It provides a recipe for making the highest and best use of the different integration mechanims by intermingling these private, public and civic sector principles into both domestic and transnational organizations and institutions capable of generating the requisite coordination and gumption in the socio-economy.

This may take many forms, but all of them point to a network society in which the different partners find ways to coordinate better their activities. This may require the intervention of the catalytic state, since the organizational capital may not emerge organically and require modifications in the legal structures (de la Mothe and Paquet 1997). For example, a shift from shareholder capitalism to stakeholder capitalism might transform the socio-economic performance by shifting from an exclusive emphasis on the well-being of a limited number of actors toward a system that attempts to take into account the well-being of all of them. The productivity record of Canada would in all likelihood be dramatically affected by such a massive organizational transformation. But such a transformation would require some overhauling of both corporate law (to avoid corporate boards being accused of diverting corporate profits from what might be regarded in the present context as their rightful owners – the shareholders) and in the very notion of property rights in good currency.

In the same way that the economic cyclonics generated by the world economy, as trade and investment flows increased, have had to be tamed by distributed governance – groups of regionally-joined or regime-joined governments imposing some light constraints on an ever greater share of world trade and investment – it can be said that distributed governance through a variety of moral contracts binding the stakeholders is needed to constrain the operations of the national economies if they are to be productive (Pratt 1997).The central problem has to do with the way in which this can be accomplished. It is our view that what is required is a transformation of the governance structures to ensure that a more decentralized, more participative, less technocratic system is put in place that draws on the most effective mix of the private, public and civic sectors (Hock 1995; Paquet and Roy 1998).

4. Distributed governance and mediating structures

The Canadian socio-economy has much resilience. It has already reacted to both the increasing globalization and the productivity slowdown even though one may have reservations about the depth

of the adjustment of its governance system, and the extent to which it has fallen short of what was and is needed. Suffice it to say that Canada has gone beyond the sheer fatalistic speculations about the world trends and its relative inability to do anything more than simply cope.

As explained in the last sections, counter-strategies to both these world trends have entailed the construction of mediating structures embodying some form of distributed governance or triangle-wide governance (i.e. some arrangements capable of generating, through cooperation among the private, public and civic sectors, some attenuation of the negative impacts of the broad forces at work on the world scene).

(1) the hemispheric strategy

It is more than a decade since Joe Clark announced Canada's Latin American Stratregy and there has been a strategy update in 1996 (DFAIT 1996). If one were to judge Canada's policy by this latter public statement, one would feel very encouraged by the enthusiasm it displays. But reality is less glorious.

Canada has become ever more integrated into a strictly North American production structure over the last decade. Canadian trade and investment in the rest of the Americas has grown relatively slowly. Despite trade missions to the south of the hemisphere in 1995 and 1998, the commercial basis for Canada's integration into the whole hemisphere has been shrinking. As Daudelin and Dosman (1998) suggest, there is no functional necessity to Canada's option for the Americas. Only a robust policy initiative would appear to be able to generate some effort in this direction. But this policy initiative has to be more sophisticated than the simple suggestion of quick trade liberalization and elimination of capital controls and the negotiation of a single agreement for all countries where the USA would be eminently first among equals. Latin American countries are more concerned about the United States unilateralism than Canada. Therefore a soft and slow regime-type approach might be called for.

This strategy goes of necessity through the Organization of the American States (OAS) which could be a deliberative forum through which governments, business communities and civil societies might be able to shape a regional consensus. Such a consensus is unlikely to be constructed except on a piecemeal basis through some regime-building in different areas until the time is ripe for more universal rules. But this will require a creative leadership on the part of the Canadian government to ensure that both the Canadian business and NGOs communities are mobilized, and the requisite resources for capacity-building in Canada are found. For the degree of ignorance in Canada about Latin America is immense. By the way, it is not much better in the United States.

It is only if and when there is the requisite mobilization and capacity building that one can expect the Canadian government to be able to take the leadership in the development of an organized system of cooperation with Brazil, Argentina, Venezuala, Peru, Chile, etc.Such cooperation will require much imagination especially when it involves countries like Brazil and Argentina that might be seen as competing with Canada in a number of key areas. But this also provides opportunities for joint

strategies.

The integration of the Americas *par morceau* (around Brazil in Latin America as it has proceeded around the USA in North America) is promising in the long run. As the United States' valence in the world economy diminishes with the strenghtening of regional groupings such as the European Union, and Latin American countries become much more sizable economic powers than Canada in the next decades, Brazil, Argentina and other LAC countries are likely to remain throughout this slow process of integration the natural allies of Canada against the forces of the United States which tend to foster protectionism and unilateralism (Lipsey and Meller 1997).

These alliances would work in a variety of ways: through some constraints on the flows of commerce and investment to insulate somewhat a region or a group from catastrophes elsewhere, through the development of zone or regime institutions to facilitate the adjustment of the group to external shocks, through policy coordination enabling the group to define more effective ways either to prevent the shock hitting the group or at least to attenuate the impact, through compensatory mechanisms put in place to ensure that those most seriously hit by these shocks are somewhat compensated through some sort of redistribution scheme, and through collaborative mechanisms capable of providing adequate forums for consultation and co-decision.

(2) the network strategy

If the external organizational capital on which Canada might build is a loose and progressive integration with the rest of the Americas through regime-building, involving the private, public and social sectors, the corresponding internal organizational capital has to be constructed on a much closer collaboration among government, business and civil society.

The required speed, flexibility and innovative adaptation necessary in the new globalized socio-economy can only be generated by non-centralization. Hierarchical structures have proved inadequate. What is required as a result of this "dispersive revolution" is a more distributed governance (de la Mothe and Paquet 1994). Another reason for this development has been the process of democratization that has multiplied the number of players involved in the process of governance. These two features have generated the need for cooperative arrangements among the public, private and civic sectors.

The reason why the guidance system has to be decentralized, collaborative and adaptative is that this sort of arrangement is best if one needs to continually adjust to new circumstances in order to generate knowledge value-addition. This is also the recipe for productivity gains in a world of alliances and partnerships across borders, and among different layers of networks.

Hierarchies have limited learning abilities, and markets have limited capacities to process information effectively. Network alliances are a way to counter these failures: they reduce uncertainty and adaptation costs arising from the complexity of the environment through an increase of the collective organizational capabilities of the partners (Paquet 1999a).These collaborative

arrangements through networks foster faster and more effective learning, but the development of such arrangements call on the state to recognize that it cannot achieve its goals by simply relying on its resources. The state must assume a dominant role in coalition-building both internationally and domestically. This is what Michael Lind (1992) has called “the catalytic state”.

The proliferation of regional/regime agreements and the evolving character of close government-business-society relations in Japan, Germany, etc. are manifestations of the new importance of the catalytic state (Weiss 1998 :210). But not all states have the same catalytic capabilities. Some like the US have the clout necessary to exploit international leverages; others like Germany and Japan have both domestic and international clout in coalition building; still others like Canda would appear to lack both capacities.

Indeed, it may well be that the sort of consensus required among provate, public and civic partners is not possible for large fractured countries like Canada; that the only way to generate catalytic action is at the level of region-states, through the empowerment of sub-national powers (Courchene 1999). This is a pattern that has developed in the European Union where sub-national segments of a country A may enter into agreements or treaties with sub-national segments of country B without asking any permission from higher order governments. Maybe in Canada such decentralization is the only way to ensure that the socio-economy *in toto* can evolve faster toward a less ineffective governance *par morceau*. This would appear to be a model worth examining in Canada for the design of learning organizations well adapted to different cultures is not simple. Sparsely connected networks are stagnant, and overly connected networks are frozen; maximal nimbleness would appear to be achieved at low connectivity especially diagonal interdependence across boundaries for they are more likely to stimulate innovation.

(3) cognitive dissonance

It may be difficult to understand why those strategies are not naturally evolving very rapidly in the face of globalization and slower productivity increase. Yet, they are not.

On the international scene, Canada would appear to be betting on a blind search for liberalization in all directions as if this were a panacea. Moreover, our foreign commercial policy would appear to neglect the possibilities of hemispheric governance both because of our culture of dependency vis-à-vis the United States, and because of the cultural barriers that would appear to stand in the way.

Moreover, when alternative strategies are proposed, they would all appear to be short-run driven (simply because the market shares are there -- i.e. Japan) without much serious geo-political reflection.

On the national scene, our collective action is based on a culture of contentment. Even though the productivity slowdown has hit Canada more than any other member of the G-7, we are still in a state of denial about the need to do something about productivity. For our political leaders, it has been easy to deny the reality of the productivity gap vis-à-vis our trade partners, the erosion of social

capital in Canada, and the difficulty in generating the requisite amount of collaboration among government, business and groups in civil society by pointing to the United Nations's rating of Canada's quality of life. Since, according to opinion-molders, there would appear to be no problem with our present performance, there is no need felt for any overhaul of our governance system.

Moreover, whenever Canadian political leaders have been mugged by reality, as in the critical period of the late 1980s and early 1990s, there would appear to have been a disconnect between the mood of the country and the mood of the political class when occasions were provided (through votes on the Meech or the Charlottetown accords) for decisions about proceeding with decentralization of the Canadian governance process in an orderly way.

Despite the fact that an extensive literature has shown that, both internationally and nationally, the new distributed governance system has proved most effective in coping with globalization and productivity slowdown (Naisbitt 1994; v.N Whitman 1999; Leadbeater 1999), the degree of cognitive dissonance remains high in Canada. The cumulative effect of a certain degree of glibness, much blindness, an immensity of denial, and a pervasive centralized mindset that prevents the engineering of the requisite degree of decentralization (Paquet 1999b) has amounted to accepting many broad world trends somewhat fatalistically, and to suggesting that we need not worry about the needed governance overhaul for Canada is obviously capable of surfing on these trends successfully.

Conclusion

The root causes of our predicament when one examines the challenges facing Canada in the next 6000 days are a multitude of factors amounting to a crisis of leadership. These are seriatim – the lack of clear foreign policy, the denial syndrome of Ottawa vis-à-vis the external threats Canada is facing, the crippling effect of political correctness on national debates in a Canadian forum where dissent amounts to treason, the lack of a meaningful role of the media in the process of social learning, the rational apathy of the citizens without the help of a meaningful opposition in the House of Commons to guide them, etc.

None of these factors in isolation really amounts to an explanation of Canadian lethargy. But all of them together have created a bizarre situation in which complacency, denial, etc. entail that Canada is not developing a meaningful strategy to overhaul its governance in order to face more effectively the challenges brought forth by globalization and productivity decline.

This fatalistic and myopic attitude does not necessarily mean disaster in the short-run. However in the long haul, it can only mean disaster.

References

W.R. Ashby (1960) *Design of the Brain.* London: Allen Lane The Penguin Press (Sec. Ed.)

K.E. Boulding (1970) *A Prime on Social Dynamics*. New York: Basic Books.

T.J. Courchene and C.R. Telmer (1998) *From Heartland to North American Region State*.+ Toronto: University of Toronto, Faculty of Management.

J. Daudelin and E.J. Dosman (1998) "Canada and Hemispheric Governance: The New Challenges" in F. Osler Hampson and F. Appel Molot (Eds) *Canada Among Nations 1998: Leadership and Dialogue*. Ottawa: Carleton University Press, 211-238.

J. de la Mothe and G. Paquet (1994) "The Dispersive Revolution" *Optimum*, 25(1) 42-48.

J. de la Mothe and G.Paquet (1997) *Challenges Unmet in the New Preoduction of Knowledge*. Ottawa: PRIME.

J. de la Mothe and G. Paquet (1998) "Finance and the Technology-Trade Nexus" *Technology in Society* , 20,1998,441-468.

J. de la Mothe and G. Paquet (1999) "Structural Competitiveness and Interdependencies: Regional Patterns" in G. Boyd and J.H. Dunning (Eds) *Structural Change and Cooperation in the Global Economy*. Cheltenham: Edward Elgar, 1999, 82-112.

J.B. De Long (1998) *Global Trends: 1980-2015 and Beyond*. Ottawa: Industry Canada.

Department of Foreign Affairs and International Trade (DFAIT) (1996) *Strategy Update for for Latin America and the Caribbeans*. Ottawa: DFAIT.

B. Emmott (1999) "Freedom's Journey – Aurvey of the 20th Century" The Economist, Sept. 11th, 44p.

R. Falk (1999) "The Future of Sovereign States and International Order" *Harvard International Review*, 21 (3), 30-35.

M. Granovetter (1973) "The Strength of Weak Ties" *American Journal of Sociology*, 78, 1360-1380.

J.F. Helliwell (1998) *How Much Do National Borders Matter?* Washington: The Brookings Institution

D.W. Hock (1995) "The Chaordic Organization" *World Business Academy Perspectives*, April-May, 19-22.

P. Laurent et G. Paquet (1998) *Epistémologie et économie de la relation – cordination et gouvernance distribuée*. Paris/Lyon: Vrin.

C. Leadbeater (1999) *Living on Thin Air*. *London: Viking*

M. Lind (1992) "The Catalytic State" *The National Interest, 27* (Spring), 3-12.

R.G. Lipsey and P. Meller (Eds) (1997) *Western Hemisphere Trade Integration*. New Yor: St Martin's Press.

B.J. Loasby (1991) *Equilibrium and Evolution*. Manchester: Manchester University Press.

A. Marshall (1920) *Principles of Economics*. Lonmdon: Macmillan (8th Ed.)

J. Naisbitt (1994) *Global Paradox*.New York: Morrow & Company.

G. Paquet (1978) "The Regulatory Process and Economic Performance" in G. Bruce Doern (ed), *The Regulatory Process in Canada*. Toronto: MacMillan, 34-67.

G. Paquet (1998) "Canada as a Disconcerted Learning Economy: A Governance Challenge" *Transactions of the Royal Society of Canada*, Series VI, Vol VIII, 69-98.

G.Paquet (1999a) *Governance Through Social Learning*. Ottawa: The University of Ottawa Press.

G.Paquet (1999b) *Oublier la Révolution Tranquille*. Montréal: Liber.

G. Paquet and J. Roy (1998) *Governance in Canada*. Ottawa: Centre on Governance.

C. Pratt (1997) Business Accountability: Shhareholders, Stakeholdres, or Society? An Address to the Canadian Club of Toronto, September 29, 13p.

Public Policy Forum (1993) *Private-Public Sector Cooperation as a Means of Improving a Country's Economic Performance: A survey of Practices in Canad, the US, Europe, and Japan.* Ottawa: Public Policy Forum.

L. Weiss (1998) *The Myth of the Powerless State*. Ithaca, NY: Cornell University Press

M. v.N. Whitman (1999) *New World, New Rules*. Boston: Harvard Business School Press.

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CANADA IN THE 21ST CENTURY

I. SCENE SETTING

DEMOGRAPHIC TRENDS IN CANADA, 1996-2006: IMPLICATIONS FOR THE PUBLIC AND PRIVATE SECTORS

By David K. Foot, Richard A. Loreto and
Thomas W. McCormack,
Madison Avenue Demographics Group

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PREFACE

AS A NEW MILLENNIUM APPROACHES, Canadians are going through a time of dramatic economic change. Markets are becoming global and economic activity across nations is becoming increasingly integrated. Revolutionary developments in computer and communications technology are facilitating globalization, and are also altering a great deal the workplace and the lifestyles of Canadians. At the same time, largely as a consequence of the information revolution, knowledge-based activities are becoming increasingly important within the Canadian economy as well as the economies of other industrialized nations.

These and related major transformations of the economic environment invite comparison with the Industrial Revolution of the 1800s. As in the earlier time, major structural changes are giving rise to uncertainties. Firms and workers are struggling to find their place in the new economic order. Canadians collectively face the question of whether their nation's physical, human and institutional resources will provide a firm foundation for continued prosperity. Many see Canada's prospects as being much less secure than in earlier years, when the country's rich natural resources played a major role in shaping the Canadian economy.

To examine fully the medium to longer-term opportunities and challenges of these developments, the Micro-Economic Policy Analysis Branch of Industry Canada asked a group of experts to provide their "vision" for Canada in the 21st century on a number of important issues. Each author was required to undertake two formidable tasks: first, to identify major historical trends and develop scenarios to illustrate how developments in his/her respective area might unfold over the next ten to fifteen years; and second, to examine the medium-term consequences of these developments for the Canadian economy.

The papers coming out of this exercise are now being published under the general heading of "Canada in the 21st Century". This series consists of eleven papers on different aspects of Canada's medium-term outlook. The papers are divided into three major sections. The first section, *Scene Setting*, focuses on important developments that are going to shape the medium-term economic environment in Canada. The second section, *Resources and Technology*, looks at trends among some important components of Canada's wealth creation and considers the actions needed to ensure that these factors provide a firm foundation for continued prosperity. The last section, *Responding to the Challenges*, explores individual, corporate and government responses to the medium-term challenges and offers some options for appropriate course of action.

In the final paper of the *Scene Setting* section, the implications of the aging Canadian population for the domestic economic environment are examined by David Foot, Richard Loreto and Tom McCormack of the Madison Avenue Demographics Group. The authors argue that, by 2006, significant

shortages of workers under the age of 35 might occur in some service sector activities where it is not easily possible to substitute technology for labour. In addition, self-employment is likely to increase in future years as the baby boomers generation move into its peak self-employment years. These changes in the nature of the labour supply are likely to be accompanied by some significant, demographically-related shifts in spending patterns toward leisure, health services and financial services.

INTRODUCTION[1]

THE PURPOSE OF THIS PAPER is to describe and analyse demographic trends in Canada and to discuss their implications for public and private sector activities during the next ten years. Although our findings and conclusions rest on the large body of empirical work listed in the "Bibliography", the paper has been commissioned by Industry Canada as a non-technical work that will be used to facilitate discussion among a variety of stakeholder groups. Accordingly, the use of data in the text has been limited and specific references to sources have not been made. This information, typically found in academic work, can be obtained by consulting the listed references or contacting the authors.

The paper is organised in four sections. The first one positions the paper in terms of its purpose, approach, and organisation. The second one examines key demographic trends at the national, provincial, and urban levels, both on a retrospective and prospective basis. The next section examines the general implications of demographic change for a variety of products and services in the public and private sectors. The fourth section provides a general conclusion on the relative importance of demographic analysis in public and private sector policy development.

THE "DEMOGRAPHICS LESSON"

OVERVIEW OF DEMOGRAPHIC TRENDS[2]

ALTHOUGH DEMOGRAPHICS ARE CONCERNED with the interplay of many variables including ethnicity and gender, our analysis gives primacy to the impact of the age variable through the life cycle since age is the primary demographic determinant of economic behaviour. In determining the impact of demographics on economic behaviour, age explains "two-thirds of everything".

Canada's population is aging due to a prolonged (and likely continuing) period of low fertility and increasing life expectancy. Given Canada's population distribution, the age composition of the population will have a substantial impact on the provision of goods and services by the public and private sectors.

Canada's population growth is determined by two factors:

- net natural causes – the difference between births and deaths; and
- net migration – the difference between immigration and emigration.

On the birth side of the net natural equation, a useful distinction must be made between the fertility rate and the birth rate. The fertility rate is the

FIGURE 1

TOTAL FERTILITY RATE, BIRTHS IN THOUSANDS, 1921-1995

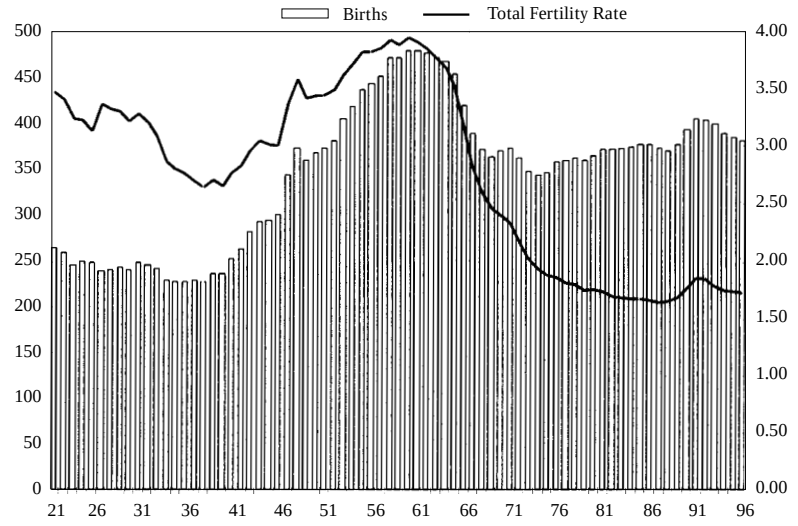
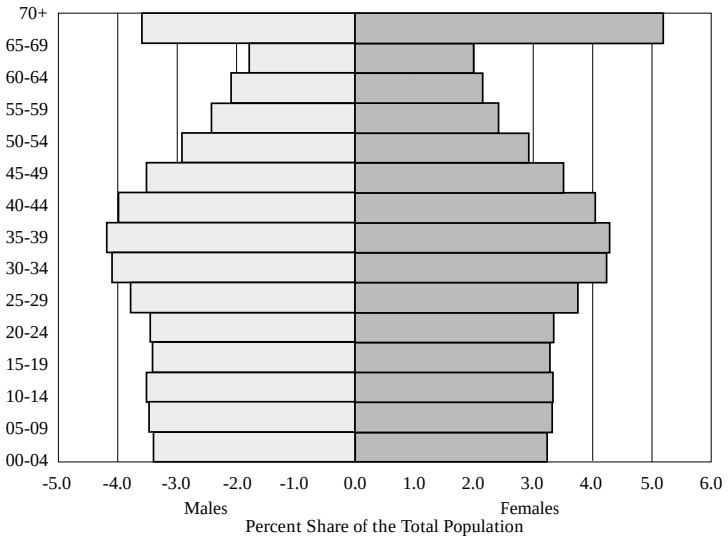


FIGURE 2

CANADA'S POPULATION AGE DISTRIBUTION, 1996



average number of births per female over her lifetime and it can be considered as a proxy for family size. The birth rate is the number of births in a given time period divided by the population.

Fertility in Canada has been declining since the 1960s and currently stands at 1.7 children per woman. This rate is below the replacement rate of 2.1. All of the provinces have fertility rates below replacement, with Newfoundland now having the lowest rate ever recorded for a province (1.3 in 1993). Only in Canada's aboriginal communities is fertility substantially above replacement.

Despite this low fertility, the number of births increased annually during the 1980s as the post-war "baby boom" generation traversed its prime child-bearing ages. Births peaked in 1990 and have been on a steady downward trend during this decade (a decrease of 4.7 percent between 1990-1994).

In terms of net natural population growth, the template of the "baby boom, bust, and echo" generations provides the key analytical framework for understanding the past fifty years and the next ten. The baby boom, born between 1947 and 1966, account for almost one-third (9.8 million) of Canada's current population of 30 million (see note no. 2). An important sub-cohort, within the boom generation, is those individuals born between 1960 (the peak of the boom) and 1966, the so-called "Generation X" who number approximately 2.6 million. The baby bust cohort, born during a period of declining fertility between 1967 and 1979, encompasses 5.4 million Canadians (around 55 percent the size of the boom cohort). The echo generation, born during the

1980s and first part of the 1990s, are the children of the boomers. They are more numerous (6.9 million or about 70 percent of the boom) than the preceding bust generation not because of an upswing in fertility but as a consequence of the sheer size of the baby boom cohort. Looking ahead it is now possible to discern the next generation or "millennium kids" that will be born during the period from 1995 to 2010. These are essentially the children of the baby bust generation and hence they will be a relatively small component of the Canadian population.

The "boom, bust, and echo" template is evident for Canada as a whole, Ontario, and the western provinces. The echo generation is not a salient factor in the populations of Quebec and the Maritime provinces due to relatively high levels of internal out-migration of the boom generation during the past several decades.

In relative terms Canada's baby boom was one of the largest of those developed nations that experienced this phenomenon in the post-war period (i.e., United States, Australia, and New Zealand). The importance of demographics to understanding past and future trends in public policy and market behaviour in Canada is the sheer size of the boom generation, the substantially smaller size of the bust generation, and the "middling" dimensions of the echo generation (i.e., smaller than the boom but larger than the bust generation). Given the primacy of the age variable on economic behaviour, the impact of these different cohorts marching through the various stages of the life cycle leaves an indelible stamp on the demand and supply of public and private goods and services.

Despite falling mortality rates, the number of deaths has increased steadily during the past fifty years and will continue to do so because of the aging of the population. Also, at today's mortality rates, there is a "gender gap", i.e., women, on average, live longer than men (81 versus 75 years). Notwithstanding the long-term increase in the mortality rate, in 1994 there were almost twice as many births (386,550) as deaths (211,535) in Canada.

Given these patterns of fertility and mortality, the net addition to Canada's population from natural means will be zero by the second decade of the next century. In the absence of population gain through immigration, Canada's population would then enter a long period of gradual decline.

Immigration has always been an important factor in the growth and vitality of Canada's population. Over time immigration has been used as a tool of economic policy, i.e., higher levels during good times when the economy is able to absorb the additional population and lower levels when economic growth is weak. However, a break with this linkage between the health of the economy and immigration policy was evident during the 1990s. Despite Canada's poor economic performance during much of this decade, immigration levels have been maintained at relatively high levels in historical terms.

Currently, slightly more than 200,000 immigrants come to Canada annually. When emigrants are factored in, there is a net gain of approximately 150,000 people annually from migration as a source of population growth. It is

interesting to note that at this level net migration is only slightly below net natural increase as a source of population growth.

Immigrants arriving in Canada vary in age but the majority are 20 to 44 years old, the period in life when individuals are most mobile. This period of peak personal mobility is applicable both to international and internal migration. Therefore, the component of population growth attributable to net migration adds more to some population cohorts than others.

Moreover, the destination within Canada of a majority of immigrants is Ontario (51.9 percent in 1994), particularly the Greater Toronto Area. Hence, net migration also affects the regional distribution of population both among and within provinces.

During the 1950s and 1960s the bulk of Canada's immigrants came from Europe. During the past twenty-five years, the majority of immigrants have come from Asia, the Caribbean region, and Central/South America. This reflects the aging (and hence lower mobility) of the European populations and the higher fertility (and higher mobility) of populations in Asian, Caribbean, and Central/South American countries. Given global patterns of fertility and mortality, immigration will not only add to Canada's population growth but also continue the process of ethnic and racial diversity that is a hallmark of our society.

Demographics provide a basis for projecting not predicting future trends. Projections are made on the basis of assumptions about fertility, mortality, and net migration (both international and internal). Scenarios for periods five, ten, or twenty years into the future can be constructed. Although projections can be made for periods further out, the longer the projection time frame, the less it is possible to control the other "one-third" of variables that affect economic behaviour. Therefore, given plausible assumptions, demographic projections have their most effective impact for periods from five to fifteen years in the future.

Our projections assume fertility and mortality rates at current levels and net migration of 150,000 annually. This creates a future scenario in which there is a continuing decline in the number of births and a continuing increase in the number of deaths. Consequently, population growth declines and net migration gradually becomes more important than net natural increase as a source of population growth.

CANADA'S POPULATION BY PROVINCE IN 1996

SINCE 1991 CANADA'S POPULATION HAS INCREASED by 6.4 percent from 27,296,900 to 29,033,500 (see note no. 2). Canada's people are unevenly distributed throughout the country. The most populated province, Ontario, had a total of about 10,823,300 persons in 1996, accounting for 37.3 percent of the country's entire population. Quebec, the second most populated province, had a total of about 7,187,300 persons (24.8 percent of the total). British Columbia, placing

TABLE 1

POPULATION OF CANADA, BY PROVINCE, 1996

Province	Population 1996	Percent Change 1991-1996	Percent Share, 1996
Newfoundland	563,009	-1.0	1.9
Prince Edward Island	135,978	4.8	0.5
Nova Scotia	923,615	2.6	3.2
New Brunswick	737,635	1.9	2.5
Quebec	7,187,252	4.2	24.8
Ontario	10,823,307	7.3	37.3
Manitoba	1,121,821	2.7	3.9
Saskatchewan	1,000,439	1.2	3.4
Alberta	2,717,369	6.7	9.4
British Columbia	3,731,184	13.7	12.9
Yukon	28,954	4.1	0.1
Northwest Territories	62,916	9.2	0.2
Canada	29,033,478	6.4	100.0

TABLE 2

SOURCES OF POPULATION GROWTH, CANADA, BY PROVINCE, 1991-1996

	Births	Deaths	Net Natural	Net Migration	Total Change
Newfoundland	31,031	19,280	11,752	-17,228	-5,476
Prince Edward Island	8,737	5,719	3,017	3,210	6,228
Nova Scotia	56,451	37,530	18,920	4,755	23,675
New Brunswick	43,105	28,674	14,431	-681	13,750
Quebec	446,222	257,429	188,793	102,488	291,282
Ontario	697,258	376,347	320,911	417,497	738,407
Manitoba	81,702	46,129	35,574	-5,703	29,871
Saskatchewan	70,689	40,617	30,073	-18,564	11,509
Alberta	194,191	75,898	118,293	53,521	171,814
British Columbia	219,154	127,867	91,287	357,842	449,129
Yukon	2,250	629	1,621	-492	1,129
Northwest Territories	7,061	1,300	5,761	-480	5,281
Canada	1,857,851	1,017,419	840,433	896,165	1,736,598

third, has about 3,731,200 (12.9 percent) while Alberta, in fourth place, has about 2,717,400 (9.4 percent). These four provinces, therefore, account for 84.2 percent of all Canadians. The remaining population – totaling 4,574,300 persons (or 15.8 percent of the total) – is scattered throughout the remaining six provinces and two territories.

The rate of growth of the population by province has varied significantly since the 1991 census. British Columbia grew fastest (13.7 percent over that 5-year period) followed by the Northwest Territories (9.2), Ontario (7.3), Alberta (6.7), Prince Edward Island (4.8), Quebec (4.2), the Yukon (4.1), Manitoba (2.7), Nova Scotia (2.6), New Brunswick (1.9), Saskatchewan (1.2), and Newfoundland (-1.0).

The variation in growth rates among the provinces over this period is due to variations in the fertility and mortality rates, variations in the age distributions of the base populations against which these rates apply, and variations in the degree to which each is an attractor for migrants from abroad or from other provinces or territories.

Table 2 reveals those provinces and territories exhibiting the fastest growth rates do so because of net migration. For example, British Columbia grew by 449,100 persons over the last five years, but 79.7 percent of that growth was due to net migration. Quebec, on the other hand, grew by 291,300 persons, but only 35.2 percent was due to net migration. Newfoundland's population fell by 5,500 – despite an 11,800 increase in its population due to net natural causes – because migration resulted in a net outward movement of 17,200 persons.

CANADA'S POPULATION BY URBAN AREA IN 1996

AS OF 1996 CANADA'S 29,033,500 PEOPLE were heavily concentrated among the largest urban areas of the country. For example:

- the 54 largest urban areas in Canada – including all Census Metropolitan Areas and all Census Agglomerations with populations in 1991 exceeding 50,000 persons – accounted for 69.8 percent of Canada's total population in 1996;
- these 54 collectively grew by 1,329,700 persons over the period from 1991 to 1996; thus they accounted for a disproportionate 76.6 percent of Canada's total growth over this period;
- the 54 urban areas as a group achieved a growth rate of 7.0 percent over the 1991 to 1996 period; in sharp contrast, the rest of Canada grew by only 4.9 percent (Canada's total gain was 6.4 percent);
- the four largest areas – each with a population exceeding 1,000,000 persons – account for 35.4 percent of Canada's total population;

- the 16 largest urban areas – each with a population of 250,000 persons or more – account for 56.2 percent of the total population in Canada.

The growth rate of Canada's population by urban area over the 1991 to 1996 period was uneven, however, ranging from a high of 22.7 percent in the Barrie, Ontario area (a compound annual growth rate of 4.2 percent) to a low of 0.4 percent in the Thunder Bay, Ontario urban area (a compound annual growth rate of 0.0 percent).

CANADA'S POPULATION GROWTH FROM 1996 TO 2006

OVER THE NEXT DECADE, Canada's population is projected to grow by about 2,593,000 persons. That projection is based on the following assumptions:

- the total fertility rate will hold at a rate of 1.74 live births per female;
- mortality rates by age and sex will hold constant at the rates prevailing during the early 1990s;
- net international immigration will average about 150,000 persons per year (i.e., immigration will average 200,000 per year, in line with current federal targets, and emigration will average 50,000 per year, in line with historical precedent).

The expected stability in the total fertility rate over the next decade implies the number of births on an annual basis will hover between 370,000 and 380,000 between now and 2006.

CANADA'S POPULATION GROWTH BY AGE FROM 1996 TO 2006

CANADA'S EXPECTED POPULATION GROWTH of 2,593,000 persons over the next decade is expected to be unevenly distributed by age. Over this period we expect the following:

- the age group expected to show the greatest growth in absolute terms over this period is that including all those over the age of 70; this group is expected to grow by about 705,000 persons over this period, thus accounting for 27 percent of all of Canada's population growth;
- the age group 55 to 59 is expected to grow by 548,000 and the age group 50 to 54 is expected to grow by 529,000; thus those in their 50s are expected to account for 1,077,000 of Canada's 2,593,000 growth over this period, or almost 42 percent of the total; this group represents those who are currently between the ages of 40 and 49, the front end of the baby boom generation;

TABLE 3

POPULATION OF CANADA BY URBAN AREA
RANKED BY POPULATION, 1996

Urban Area	Province	Population 1996	Percent Change 1991-1996	Percent Share in 1996
Toronto	Ont	4,222,790	8.5	14.5
Montreal	Que	3,258,915	4.2	11.2
Vancouver	BC	1,811,962	13.1	6.2
Ottawa-Hull	Ont	1,005,150	9.2	3.5
Edmonton	Alb	869,029	3.5	3.0
Calgary	Alb	827,567	9.8	2.9
Quebec	Que	677,155	4.9	2.3
Winnipeg	Man	669,587	2.6	2.3
Hamilton	Ont	626,076	4.4	2.2
London	Ont	406,395	6.5	1.4
Kitchener	Ont	387,501	8.7	1.3
St. Catharines-Niagara	Ont	379,310	4.0	1.3
Halifax	NS	336,291	4.9	1.2
Victoria	BC	306,830	6.6	1.1
Windsor	Ont	278,924	6.4	1.0
Oshawa	Ont	258,618	7.7	0.9
Saskatoon	Sask	220,998	5.2	0.8
Regina	Sask	196,746	2.6	0.7
St. John's	Nfld	177,239	3.1	0.6
Chicoutimi-Jonquière	Que	165,372	2.8	0.6
Sudbury	Ont	161,914	2.7	0.6
Sherbrooke	Que	145,468	4.5	0.5
Kingston	Ont	143,317	5.1	0.5
Trois-Rivières	Que	139,817	2.6	0.5
Kelowna	BC	136,629	22.2	0.5
Abbotsford	BC	135,383	19.2	0.5
Saint John	NB	126,687	1.4	0.4
Thunder Bay	Ont	124,951	0.4	0.4
Sydney	NS	117,052	0.8	0.4
Barrie	Ont	113,070	22.7	0.4
Moncton	NB	111,542	4.7	0.4
Guelph	Ont	104,201	7.2	0.4
Brantford	Ont	102,319	5.4	0.4
Peterborough	Ont	101,188	3.2	0.3
Belleville	Ont	100,293	5.6	0.3
Sault Ste. Marie	Ont	91,416	7.5	0.3
Nanaimo	BC	89,285	21.5	0.3
Sarnia-Clearwater	Ont	88,928	1.2	0.3
Kamloops	BC	80,193	18.2	0.3
Prince George	BC	77,095	10.7	0.3

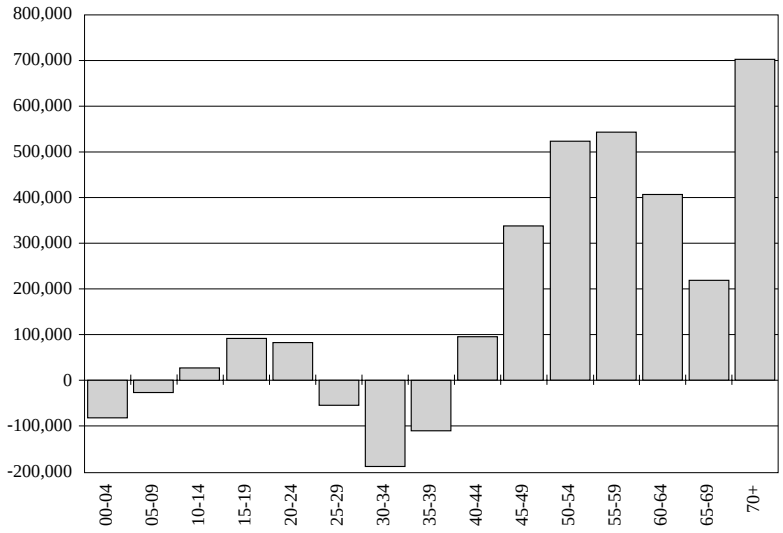
TABLE 3 (CONT'D)

Saint-Jean-sur-Richelieu	Que	76,941	12.6	0.3
Fredericton	NB	76,450	6.5	0.3
Chilliwack	BC	73,928	23.0	0.3
North Bay	Ont	66,647	5.3	0.2
Lethbridge	Alb	66,206	8.6	0.2
Granby	Que	64,135	8.0	0.2
Drummondville	Que	63,931	6.4	0.2
Red Deer	Alb	63,350	9.0	0.2
Shawinigan	Que	62,002	0.4	0.2
Charlottetown	PEI	60,631	5.6	0.2
Saint-Jérôme	Que	59,975	15.4	0.2
Medicine Hat	Alb	58,334	10.8	0.2
Cornwall	Ont	55,768	4.1	0.2
Saint-Hyacinthe	Que	51,146	1.9	0.2
Sub-Total		20,272,645	7.0	69.8
All Other Canada		8,760,833	4.9	30.2
Canada		29,033,478	6.4	100.0

- the next largest gains are expected among those aged 60 to 64 (up 407,000), those aged 45 to 49 (up 339,000) and those aged 65 to 69 (up 233,000); the 45-49 group represents those born at or near the peak of the baby boom;
- every five year age group under the age of 45 is expected to grow less than any of those groups over the age of 45, and in some cases significant declines are expected; these cohorts represent Generation "X" as well the baby bust and echo generations;
- the declines are expected to be especially large among those aged 30 to 39; these people – who as of 1996 are between the ages of 20 and 29 – are members of the baby bust generation and were born in the 1967 to 1976 period when births fell significantly compared to the previous decade;
- Canada's population among those under 45 is either growing by only a small amount or declining over the next decade despite the major inflows of immigrants assumed in these projections; immigrants tend to be relatively young, concentrated among the age groups from 20 to 44 (57 percent of immigrants between 1990-1992 were in this age group), often with young children in tow; if it were not for this immigration inflow Canada's population under the age of 45 would grow even less quickly over the next decade than we currently anticipate.

FIGURE 3

CANADA'S POPULATION GROWTH BY AGE, 1996-2006



CANADA'S POPULATION GROWTH BY PROVINCE FROM 1996 TO 2006

OVER THE NEXT DECADE WE EXPECT fertility rates and mortality rates by province will hold constant at recent levels, and we project net migration – representing net flows from abroad and from province to province – will heavily favour growth in Ontario, British Columbia and, to a lesser extent, Alberta (Quebec will be favoured, but only by net international migration, as it is a net loser in terms of net inter-provincial migration). Ontario, British Columbia, and Alberta are favoured by both types of migrants because they afford higher living standards and greater economic opportunities compared to all of the other provinces. Net migration will also be a positive factor for population growth in each of Nova Scotia, New Brunswick, and Prince Edward Island, but it will negatively impact the populations of Saskatchewan, Newfoundland, Manitoba, the Northwest Territories, and the Yukon. Thus, we expect Canada's population by province will grow over the next decade as indicated below.

TABLE 4
SOURCES OF POPULATION GROWTH, CANADA BY PROVINCE,
CUMULATIVE CHANGE, 1996-2006

	Births	Deaths	Net Natural	Net Migration	Total Change
Newfoundland	57,432	44,518	12,914	-21,091	-8,177
Prince Edward Island	17,583	12,580	5,003	4,296	9,299
Nova Scotia	104,757	84,363	20,394	14,957	35,350
New Brunswick	80,723	65,234	15,489	5,042	20,531
Quebec	821,374	632,375	188,999	245,929	434,929
Ontario	1,335,339	922,400	412,938	689,618	1,102,556
Manitoba	153,632	102,015	51,617	-7,015	44,602
Saskatchewan	136,603	88,620	47,983	-30,799	17,184
Alberta	368,497	190,758	177,739	78,806	256,545
British Columbia	466,580	319,081	147,499	523,120	670,619
Yukon	3,965	1,804	2,161	-476	1,686
Northwest Territories	14,203	3,550	10,653	-2,767	7,885
Canada	3,560,687	2,467,298	1,093,389	1,499,620	2,593,009

CANADA'S POPULATION GROWTH BY URBAN AREA FROM 1996 TO 2006

IN GENERAL WE EXPECT THOSE URBAN AREAS OF CANADA exhibiting the fastest and/or most significant absolute growth during the period from 1991 to 1996 to continue to do so over the next decade. For example, in relative terms we expect the ten fastest growing areas to be Barrie, Ontario followed by Chilliwack, Kelowna, Nanaimo, Kamloops and Abbotsford in British Columbia, Saint-Jérôme in Quebec, Vancouver in British Columbia, Saint-Jean-sur-Richelieu in Quebec, and Prince George in British Columbia.

We expect the ten urban areas making the greatest contribution to Canada's growth in absolute terms to be Toronto in Ontario, Montreal in Quebec, Vancouver in British Columbia, Ottawa-Hull in Ontario-Quebec, Calgary and Edmonton in Alberta, Quebec City in Quebec, Winnipeg in Manitoba, Hamilton in Ontario, and Kelowna in British Columbia.

Our expectations regarding urban growth in Canada over the next decade are summarized in the following table.

TABLE 5

POPULATION GROWTH, CANADA BY MAJOR URBAN AREA, 1996-2006

	1996	2006	96-06	% Change 96-06
Toronto	4,222,791	4,720,406	497,614	11.8
Montreal	3,258,907	3,456,544	197,637	6.1
Vancouver	1,811,934	2,124,981	313,047	17.3
Ottawa-Hull	1,005,187	1,131,547	126,361	12.6
Edmonton	869,003	912,409	43,406	5.0
Calgary	827,570	936,966	109,396	13.2
Quebec	677,165	724,665	47,500	7.0
Winnipeg	669,586	696,033	26,448	3.9
Hamilton	626,051	664,169	38,118	6.1
London	406,402	443,268	36,866	9.1
Kitchener	387,517	433,815	46,298	11.9
St. Catharines-Niagara	379,302	401,021	21,719	5.7
Halifax	336,297	360,168	23,870	7.1
Victoria	306,817	334,819	28,002	9.1
Windsor	278,909	303,654	24,746	8.9
Oshawa	258,617	283,395	24,778	9.6
Saskatoon	221,006	238,447	17,442	7.9
Regina	196,743	204,656	7,913	4.0
St. John's	177,238	187,310	10,072	5.7
Chicoutimi-Jonquière	165,385	172,381	6,996	4.2
Sudbury	161,892	168,364	6,473	4.0
Sherbrooke	145,457	155,325	9,868	6.8
Kingston	143,313	153,477	10,164	7.1
Trois-Rivières	139,815	145,610	5,794	4.1
Kelowna	136,625	173,625	36,999	27.1
Matsqui	135,365	167,592	32,227	23.8
Saint John	126,688	129,423	2,735	2.2
Thunder Bay	124,973	125,493	520	0.4
Sydney	116,977	118,317	1,340	1.1
Barrie	113,050	146,513	33,463	29.6
Moncton	111,535	119,561	8,027	7.2
Guelph	104,204	114,311	10,106	9.7
Brantford	102,305	109,805	7,501	7.3
Peterborough	101,198	105,572	4,374	4.3
Belleville	100,293	107,645	7,352	7.3
Sault Ste. Marie	91,419	100,714	9,295	10.2
Nanaimo	89,337	112,492	23,155	25.9
Sarnia-Clearwater	88,918	90,128	1,210	1.4
Kamloops	80,194	99,456	19,262	24.0
Prince George	77,108	89,048	11,940	15.5
Saint-Jean-sur-Richelieu	76,994	90,129	13,136	17.1
Fredericton	76,524	83,878	7,354	9.6

TABLE 5 (CONT'D)

Chilliwack	74,089	95,021	20,931	28.3
North Bay	66,637	72,132	5,496	8.2
Lethbridge	66,215	74,277	8,062	12.2
Granby	64,175	71,530	7,356	11.5
Drummondville	63,943	69,885	5,943	9.3
Red Deer	63,354	71,240	7,886	12.4
Shawinigan	61,949	62,109	159	0.3
Charlottetown	60,668	65,607	4,939	8.1
Saint-Jérôme	59,981	71,779	11,799	19.7
Medicine Hat	58,355	67,141	8,786	15.1
Cornwall	55,748	58,592	2,844	5.1
Saint-Hyacinthe	51,139	52,383	1,243	2.4
Sub-Total	20,272,862	22,268,828	1,995,966	9.8
All Other	8,760,595	9,357,638	597,043	6.8
Canada	29,033,457	31,626,466	2,593,009	8.9

CANADA'S LABOUR FORCE GROWTH BY AGE AND GENDER FROM 1996 TO 2006

LABOUR FORCE PARTICIPATION INITIALLY INCREASES WITH AGE and then declines with age (an inverted U-shaped relationship). Therefore, we project that between 1996-2006 (and beyond to 2021) overall participation rates will decline. Participation rates by gender exhibit a different pattern. In general terms the rates for females over 35 will increase while the rates for men over 35 will decrease. This reflects the later entry of females into the paid labour force during the postwar period and male dominance of jobs in the primary and secondary sectors where substantial corporate "downsizing" has taken place.

Between 1981 and 1991 the labour force participation rate in Canada increased from 65.3 percent to 66.7 percent. However, given poor job prospects over the last five years, it fell to 64.8 percent, or below its rate in 1981. The decline occurred among males of all age groups and among females under 35. Interestingly, rates among females over 35 continued to climb during the recession.

In the future we expect the following participation rate trends to emerge:

- over the next five years we expect some cyclical recovery in the rates among males under 35 and among females under 25;

- beyond 2001 we expect rates among both males and females 15 to 19 to hold steady, while those among males 20 to 34 and among females 20 to 24 should resume their pre-recession long term rates of decline;
- among males over 35 we expect the pre-recession long term decline to continue, but at a reduced rate of decline;
- among females over 35 we expect rates to continue to climb; as their rates reach those of males in the same age group, however, we expect them to decline in tandem.

As a result of these shifts the total participation rate in Canada will increase from 64.8 percent currently to 65.2 percent by 2001, then gradually decline to 63.9 percent by 2006 (and to 59.2 percent by 2021), a trend consistent with the predicted aging of Canada's population.

These participation rate changes in conjunction with the changes in population by age and gender discussed earlier will result in the following labour force trends:

- over the next decade the labour force among males under 25 years of age and among females of the same age group will increase by only about 100,000 persons for each gender; over the last decade these two groups declined significantly; over the period from 2006 to 2016 this labour force age group is not expected to grow at all;
- over each of the next two decades neither the males 25 to 44 nor the females 25 to 44 age group are expected to contribute to Canada's labour force growth, in sharp contrast to the last ten-year period during which they were among the main contributors;
- over the next decade — from 1996 to 2006 — both males and females over 45 will be almost the only contributors to labour force growth; beyond 2006, however, their contribution will drop significantly (although they will still be the only overall contributors, with females in this age bracket contributing most of all).

The trends for the next ten years demonstrate, once again, the impact of the aging of the baby boom, bust, and echo generations. Lower labour force growth for persons under 45 is linked to the predominance of the bust and echo generations in this age category. The higher growth rate in the 45 and over category illustrates the predominance of the baby boom, especially its large front end and peak cohorts. So as Canada's population ages, its labour force ages in lockstep, with trends in growth and participation rates reflecting the impact of aging.

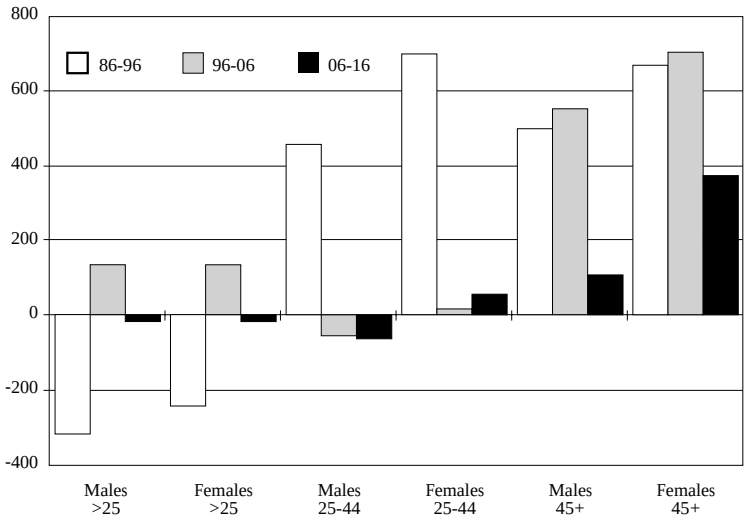
TABLE 6

PARTICIPATION RATES BY AGE AND GENDER, 1981-2021

	1981	1986	1991	1996	2001	2006	2011	2016	2021
Males 15-19	58.4	56.1	55.9	50.0	55.0	55.0	55.0	55.0	55.0
Males 20-24	86.6	84.8	81.5	78.6	80.3	78.8	77.3	75.8	74.3
Males 25-34	95.3	94.3	92.6	91.0	92.7	92.0	91.4	90.7	90.1
Males 35-44	96.0	94.9	93.7	92.1	93.7	93.0	92.4	91.7	91.1
Males 45-54	92.7	91.6	90.6	89.4	88.6	87.8	86.9	86.1	85.3
Males 55-59	83.1	79.2	76.1	72.7	72.5	71.4	70.3	69.2	68.2
Males 60-64	65.5	56.8	48.2	44.0	40.0	36.0	32.1	28.1	24.1
Males 65-69	21.8	18.6	17.6	17.1	16.6	16.2	15.7	15.3	14.8
Males 70 +	9.0	7.6	7.4	6.1	5.6	5.1	4.5	4.0	3.5
Females 15-19	53.4	53.1	54.0	48.0	53.0	53.0	53.0	53.0	53.0
Females 20-24	73.9	77.2	75.9	72.4	74.8	73.2	71.7	70.1	68.5
Females 25-34	66.4	74.0	77.5	76.7	78.8	79.8	80.8	81.8	82.8
Females 35-44	64.7	72.4	78.4	78.4	80.3	81.3	82.3	83.3	84.3
Females 45-54	55.6	60.8	70.0	72.6	75.8	79.1	82.4	85.6	85.3
Females 55-59	40.1	42.3	46.5	48.8	51.0	53.2	55.5	57.7	59.9
Females 60-64	26.2	24.3	24.5	23.3	22.1	20.9	19.7	18.5	17.3
Females 65-69	7.9	7.2	7.0	7.4	7.5	7.7	7.9	8.0	8.2
Females 70 +	2.5	1.9	1.7	1.5	1.3	1.1	0.9	0.7	0.5
Men	78.7	77.1	75.1	72.4	72.2	70.0	67.7	65.4	63.3
Women	52.3	55.8	58.5	57.5	58.4	57.9	57.2	56.5	55.3
Total	65.3	66.3	66.7	64.8	65.2	63.9	62.3	60.8	59.2

FIGURE 4

LABOUR FORCE GROWTH IN CANADA, 1986-2016
TEN-YEAR CHANGE IN THOUSANDS



CANADA'S EMPLOYMENT GROWTH BY INDUSTRY FROM 1996 TO 2006

ONE IMPORTANT ECONOMIC TREND UNDERWAY IN CANADA is the changing profile of job creation. In the ten-year period ending in 1995 the number of jobs in Canada increased by 1,764,000. The primary sector – which includes agriculture, fishing, and forestry – lost 53,000 jobs over this period while the manufacturing sector lost 3,000, and public administration lost 20,000. These losses, however, were more than offset by major gains in the services, trade, finance, construction, and utilities sectors. These trends in job growth by industry are expected to continue into the foreseeable future.

TABLE 7

EMPLOYMENT GROWTH IN CANADA BY INDUSTRY, 1985-1995
THOUSANDS OF PERSONS

	1985	1995	Change 85-95	% Change 85-95	% Change 1995
All Industries	11,742	13,506	1,764	15.0	100.0
Primary	1,074	1,022	-53	-4.9	7.6
Manufacturing	2,064	2,061	-3	-0.1	15.3
Construction	608	724	115	19.0	5.4
Utilities	919	1,033	114	12.4	7.6
Trade	2,088	2,307	219	10.5	17.1
Finance	660	809	149	22.6	6.0
Services	3,795	5,036	1,241	32.7	37.3
Business services	527	867	340	64.4	6.4
Educational services	768	944	176	23.0	7.0
Health and social services	1,012	1,340	328	32.4	9.9
Accommodation, food, beverages	664	861	197	29.6	6.4
Other service industries	825	1,025	200	24.3	7.6
Government	830	810	-20	-2.4	6.0

TABLE 8

EMPLOYMENT GROWTH IN CANADA BY INDUSTRY, 1996-2006

	1996	2006	Change 96-06	% Change 96-06
Primary	760,948	792,632	31,684	4.2
Manufacturing	2,070,587	1,865,013	-205,574	-9.9
Construction	764,451	959,568	195,117	25.5
Utilities	1,029,566	1,106,875	77,309	7.5
Trade	2,313,934	2,408,197	94,264	4.1
Finance	818,675	1,019,955	201,280	24.6
Services	5,120,863	6,193,025	1,072,163	20.9
Government	785,718	800,235	14,517	1.8
Total	13,664,741	15,145,501	1,480,759	10.8

APPLYING THE TEMPLATE

THE UNDERLYING ASSUMPTIONS REGARDING THE APPLICATION of the template are that "every year each person gets a year older" and that "people tend to act their age". The first assumption is almost a tautology (i.e., a few people do not make it to the next year) and it is linked to Canada's population structure. The baby boom generation accounts for about one-third of the current population, the bust generation is 45 percent smaller, and the echo, while larger than the bust, is only 70 percent of the boom cohort. In combination the three generations represent almost three-quarters of Canada's population.

To understand the impact of demographics it is important to position the age range of the members of the three cohorts in a given period. For example, in 1996 the baby boom ranges in age from 30 to 49 years; the bust generation from 17 to 29 years; and the echo from birth to 14 years. This observation brings into play the second assumption about "acting your age" or that age is the most important determinant of economic behaviour.

Are the recreational or educational or housing needs of the three cohorts the same? Are the members of one cohort more inclined to save or to spend money? If the largest cohort, the boom generation, ranges from 30 to 49 years in age what is the future of activities such as tourism, major league sports, or the opera?

SUPPLY FACTORS

Youth Employment

Traditionally the youth employment market has been described in relation to the 15-24 years cohort. More recently, the youth cohort has sometimes been analysed in terms of the 15-29 years cohort. This re-definition of the age boundaries of the youth cohort reflects the reality that more youth are obtaining higher education up to the graduate level of study, a phenomenon attributable in part to the poor economic conditions (and hence poor prospects for full-time employment) in Canada during this decade.

"Generation X" should also be considered as part of the youth market. This is the cohort that represents the last quarter of the baby boom (just under 27 percent); it is not the "twenty something" generation popularly depicted in the media. "Generation X" merits inclusion in a demographic analysis of youth employment because it is the generation that has been hardest hit by the demographic and economic realities of the last fifteen years. Members of this cohort entered the labour force in the late 1970s and were victimised by the recession of the early 1980s. In addition, they have been the prime victims of the sub-

stantial downsizing of government and business organisations that has taken place during the 1990s. The pernicious impact of downsizing is most evident where seniority, not merit, is the primary basis of employment tenure (for example, the recent laying off of young primary and secondary teachers in Ontario as a result of reductions in provincial government transfers).

In 1981 the distribution of the Canadian population in the prime labour force participation years (i.e., 15-64 years) exhibited the triangular shape that has been evident since 1921. A triangular distribution means there is a broad base of younger workers that gradually tapers at the top to a smaller group of older workers who are on the cusp of retirement. The year 1981 is a good proxy for the period when the bulk of the baby boom was entrenched in the labour force.

Our projection of the Canadian population in 2006 shows that compared to 1981 there will be substantially fewer people under the age of 35 years and more over the age of 35 years. The deficit in the under 35 years cohort exists even with substantial immigration and the continuing entry of the echo generation into the labour force. Some of the deficit in the under 35 age cohort will be absorbed by the greater use of technology, a trend that has been evident in large manufacturing companies (for example, the automobile manufacturers) for some time. However, is technology as a substitute for labour the answer in the much larger and faster growing (in terms of employment) services sector? If technology is an inappropriate substitute for labour in the services sector, there will be a high demand for young workers in a market where they will be in shorter supply.

In small and medium-sized manufacturing firms, the construction industry, and the primary sector there is a potential shortage of tradespersons. During the post-war period, the youth cohort has supplied the candidates for apprenticeship and immigrants, mostly from Europe, have supplemented the ranks of journeypersons. Both of these groups will be in short supply in the future. Demographic studies of selected trades in the Ontario construction industry have revealed a labour force that is currently older than the population at large. Two independent studies have raised this issue in relation to firms in the Hamilton, Ontario labour market. TransSkills, a training broker in Hamilton-Wentworth region, reported that demographic factors will create a shortage of skilled workers by 2005. A survey by the Hamilton YWCA Employment Services of the area's small- and medium-sized enterprise (SME) sector observed that skilled jobs were available in 26.5 percent of the 170 firms contacted.

Self-employment

Between 1976 and 1987 the number of self-employed persons in the labour force increased from 1 million to 1.6 million, a growth rate of 60 percent. In 1987 about 54 percent of the self-employed were own-account workers, i.e.,

they did not usually employ paid staff. By 1995 the ranks of the self-employed had swelled to 2.1 million.

These data are derived from studies on self-employment conducted by Statistics Canada. The studies also establish the fact that the older the worker, the more likely she or he is to leave corporate employment and go into business for themselves. In 1987 some 20 percent of workers aged 45 to 64 were self-employed compared to 13 percent of workers aged 25 to 44 and only 5 percent of those aged 15 to 24. This relationship was also detected in the 1995 data. The direct link between age and self-employment reflects the differentials in experience, skills, resources, and opportunities between older and younger workers.

The front end of the baby boom reached the age of 40 in 1987. With the peak of the baby boom at age 36 in 1996, the largest group within the "big generation" has not arrived at its peak self-employment years. Furthermore, this trend towards self-employment is accelerated by the rash of downsizing in both the public and private sectors.

However, not all the casualties of downsizing are well positioned to become self-employed. Workers under the age of 35 are at a disadvantage compared to those in their 50s or 60s who are likely leaving corporate or institutional employment with a substantial severance package including transitional assistance.

Computer Literacy

Longitudinal data available from Statistics Canada show that computer literacy is related directly to household income (i.e., the greater the income, the higher the literacy) and inversely to age (i.e., the older you are, the lower your literacy level). A 1989 study revealed a substantial drop in literacy levels for persons age 45 and over. A similar study in 1994 found that the drop off point had shifted to age 55 but only 55 percent of respondents aged 45 to 54 could use computers (38 percent in 1989).

A 1996 Statistics Canada survey by Paul Dickinson, an economist at McGill University, and George Sciadas, an employee of the agency, shows that the penetration rate of computers has increased from 19 percent of Canadian households in 1991 to 28.8 percent in 1995 (25 percent in 1994). They also identify how penetration rates vary by region within Canada. About one-third of households in Alberta, British Columbia, and Ontario have computers compared to one-quarter of households in Quebec, Saskatchewan, Manitoba, and Nova Scotia and one-fifth of households in Newfoundland and New Brunswick. Prince Edward Island at 16 percent has the lowest rate.

An indication of whether Canadians are using the Internet is provided by a survey conducted by Gallup Canada and Goldfarb Consultants for Andersen Consulting Canada. The most recent annual survey obtained the views of 1,337 people. The results show that more people are hooked up (29 percent in

1996 versus 12 percent in 1995) and that the Internet is used mostly for transactions. However, there is a reluctance to purchase goods that the potential customer can not inspect.

Another survey conducted this year gives a glimpse of how businesses are using the Internet. A Compas Inc. survey for the Toronto consulting firm A. T. Kearney Inc. polled senior executives of 412 companies from across Canada and representing various sectors and firm sizes. Forty (40) percent of the firms polled are hooked up to the Internet (compared to 20 percent six months ago) and the share is expected to reach 80 percent within 12 months. Twenty-two (22) percent of the hooked-up firms have Web sites and the share is expected to reach 60 percent within 12 months. Eighty (80) percent express either strong or moderate support for the Internet as an important business tool while only 12 percent regard it as a "fad" (8 percent are undecided). Finally, the degree to which a firm's workers are on-line varies:

under 10 employees:	36% of firms
10-25:	21%
26-50:	24%
51-75:	8%
over 75:	8%
Don't know:	2%

In the opinion of Jeffrey Gilchrist of A. T. Kearney, Canadian firms on average are at the end of the first stage of implementing the Internet, i.e., information retrieval. The stages yet to be completed are information provision to customers and transactions (for example, making reservations or filling out forms). Nadir Desai, president of the Canadian subsidiary of PSINet Inc., the world's largest provider of Internet access to corporations, observes that at this point companies use the Internet primarily to communicate with each other. In his view it will be a long time before the Internet emerges as an electronic shopping centre. This is because people are reluctant to buy what they cannot see. An exception to this trend may be cheap items (for example, a song from a CD for $1.00). Stephen Kiar, a partner in A. T. Kearney, believes the obstacles to increased business use are not costs, privacy, or unclear economic benefits but rather the complexity of the technology. Therefore, proponents of the "Net" should focus on education.

The banking industry is the best example within the service industry of the deployment of computer technology. Furthermore, it is being implemented in a downsizing context. Braxton Associates (Deloitte & Touche) in a 1995 survey of 200 banks in Canada, the United States, Great Britain, and Europe found that technology will reduce branches by one-half and employees by one-quarter over the next decade. In the U.S. 450,000 jobs will disappear. A similar trend is evident in Canada – staff at the "big six" banks has been decreasing by 2.5-3.0 percent per year during the last three years. The predominant notion is

that technology will handle routine transactions and staff will be oriented to sales and customer service for those who can afford personal financial services.

A recent survey by Payment Systems Inc., a banking industry market research firm in Tampa, Florida, found that while one-third of households own a computer and a majority of those have a modem, just 1 percent of consumers currently use computer banking and only 18 percent would use it if it were available. Of the 2,590 people surveyed, 63 percent were not even aware if their financial institutions offered it. Respondents who are not likely to use computer banking did not see a need for it or lacked confidence in it. Almost one-quarter had concerns about security and privacy. In addition, although 78 percent of respondents owned personal financial management software, only 46 percent to 59 percent actually use it.

In Canada, Canada Trust's CTConnect is currently the only national computer banking program. Royal Bank research shows that 20 percent of its customers would like to use the service. Canadian banks have also found that automatic teller machine (ATM) use is declining due to the use of debit cards, telephone banking, and credit card rewards programs. Other research has shown that older customers do not use ATMs to any great extent. The bank's response has been to make more services available through ATMs in the hope of attracting more customers.

One observer of the American banking scene suggests that the move towards technology will not be easy. A. Christian Frederick, managing director of Dove Associates Inc. in Boston states:

> PC home banking is going to be a very difficult selling job for financial institutions. Getting consumers to change how they bank and pay their bills is going to be a tremendous challenge and it will take an effective marketing campaign.

We put forward two hypotheses about the impact of age on computer literacy (and technological literacy in general). The first hypothesis is in line with the findings of the Statistics Canada studies that over the past ten years have shown a consistent inverse relationship between the ability to use a computer and age. Under this hypothesis individuals do not continue to develop computer skills acquired at an earlier age. Instead those skills, so formidable when one was a twenty-five year old graduate student, are “congealed” in your 40s and 50s as other activities make demands on your scarce time, anything from a greater interest in travel to taking care of your ailing mother who lives in another community. From this perspective the seventy-three year old computer illiterate of today was probably (and still is) most adept with the information technology of the 1960s. Another aspect of this hypothesis is the emphasis on quality and service by the older customer or client. In this regard it is our contention that quality and service are better dispensed by a well-trained person on the front line than information conveyed by a computer screen or voice

on the front line than information conveyed by a computer screen or voice messaging system.

The second hypothesis focuses on the penetration rates of computer technology. Several of the surveys mentioned earlier provide an indication of how far computers have been woven into the fabric of everyday life for both individuals and businesses. Under this hypothesis the penetration rates for computers are compared with those of other forms of technology (for example, microwaves or compact disk players) to judge when they will be used on a widespread basis. This hypothesis assumes that you carry forward your level of computer literacy (if not increase it) and that computers, like other forms of technology that are now commonplace, will become increasingly "user friendly".

Indeed, the imperative of user friendliness is a bridge between the two hypotheses. However, the penetration hypothesis assumes that this happens over time while the congealment hypothesis assumes, at least implicitly, that it does not to any sufficient extent.

Education and Training

Given that children are required by law to attend school until the age of 16 years, demographics can project school enrolments with great accuracy. Appropriate adjustments can be made for projections of enrolment beyond the mandatory age.

One approach to projecting the future demand for education services is to determine at any point which cohort is moving through which level of the education system. During the next ten years the children entering primary school will be the back end of the echo generation and the "millennium kids". These cohorts are relatively small. The echo component is essentially the kids born after the peak in births in 1990; the millennium kids are the children of the baby bust generation. The need for new facilities and teachers will decrease, especially in those provinces where the echo generation is less pronounced.

The peak and back end of the echo generation move through the secondary system during the 1996-2006 period. This will put pressure on the supply of facilities and staff, particularly in Ontario and the western provinces.

The post-secondary system is a unique case in that it will attract clients from all age groups to meet the labour force re-training and leisure needs of an aging population. Furthermore, corporate downsizing magnifies both needs in two ways. First, the "survivors" of downsizing will require higher and continuous levels of training and education to maintain productivity, especially as the technological component of their work increases. Second, depending on the exit path chosen, the "victims" of downsizing will be prime consumers of education and training services. Some will need new skills to take up positions with new employers or to pursue self-employment; others will seek knowledge in line with retirement goals.

The key question is whether colleges and universities are positioned in terms of their learning methodologies and administrative policies to cater to an adult learner who will demand a level of quality and service much different than that of a nineteen year old undergraduate? The front end of the echo generation begins to enter the post-secondary system in the late 1990s. Will institutions respond instinctively and traditionally to this enrolment blip and leave the potentially more lucrative adult education market to the private sector?

Demographic change also creates challenges for industry-based training. Compared to their counterparts in countries such as Germany or Japan, Canadian employers have been reluctant to invest in their employees to the same or greater extent that they invest in machines and equipment. This is a problem that some have described as the absence of a "training culture". The Ontario studies referred to earlier (see Youth Employment section) highlight this issue in relation to skilled trades jobs. It is also an issue for corporations in the service sector that emphasise cost containment in their restructuring strategies.

Corporate Restructuring and Career Paths

In relating demographics and public sector labour force trends, four types of generic career paths should be identified: steady state, linear, spiral, and transitory. One of the implications of current demographic trends in Canada is the transition from linear to spiral and transitory career paths. However, the current emphasis on downsizing – the stripping of jobs to enhance short-term profitability or reduce the deficit – is creating a situation of demographic imbalance within public and private corporate structures that will reduce long-term productivity and profitability.

The steady state career is characterised by little or no movement because the worker essentially holds one occupation during her or his working life. University professor is a good example of this career path. The type of organisation corresponding to the steady state career is a flat, almost rectangular, structure. There is a hierarchy but it pales before that found in government departments or major business corporations. There are few opportunities for advancement and the reward system favours employment security initially and compensation levels once security is achieved.

The linear career path emphasises upward movement through the numerous levels of a hierarchical ("triangular") organisation. Individuals pursuing this career path may ultimately have two occupations, one on the service delivery side of the organisation and the other in senior management. The reward system is based on the progressive accumulation of both authority and compensation through promotion. A career within the police service or the military illustrates the linear conception well, but so do the careers of the thousands of workers who are employed in government agencies or large private corporations. During much of the postwar period, successive waves of workers have expected to pursue linear careers within triangular structures.

The spiral career path is characterised by both upward and lateral organisational movement. Individuals who pursue this career path can expect to have several occupations during their working years. One may start out as an accountant and then be promoted eventually to the position of director of financial services, i.e., the first rung of the senior management level. At this point the next occupation may involve a lateral move to become the director of program evaluation. In sum, over time one progresses within the organisation through a series of vertical and lateral moves.

A spiral path requires a substantially different organisational structure and reward system than that of the linear path. The organisation is still a triangle but it is much flatter in shape. Individuals are not motivated by the continual prospect of promotions but by the challenges of different occupations and the opportunities associated with re-education and re-training.

The transitory career path emphasises lateral movement among different projects either within one organisation or among several. Individuals pursuing this path will have many occupations during their career. The concept of the temporary team is the organisational structure that fits best with the transitory career path. Independence, variety, and a flexible work schedule are the rewards; the absence of security and a fixed level of compensation are the constraints. Own-account workers within the ranks of the self-employed in Canada illustrate this career path.

The baby boom represents a twenty-year "rectangle" of workers moving through a triangular corporate world. The central issue is that the boom generation challenges the leaders of traditionally-structured organisations, where linear careers are the norm, to "push a rectangle up a triangle". The problem is "plateauing" or career blockage for large groups of workers conditioned to regard upward mobility as the signpost of success. The response is delayering and reengineering to strip out unnecessary levels of management and work processes and create a flat and responsive organisation. However, in too many cases another step has been taken – the downsizing of staff to contain financial costs. From the perspective of demographics plateauing, reengineering, and delayering, but not downsizing, are "inevitable surprises".

The impact of demographics on organisational structure and career paths is not simply an issue of the 1990s. This issue will become increasingly problematic over the next ten years. In 1981, as the last of the baby boom generation began to enter the labour force (defined as workers between 15-64), the distribution of the working age population still exhibited its traditional triangular shape, i.e., a mass of younger workers at the base and increasingly fewer and older workers as the ranks approach the apex. By 2006 the baby boom will range in age from 40-59 with the peak at 46. Projections show this cohort as the broad top end of a barrel-shaped labour force. The bottom levels of the old triangular labour force (i.e., workers under 35) will be less occupied than in the past. Downsizing, as currently practised, accelerates this natural trend.

Federal government employment data for 1995-1996 lend further support to the thesis that the baby boom dominates organisational ranks. During 1995-1996 the federal public service was reduced by just under 8 percent. Notwithstanding absolute drops in all major age cohorts, the proportion of workers under age 35 fell by more than 2 percent and the proportion of workers 35 and over increased by more than 2 percent. The increased share for "older" workers favoured the baby boom generation. Boomers increased their share by about 2.5 percent. Furthermore, the older front end and peak boomers (age 35-49) fared the best with an increase of well over 3 percent. "Generation X" declined slightly.

The juxtaposition of the huge baby boom generation with the management strategy of downsizing raises a number of important questions for Canada's governments and corporations. How should organisations adjust their structures, policies, and procedures to manage the transition of the boomers (and pre-boomers) from linear to spiral and transitory career paths? How important will workplace training become as a means of maintaining morale and productivity? What are the longer-term economic and social consequences of the blunt instrument of downsizing?

Downsizing, either in place of or in conjunction with reengineering, represents the conventional wisdom on how governments (and businesses) can escape their financial woes. As ministers face citizens' wrath over excessive levels of deficit spending and public debt, the reflex response to this pressure is to implement a scheme that works, at best, in the short term.

Downsizing as the preferred "short term solution" typically involves three elements:

1. cutting staff usually across the board or on the basis of seniority;
2. organisational restructuring that emphasises greater centralisation of senior management authority; and
3. substituting technology for people nominally to improve service delivery.

Although there may be short-term financial benefits, the long-term problems created by downsizing outweigh the benefits (our discussion of these problems parallels the 1993 study conducted by The Wyatt Company in the United States). The first problem is that the survivors of the corporate bloodletting are often left in a demoralised and less productive state. In addition, "corporate loyalty" often evaporates in the aftermath of downsizing.

There are other negative consequences associated with downsizing. Where younger workers (under 35) are the prime victims of cuts, governments and businesses run the risk of having a less computer-literate work force. Longitudinal studies undertaken by Statistics Canada have consistently demonstrated the inverse relationship between computer literacy and age (i.e., the younger the worker, the higher the literacy level). The tendency in downsizing scenarios to replace people with technology (although some critics contend that downsizing is more focused on the short-term cost reduction obtained

through cutting jobs, not strategic investment in technology), fails to recognise that technological solutions are potentially ineffective in an aging society, both for the client and service provider. At this point machines are not an appropriate replacement for front line staff. Technology must become extremely "user friendly" to have the desired impact on effectiveness. Moreover, technology does not replace everybody, therefore, substantial training expenditures will be required to develop the skills of the workers who must use the technology. Training costs will be higher for the older work force left in the wake of downsizing compared to one that is demographically balanced.

Downsizing also indiscriminately liberates some of an organisation's best employees. This observation reflects the hypothesis that two categories of workers tend to exit as a result of downsizing, i.e., the "young" (under 35) who have limited seniority but high potential and high computer literacy and the "old" (over 50) who have the experience and knowledge. Furthermore, it is our view (based on anecdotal evidence) that, regardless of age, those who depart are the government's most entrepreneurial and creative people – the people who feel that they can make it on their own particularly with or without the assistance of an attractive severance package.

The exodus of "good people" creates a number of "organisational deficits". An organisation without a significant youth cohort runs the risk of exhibiting low levels of "energy", client responsiveness, and computer literacy. In this regard governments and businesses will not only face a competitive future market for workers under the age of 35, but they will also face an even more competitive market for the best workers. At the older end of the employee spectrum the exit of "good people" means the loss of strategic expertise and "institutional memory", deficits that often lead to inefficiency and ineffectiveness. Recent press reports from Alberta indicate that the cumulative impact of years of wage decreases and reductions in operational resources is inducing senior civil servants to seek (and obtain) higher salaries in the private sector. There is now concern that the Alberta Government is losing strategic expertise and its most innovative managers.

Unfortunately, for many organisations the "good people" liberated by downsizing are probably not coming back. Those with professional and management backgrounds are swelling the ranks of the self-employed and will be available as consultants. They will not form part of the "core" employee group that the senior executives of downsized organisations suggest is sufficient to reach even higher levels of productivity. They will revel in the variety and flexibility of their transitory careers and continue to make an important contribution to the economy as a whole.

Indeed, many governments make it relatively easy for the "good people" to leave. The case of the federal government is instructive. During the 1995-96 fiscal year, just under 77 percent of the separations were under various incentive programs, particularly the Early Retirement Incentive (29 percent), Civilian Reduction Program (20 percent), and Early Departure Incentive (18 percent).

The Early Departure Incentive (EDI) is potentially lucrative – depending on years of service and age it could pay out up to 90 weeks of salary and $7,000 for counselling and re-training. The federal government initially estimated that about 4,000 of the 50,000 eligible employees would take up the EDI. In 1995-96 3,557 federal employees accepted the EDI. The "job swap" program is also both popular and an indicator of the desire of some civil servants to start new careers. In 1995 it was reported that the ratio of swaps for members of the Professional Institute of the Public Service was 2:1 in favour of exit.

In sum, by the 1980s the sheer size of the baby boom generation began to put pressure on the vertical structure and linear career paths characteristic of large-scale public and private sector organisations, thereby making the transition to flatter corporate structures with spiral and transitory career paths inevitable. By the 1990s economic factors, some global in origin, increased the pressure on government and business leaders to improve short-term financial performance. Downsizing, with its emphasis on containing costs through job cuts and related measures, meets this goal but it creates longer-term problems that will be accelerated by demographic trends.

The alternative to downsizing is to "flatten the triangle" and humanely and creatively move displaced staff from linear to spiral and transitory career paths. Downsizing flattens corporate structures but it also sheds employees in the name of short-term financial benefit. Our perspective assumes that demographic balance within organisations is a key ingredient for long-term productivity and financial health. Also, it calls for much more flexibility in the workplace. One approach would be to offer the front end of the boom the option of a 20 percent reduction in compensation in return for a 20 percent reduction in workload. In addition, their employers must guarantee them job security based on performance. This option must be voluntary and requires flexible, individualised career plans (and generates the type of creative work that human resource management staff should be doing). The savings generated can be allocated to both the "bottom line" and the careers of "Generation X" and today's "twenty somethings". Adopting this option would reflect an uncharacteristic long-term perspective on productivity in government and business operations.

DEMAND FACTORS: PRIVATE SECTOR

Primary, Secondary, and Tertiary Economic Activities

The consumption of a "younger" population (under 50 years) is mostly focused on the output of the primary and secondary sectors of the economy. Therefore, the demand for durable goods such as houses, automobiles, and refrigerators as well as for food and alcoholic beverages is high. The front end of the baby boom is about to enter a period when saving for retirement and the consumption of particular types of services (for example, leisure or health services) will

be paramount. Therefore, the “service economy”, already well entrenched in Canada, will become an even more salient description of our marketplace.

Given the impact of aging on consumption (primarily the shift from durable goods to services), what Canada imports and exports will change. Assuming that industry productivity levels can be maintained or increased, Canada will export manufactured goods to the parts of the world with younger, goods-consuming populations. Domestically the consumption of services, particularly in areas such as health, travel, and financial planning will drive the economy.

The application of technology and the upgrading of the skills of workers who will use the technology continues to hold out the prospect of productivity gains in the primary and secondary sectors. However, where technology is a factor older workers will likely be less productive than younger workers who tend to be more literate. The relative productivity of older and younger workers may be further affected by differences in educational attainment and attitudes towards training. For example, studies of various trades in Ontario's construction industry have shown that a worker's level of formal education and interest in training programs are inversely related to age. This development means that employers will have to balance two issues – the need to provide continuous training for older workers, who have lower literacy and interest levels, and the need to recruit younger workers, who have higher literacy and interest levels, in a market where their supply will be tight.

In the services sector we have raised the question of whether technology is always an appropriate substitute for labour. The alternative is the development of highly skilled, flexible workers. Notwithstanding these implications, some service sector industries, most notably the banks and government, are travelling down the “technology for people” route. The surface rationale for the increased use of technology is improved service to the customer or citizen. The underlying purpose is profitability for business and cost reduction for government. However, the main obstacle for service industries attempting to meet financial objectives through the deployment of technology will be the older consumer's emphasis on quality and service. The technology option assumes that a machine can provide a higher level of quality and service in a nursing home, government employment office, or bank.

Quality and Service

As the baby boom ages into its 50s and 40s during the next ten years, the marketplace will be serving a consumer that places greater value on quality and service. This trend reflects the observation that the older consumer increasingly has the discretionary income but not the time to conduct a comprehensive search for the best combination of price, quality, and service. Data provided by Statistics Canada show that household income, consumption, and savings peak about the age of 54. However, although the mortgage may be paid off and

saving for retirement is a new priority, household heads in their 50s may still face a scenario in which their well-educated but underemployed “Generation X” children live at home to cut costs and “eighty something” parents are less able to care for themselves. When career pressures are added to personal ones, the net result is too little time to meet everybody's needs.

With the front end of the baby boom approaching 50, there is some evidence to support our hypothesis in the results of a March 1996 survey of 8,800 Canadians conducted by A.C. Nielson for the Consumers' Association of Canada and the National Quality Institute. The survey is the first of its kind to be conducted in Canada. Nearly all respondents stated that quality is important and two-thirds are willing to pay more to obtain better goods and services. The highest marks were awarded to pharmacies (93 percent), credit unions, and small retailers; government departments, cable TV companies, and Canada Post received the lowest marks. Two factors associated with higher levels of consumer satisfaction appear to be small scale of operation and the intensity of human interaction at the front line service. Moreover, about 70 percent of respondents said they were unhappy obtaining assistance through a voice-mail system, an approach more likely to be adopted by large-scale organisations in both the public and private sectors.

Notwithstanding these survey findings, both large and small businesses have the potential to provide quality and service to their customers. However, they face different constraints. Downsizing by Canada's corporate giants is accelerating the trend towards substituting technology for people, even at the front line (for example, automatic teller machines or voice mail). The small business sector is less reliant on technology and more labour-intensive but it is generally reluctant to invest in staff training, including customer service training. If the constraints can be overcome, both types of business will be better positioned to cater to the quality and service demands of the older consumer that will soon rule the marketplace.

Retail Trade

A young population that is focused on the consumption of essential goods and services and that is in debt to finance this consumption is concerned with price. An older population that is less burdened with debt and has more discretionary income can be more concerned with quality and service. The concern with quality and service reflects the time squeeze attributable to career and personal demands as well as the “retail wisdom” of the older consumer. How will the retail sector adjust to the fact that the largest segment of the market is consuming fewer durable goods and more services and that what older consumers value most is quality and service? In our view neighbourhood specialty stores where “everybody knows your name” are better positioned to face the more demanding consumer of the future than “big box” retailers that keep prices down through volume purchase of standardised goods, the minimal deployment

of staff with limited expertise and training, and spartan facilities. Moreover, in the future the customers of “big box” retailers will be less willing to accept the “bulk purchase” imperative (i.e., one can buy eight tins of the same soup but not two tins or eight tins of several different soups) that is appropriate for younger households with children but less so for the one- and two-person households characteristic of an older population.

A second implication of demographic trends for retailing is the specific goods and services that will be favoured by an aging population. Our previous research for Industry Canada's Office of Consumer Affairs has identified a list of “winners” and “losers” during two projected time periods: 1996-2006 and 2006-2016. The results were arrived at by two methods of analysis. The first assumes that age is the most important driver of consumer spending; the benchmark of market success is whether projected expenditures on a good or service will grow at a rate that exceeds the average annual rate of household growth. Over 400 individual goods and services were analysed to determine the projected consumer preferences of Canada's aging population. Secondly, some 130 items were analysed on the assumption that the key driver is real disposable (after-tax) household income growth; the benchmark is whether a good or service is growing faster or slower than the average annual rate of income growth. In bringing income into our analysis, our earlier observations about the linkage between household consumption, income, and saving and age should be kept in mind.

Projecting consumer spending on the basis of age and household income, respectively, does produce to some extent different lists of specific goods and services that are “winners” and “losers” during the next ten to twenty years. However, the broad trend associated with population aging is upheld, i.e., the shift in consumption from durable goods and related services to specialty goods and services, particularly related to travel, health, and recreation. The results of this research are integrated into our discussion of the remaining demand factors in both the private and public sectors. Emphasis is placed on the age-driven winners and losers.

Food and Beverage Consumption

People in their 20s, 30s, and 40s not only consume more food and drink than those in their 50s and 60s but their income often determines the quality of the products that they purchase and where consumption primarily takes place. Therefore, the beer ads had it right during the 1970s and the 1980s when they focused the need of “twenty somethings” to wash down their burgers with mass quantities of inexpensive lager and ale. This was the period when the front end to the peak of the baby boom was traversing its prime beer consumption years!

The 1989 *National Alcohol and Other Drugs Survey* conducted by Statistics Canada on behalf of Health and Welfare Canada pointed out that the proportion of current drinkers in the Canadian population peaked at the ages of 20 to

24 (88 percent) and 25 to 34 (87 percent) and declined in successively older age groups (for example, 54 percent of people aged 65 and over are current drinkers). Consumption (measured in terms of the average weekly number of drinks) follows a similar pattern, although the rate of decline through the older age groups is less. Men are more likely to consume alcohol than women and they consume more on a weekly basis. However, consumption peaks at different ages for men and women. Alcohol consumption is highest for men aged 20 to 24 and for women aged 45 to 54 (at a level less than half that of men in the same age group).

Our research confirms the finding that alcohol consumption will decline as a result of the aging of Canada's population during the next ten years and beyond. We project that the purchase of alcoholic beverages at licensed premises will be less favoured and that the purchase at stores will grow at the same pace as households generally. There will also be shift in what type of alcoholic beverage is consumed. Beer consumption is not favoured, wine consumption will keep up with household growth, and liquor consumption (store purchases more so than licensed premises) will increase at a rate well above household growth.

The aging of the population will also have an impact on what Canadians eat. Data from Statistics Canada show that over the past several decades:

- the consumption of red meat (mostly beef), eggs, standard milk, and butter is on a downward track;
- the consumption of poultry, fish, 2 percent milk, fresh vegetables, and cereals is on an upward track.

We expect these trends to continue during the next ten years.

The inclination of Canadians to eat out will be impacted by population aging. A 1988 Gallup Canada Inc. survey revealed an inverse relationship between eating out (defined as the proportion of the population who ate out during the past three days) and age. Participation in this type of social activity declines steadily from 63 percent of people aged 18 to 24 to 27 percent of those aged 65 and over.

Our projections confirm this trend. The aging of the population means that food purchased from stores will grow faster than food purchased from restaurants. However, food purchases, from either restaurants or stores, will grow at a rate exceeding that of households when made in conjunction with overnight or longer travel. Food purchased from restaurants while at work or school and between meals purchases will grow very slowly.

Housing

The baby boom generation tore through the rental market in the 1970s and the housing market during the 1980s to the delight of landlords and home builders,

respectively. However, the baby boom is now largely housed, although there will be some activity in the trade-up and renovation markets as it faces the potential reality of dealing with teenagers, a live-in parent, and a home business under the same roof. The cohort entering the housing market over the next ten years is the much smaller baby bust generation; the bust generation and front end of the echo generation will move into the rental market.

Our projections show that significant increases in household formation will occur in age groups 45 and older. In terms of household type the greatest increases will be in couples (42 percent) and single persons (40 percent). Both the absolute number of households and household size will decline in response to population aging.

Between 1996-2006 we project that both rented and owned shelter expenditures will grow less quickly than households. The gap will be largest for rented shelter. Spending on shelter other than the primary residence will grow considerably faster than households, particularly in the vacation home and motel categories.

Commercial, Industrial, and Institutional Property Development

Property development in the "ICI" sector flourished during the 1970s and 1980s as the large baby boom generation entered the labour force. However, since the mid-1980s, the bust generation is the cohort that has entered the labour force and it will be followed by the echo generation at the turn of the century. Given this demographic reality, the downturn during the 1990s in this market sector was predictable and so is the modest rebound in the first decade of the next century (although demand will likely be absorbed by the existing building stock).

The ICI sector is also affected by the interrelated factors of corporate downsizing, technology, and the "home work" phenomenon. Downsized staff are increasingly turning to self-employment as a career option and the affordability of information technology, particularly the fax machine and the computer, makes the home office a cost-effective alternative to one in a strip mall or downtown corporate tower. According to Statistics Canada, by 1991 743,000 non-farm workers worked at home. Two-thirds were "tele-commuters" (and therefore likely employed by a large corporation) and one-third were self-employed. Although most of the home workers were men, woman had embraced this option at a faster rate between 1981-1991 (69 versus 29 percent).

Financial Services

Individuals in their 20s and 30s typically incur debt to finance higher education, a car, furniture, or a house. Once the children leave home and the mortgage is paid, discretionary income increases (recall our earlier observation that household savings increase with age and peak around the age of 54 years). The front

end of the baby boom is poised to turn 50. Boomers are reaching their prime savings years and looking ahead to retirement. This observation is reflected in the results of a survey conducted in 1996 by Gallup Canada Inc. for Investors Group Inc., a mutual fund company. Just under 56 percent of respondents had an RRSP or RRIF. The distribution by age shows the high interest of the baby boom generation in an investment vehicle developed and promoted during the post-war period:

18-29 years	43.9%
30-39	69.0%
40-49	64.2%
50-64	59.9%
65+	43.2%

The data also indicate that the amount invested generally increases with age. For example, about 40 percent of persons in their 40s had invested $50,000 – 100,000 compared to about 5 percent of those in their 30s; just over 15 percent of persons in their 50s had invested over $100,000 compared to just over 6 percent of those in their 40s.

The aging of the baby boom over the next ten years and beyond will be a boon for the financial services industry. Banks and trust companies will reap less through interest payments as debt is paid down and more through charges on routine transactions and the provision of financial planning advice. Brokerage and mutual fund companies are also positioned to do well in an environment in which a higher savings level will track interest rates downward and force investors to seek out better rates of return in the stock market.

DEMAND FACTORS: PUBLIC SECTOR

Transportation

Data from the Ontario Ministry of Transportation on travel within the Greater Toronto area in 1986 suggest that peak car utilisation (measured in trips per day) occurs when drivers reach the age of 40. Transit trips, on the other hand, peak in the late teenage years and decline gradually to the 70+ years group. Data from the 1986 General Social Survey on commuting lends support to the observation that automobile travel peaks around age 40. Commuting, the largest component of travel time (28 percent), peaks in the 35-44 age group (52 percent).

With the peak of the baby boom at age 36, the current problems of traffic congestion and money-losing transit systems in our major urban centres will persist during the next ten years. There will, however, be an upturn for public transit as the echo generation enters its prime transit utilisation years. However, our projections also show a greater emphasis on inter-city air and bus services as an aging population increasingly seeks leisure travel experiences.

Crime

From the perspective of demographics, most of the crimes that the citizenry worries about such as homicide, break and enter, and vehicle theft are perpetrated by people in their teens and 20s. On the other hand, a crime such as fraud is more likely to be carried out by someone in their 30s and 40s. In the 1990s both reported crimes and crime rates (measured on the basis of crimes per 100,000 population) have been on a downward track for violent, property, and other criminal code offences. This reflects the aging of the baby boom into its 30s and 40s and the passage of the smaller baby bust generation through its crime-prone years.

Data from the 1995 *Uniform Crime Reporting Incident-based Research File*, collected by the Canadian Centre for Justice Statistics and representing 46 percent of the national volume of reported crime, illustrate these generalisations. The median ages for persons charged with major Criminal Code offences range from 19 for break and enter and motor vehicle theft to 34 for impaired driving. The lowest median age (24) is in the property crime category, however, the median age for fraud (29) shows that it is a crime committed by a more experienced perpetrator. The median age for violent crime is 29. Within this category, the younger offender is likely to be charged with robbery (22), attempted homicide (26), or homicide (28); the older offender with assault (30), abduction (31), sexual assault (32), or other sexual offences (34). The median age for impaired driving is 34. Possession of cannabis has a median of 22 but trafficking is the preserve of an older offender (26). Both the possession and trafficking of cocaine are the illicit activities of older offenders (median age of 29).

In 1996 the baby boom generation ranges in age from 30-49. This positions the boomers in an age category where crimes such as fraud, assault, and impaired driving are likely to increase and crimes such as homicide, break and enter, and motor vehicle theft are likely to decrease. This is reinforced by the presence of the bust generation in its most crime-prone period (i.e., 17-29 years). Looking ahead the echo generation is poised to enter its high crime years. It currently ranges from 2-16 and by 2006 it will range from 12-26. If the current relationship between age and crime holds, police services can expect a continuing decline in per capita crime rates, especially those pertaining to violence and property.

Social and Health Services

Demographics have a profound impact on the structure of the family and hence social policies. The number of marriages in Canada has been on a downward trend since 1972. In 1992 the average age of first marriage was 27 for women and 29 for men, an increase of four years for both sexes from the averages that prevailed in the 1970s. Not only are marriages fewer and later but they are not lasting as long. The average duration of a marriage that ends in divorce has

gradually fallen from 11.5 years in 1980 to 10.8 years in 1993. In addition, 30.5 percent of those divorced in 1993 had been married five or fewer years (24.2 percent in 1980). Furthermore, the proportion of marriages where one spouse has been married previously increased from 12.3 percent to 32.9 percent between 1967 and 1993.

The drop in fertility means fewer children per family and the aging trend results in a gradual decline in household size. Therefore, demographics impacts on a whole range of social policies from child care to pensions. The prospects for child care are framed by the fact that the potential clients come from the last years of the echo generation and the "millennium kids", a small cohort. The issue of public pensions will be a problematic one if changes are not made to accommodate the "big generation" when it reaches the traditional age of retirement in 2012. However, given the projection time frame of this paper, the implications of the retirement of the baby boom are beyond our scope of analysis (i.e., a 25-year time frame).

The consumption of health services is clearly linked with age. Starting at age 50, when one is more likely to die of a heart attack or cancer, the trend in consumption of health services such as those provided by doctors and hospitals is steadily upward and reaches a peak in the retirement years, especially the last six months of life. The bad news for this costly area of public policy is that the baby boom generation will consume increasing amounts of health care and will expect quality and service in its delivery. The good news is that the first boomers do not enter the "senior" years for another fifteen years.

John Kettle observes that more than half of the social benefits that an individual receives over a lifetime come after the age of 56. On average, persons aged 35 to 39 are the least costly age group since they require low health, education, and welfare expenditures and do not have a pension. Education expenditures are highest for the 5-19 group; health expenditures begin a steady upward climb after the age of 50. By 2006 the front end of the baby boom will be well into its higher health spending period but 10 to 20 years away from the dramatic increases that occur in the 70+ years group. The bust generation will be moving through the low social expenditure years and the echo generation and "millennium kids" will be firmly entrenched in the educational system.

Volunteering and Charitable Donations

The giving of donations to charities, and gift giving generally, increases with age. According to Statistics Canada, the average age of donors filing tax returns in 1990 was 47 years and the inclination to donate and average contributions increased with age. Nine (9) percent of individuals under 25 made donations compared to 33 percent of those aged 35 to 44. The average donation of the 15-24 group was $166 compared to $800 for the 55 and over group. Our projection for charitable donations shows that this form of consumer spending will grow at a rate that is well in excess of the growth rate for households.

Volunteering is another activity that increases with age, particularly as discretionary time increases in the pre-retirement and retirement age groups. A key consequence of a greater supply of volunteers in the future is the flow of strategic human resources and funds into the not-for-profit sector. The public sector may also benefit if the concept of coproduction of services takes hold.

By 2006 the baby boom generation will be well into the period during which volunteerism and charitable donations will be important and growing social activities.

Leisure, Recreation, and Culture

Recent research has debunked the myth that the boomers are more fit than their parents' generation. Notwithstanding one's health and fitness levels, with aging comes an inevitable slowing of physical activity and performance. An aging society will shift from spectator sports (where the seats aggravate already sore backs) and direct participation in sports to more passive recreational, leisure, and cultural pursuits ranging from resting to birding and from attending the opera to gardening. In addition, international travel is an activity that shows up prominently in our projections for consumer spending.

The impact of demographic trends on this composite area has implications for both public and private sector service providers. For example, the need for public amateur sports facilities such as arenas or soccer fields will be lower as the echo generation and “millennium kids” dominate the youth sports scene. However, with the baby boom in its 40s and 50s the demand for walking trails and conservation areas will likely increase. Private sector entrepreneurs will face the pressure to deliver services that exhibit quality and service (for example, the difference between a narrow, plastic seat in the Toronto's SkyDome and a spacious, ergonomically-designed pew in the new concert hall). The sale of gardening tools and supplies will far exceed the sales of power tools or health club memberships.

CONCLUSIONS

Our analysis of the implications of demographic trends for the products and services provided by the public and private sectors emphasises the primacy of age as an explanatory variable. The utility of the age variable is linked to a population distribution that is a consequence of an extended (and continuing) period of low fertility and increasing life expectancy. Thus, the absolute and relative sizes of baby boom generation and the smaller bust and echo generations behind it have a discernible impact on economic behaviour throughout the life cycle.

Although other factors affect economic behaviour (for example, real disposable income, interest rates, or relative prices, particularly in the short-term), demographic projections based on assumptions tied to the age variable yield robust results regarding relative product and service growth rates over medium- and long-term time frames.

Notwithstanding the explanatory power of demographics, leaders in both government and business have generally eschewed its use in their planning and decision-making processes. This tendency may reflect either a low level of knowledge regarding demographic trends and their implications or a preference for a short-term perspective. Whatever the reason for this neglect, our general prescription is that Canada's government and business leaders must pay greater heed to demographic analysis as they develop policies during the next ten years and beyond.

NOTES

1 This paper was researched and written by the three partners of the Madison Avenue Demographics Group – David K. Foot, Richard A. Loreto, and Tom McCormack. The Madison Avenue Demographics Group is a consulting partnership committed to the competent and continuing use of demographic information in both the private and public sector planning and decision making.

2 Readers will note that 1996 population estimates in this paper differ slightly from recent reports in the popular media. This difference is explained as follows:
Population by age and sex are sourced from the Census of Canada for each of 1981, 1986, and 1991. No attempt has been made to revise these figures to reflect national estimates produced by Statistics Canada to reflect estimates of the census undercount by age and sex or for shifting the annual date of estimation from June 1st to July 1st. Figures for the inter-censal years (1982 to 1985 and 1987 to 1990) are interpolated by Strategic Projections Inc. Figures for 1992 to 1995 are estimated by Strategic Projections Inc. tied to national post-censal estimates of population growth published by Statistics Canada based on administrative files. Figures for 1996 to 2021 are as projected by Strategic Projections Inc.

BIBLIOGRAPHY

Canadian Centre for Justice Statistics. *Juristat*, 16, 3. Ottawa: Statistics Canada, March 1996.

———. *Juristat*, 16, 11. Ottawa: Statistics Canada, July 1996.

———. *Canadian Crime Statistics 1994*. Ottawa: Statistics Canada, 1995.

Dumas, Jean and Alain Bélanger (with Gordon Smith). *Report on the Demographic Situation in Canada 1995: Current Demographic Analysis*. Ottawa: Statistics Canada, 1996.

Federation of Canadian Demographers. *Towards the XXIst Century: Emerging Socio-Demographic Trends and Policy Issues in Canada*. Proceedings of the 1995 Symposium at St. Paul's College. Ottawa, October 23-25, 1995.

Foot, David K. (with Daniel Stoffman). *Boom, Bust & Echo: How to Profit From the Coming Demographic Shift*. Toronto: Macfarlane Walter & Ross, 1996.

———. *Canada's Population Outlook: Demographic Futures and Economic Challenges*. Toronto: James Lorimer & Company, Publishers/The Canadian Institute for Economic Policy Series, 1982.

———. *Public Policy and Future Population in Ontario*. Toronto: Ontario Economic Council, 1979.

_____. Toronto, September 30, 1996.

Kettle, John. *The Big Generation*. Toronto: McClelland and Stewart, 1980.

Leacy, F. H., ed. *Historical Statistics of Canada*, 2nd edition. Ottawa: Statistics Canada/Social Science Federation of Canada, 1983.

Morgan, Nicole S. (with Charles Moubarak). *Nowhere To Go? Possible Consequences of the Demographic Imbalance in Decision-making Groups of the Federal Public Service*. Montreal: The Institute for Research on Public Policy, 1981.

Nault, François et al. *Population Projections of Registered Indians*, 1991-2015. Ottawa: Statistics Canada, 1993.

Ontario Ministry of Citizenship. I*mmigration Statistics 1991*. Toronto: Queen's Printer for Ontario, 1993.

Roadburg, Alan. *Aging: Retirement, Leisure and Work in Canada*. Toronto: Methuen Publications, 1985.

Smith Barney. *Trends: New Horizons for the 21st Century*. New York, 1996.

Statistics Canada. *Canadian Social Trends*. No. 12., Ottawa: Statistics Canada, Spring 1989.

———. *Canadian Social Trends*. No. 42. Ottawa: Statistics Canada, Autumn 1996.

Strategic Projections Inc. *Canadian Labour Market Implications of Projected Demographic and Economic Trends*. A Report prepared for Canada Post, March 1995.

———. *Consumer Spending Patterns 1996 to 2016*. A Report prepared for the Office of Consumer Affairs, Industry Canada, October 1995.

———. *Demographic Change and the Household Furniture Industry in Canada*. A Report prepared for Industry Canada, March 1995.

———. *Demographic and Economic Trends in Canada: Implications for the Information Highway*. Confidential report, May 1995.

———. *Impacts of an Aging Population on Metropolitan Toronto Transportation*. A Report prepared for the Municipality of Metropolitan Toronto Transportation Department, April 1996.

———. *Potential Household Formation by Type in Canada*. A Report prepared for the Office of Consumer Affairs, Industry Canada, December 1995.

———. (for RAL Consulting Limited). *Training Needs Analysis*. Volume 1: "Economic & Demographic Scan." A Study prepared for the International Brotherhood of Painters & Allied Trades Sectoral Agreement (Ontario) Committee. Woodbridge, Ontario, February 1995.

Treasury Board of Canada Secretariat. *Employment Statistics for the Federal Public Service*, April 1, 1995 to March 31, 1996. Ottawa, 1996.

The Globe and Mail. Toronto, January 1, 1995.

The Wyatt Company. *Best Practices in Corporate Restructuring*. 1993 Survey of Corporate Restructuring.

Wigdor, Blossom T. and David K. Foot. *The Over-Forty Society: Issues for Canada's Aging Population*. Toronto: James Lorimer & Company, Publishers, 1988.

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By Paul Beaudry and David A. Green,
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PREFACE

AS A NEW MILLENNIUM APPROACHES, Canadians are going through a time of dramatic economic change. Markets are becoming global, and economic activity across nations is becoming increasingly integrated. Revolutionary developments in computer and communications technology are facilitating globalization, and are also altering a great deal the workplace and the lifestyles of Canadians. At the same time, largely as a consequence of the information revolution, knowledge-based activities are becoming increasingly important within the Canadian economy and the economies of other industrialized nations.

These and related major transformations of the economic environment invite a comparison with the Industrial Revolution of the 1800s. As in the earlier time, major structural changes are giving rise to uncertainties. Firms and workers are struggling to find their place in the new economic order. Canadians collectively face the question of whether their nation's physical, human and institutional resources will provide a firm foundation for continued prosperity. Many see Canada's prospects as being much less secure than in earlier years, when the country's rich natural resources played a major role in shaping the Canadian economy.

To examine fully the medium to longer-term opportunities and challenges of these developments, the Micro-Economic Policy Analysis Branch of Industry Canada asked a group of experts to provide their "vision" for Canada in the 21st Century on a number of important issues. Each author was required to undertake two formidable tasks: first, to identify major historical trends and develop scenarios to illustrate how developments in his/her respective area might unfold over the next ten to fifteen years; and second, to examine the medium-term consequences of these developments for the Canadian economy.

The papers coming out of this exercise are now being published under the general heading of "Canada in the 21st Century". This series consists of eleven papers on different aspects of Canada's medium-term outlook. The papers are divided into three major sections. The first section, *Scene Setting*, focuses on important developments that are going to shape the medium-term economic environment in Canada. The second section, *Resources and Technology*, looks at trends among some important components of Canada's wealth creation and considers the actions needed to ensure that these factors provide a firm foundation for continued prosperity. The last section, *Responding to the Challenges*, explores individual, corporate and government responses to the medium-term challenges and offers some options for an appropriate course of action.

As part of the third section, *Responding to the Challenges*, this paper by Professor Paul Beaudry and David Green of the University of British Columbia examines the reaction of young workers to the dramatic labour market changes of recent years. The authors document the significant deterioration in the position of recent labour market entrants. New male entrants (over the age of 25)

in the 1990s face a 20 to 30 percent lower level of real earnings over their lifetime than individuals who entered the labour force in the 1970s. For females, the dominant trend has been the successful integration of large numbers of new entrants into the labour force. But the authors find that, when appropriate adjustments are made to account for the upward trend in employment and hours worked up to 1989, females have also experienced a decline in real earnings.

The authors project a continuation of the negative labour market trends for young workers, accompanied by a further increase in school enrolment rates. The steady rise in female participation and employment rates, however, appears to have ended. Over the long run, the authors see two conflicting forces. Globalization and increased competition from low-cost labour overseas might be expected to make life even more difficult in the future for young and low skilled Canadian workers. On the other hand, unskilled males are likely to face less competition from new labour market entrants, since the pressures on labour supply from demographic factors and increasing female participation have abated.

INTRODUCTION

Change is the single most pervasive element emphasized in current research on the labour market.

Stephan F. Kaliski, 1985

More than TEN YEARS LATER, Kaliski's statement about the perceived state of change in the Canadian labour market is still relevant. Canadian society today is concerned with the effects of ongoing events such as the arrival of the information age, the constraints imposed by high public-sector debt and the impact of persistently high rates of unemployment. Those effects will be determined by the responses of individuals, firms and government, all bound by the framework set by Canada's institutions and place in the world economy. This paper, focussing on individual responses, has two goals: First, we seek to document recent patterns in individual labour market-related outcomes such as earnings, employment, school enrollment and family formation. Second, we shall attempt to predict how individual outcomes will continue to evolve in the next decade. In meeting these goals we shall concentrate on youth since we are concerned with how current and future turbulence in the labour market will permanently affect new entrants.

To document recent patterns, we must characterize the major labour market trends. However, observed trends over the last two decades reflect several different phenomena occurring simultaneously. For example, they reflect aggregate business cycle effects, differing relative outcomes for newer versus older cohorts of labour market entrants, and the ageing patterns of older cohorts. To understand how individuals may respond to current turbulence, it is important to untangle whether poor outcomes for young workers in the 1990s are due mainly to cyclical effects that will pass if and when aggregate labour market conditions improve, or whether they reflect permanent declines in the relative performance of recent labour market entrants. Predictions for youth would be gloomier if the poor outcomes in the 1990s reflect permanent declines for new cohorts rather than a particularly strong cyclical downturn that may soon be reversed. For this reason, a major part of the analysis is concerned with disentangling cohort versus business cycle effects.

Projecting observed trends into the future can take two forms. The first is a mechanical extension of past trends. This is useful for a short period but it becomes more uncertain the farther ahead we try to predict. Even mechanical extension, though, will depend on our success in untangling cyclical from cohort effects in the recent past. This is particularly true since we are more concerned with welfare over the entire life cycle of current youth rather than simply the nature of adjustments they must make in the short run. We are particularly interested in predicting the relative long-term success of new entrants rather than whether their outcomes will improve in the short run because of a

cyclical upswing. Using this first prediction approach, we project outcomes for new entrants in the very near future.

To predict outcomes beyond the very short run of, say, three to five years, one needs a theory of what has caused existing trends and how that cause itself is likely to change. This is the second form of projection. Unfortunately, no one theory presents itself but information on past trends provides the extra service of helping us evaluate competing theories. We use past information in that way and settle on two plausible theories of underlying causes. We then describe two different predictive scenarios built from those theories.

As discussed above, our overriding concern is with outcomes for youths. However, we focus largely on and make predictions for 25- to 34-year-olds. We do so because we view this age as the time of a crucial transition to stable work patterns, accelerating careers and family formation. If change in the economy and the responses of youths to it generate permanent scars, these will be most evident in the time immediately following youth. The naturally high degree of flexibility of young people will make such scars difficult to detect directly. Alternatively, if current changes in the labour market require more adjustments from youth (for instance, in the form of prolonged schooling) but those adjustments still lead to stable work patterns at older ages, changes for youths may not arouse as much concern. We can evaluate this possibility directly by examining the experiences of different cohorts as they advance from age 25 to 34.

The remaining sections of the paper are structured as follows: In the next section, we provide an extensive overview of the changes occurring in the labour market, emphasizing how these changes are distributed across the population. The third section, which is the most novel aspect of the paper, presents a cohort-based analysis of observed changes in order to identify how opportunities are shifting for young workers. Drawing on the information presented in both the second and third sections, we map out, in the fourth section, two different scenarios of plausible adjustments by individuals to present changes. Finally, we summarize our main findings in the final section.

BASIC TRENDS IN THE LABOUR FORCE, EMPLOYMENT, EARNINGS AND NON-LABOUR ACTIVITIES

LABOUR FORCE TRENDS

Population Trends

We begin our analysis of labour market trends by examining the growth of the source population for the labour force. This essentially consists of the civilian population over the age of 15. The defining feature of the population growth rate has been a surge as members of the baby boom passed the age of 15, followed by a sharp fall. Figure 1 shows the size of the population in the 16-24, 25-34 and 35-44 age groups from 1950 to the present.[1] The baby boom is strongly in evidence in the more than 100 percent rise in the size of the youth population from 1960 to its peak in 1980 as well as in the parallel, lagged patterns for the other two age groups. In the next two to three decades, the population age distribution will shift: the peak of the baby boom will move close to retirement and the proportion of the source population in the youngest age category will be relatively small. The demographic shift is likely to be a central feature in defining the labour market experiences of new youth cohorts. The contrast between this situation and that in the previous two to three decades (when the youth cohorts were either the baby boomers themselves or the cohorts directly following them) should be kept in mind when projecting any past trends into the future.

Employment Rates by Age Group

We start our examination of labour force trends for those in the source population over the last 20 years by focussing on employment. We believe this is a useful place to start because employment is both the goal and the main labour market experience for most of the source population, something that is often forgotten in the more standard focus on unemployment and labour force participation. Also, this is the element of the labour force that is least subject to measurement error. Figure 2 shows the ratio of employment to the source population from 1965 to 1995. The pattern over that time period may be roughly characterized as an upward trend with cyclical swings increasing in amplitude. In the late 1970s, for example, the employment-to-population ratio declined by between 1 percent and 2 percent but it then surged to a much higher level by 1981. In the 1981-82 recession, the ratio fell by about 4 percent but by 1990 it again surged to levels well above the previous peak. The 1990s have so far been marked by a very sharp drop in the ratio, which has remained persistently low.

Underlying this general pattern has been a complex set of employment trends for various age, gender and education groups in the source population. Figure 3a shows the employment-to-population ratio by age group for males as

FIGURE 1

POPULATION BY AGE GROUP, 1951-1995

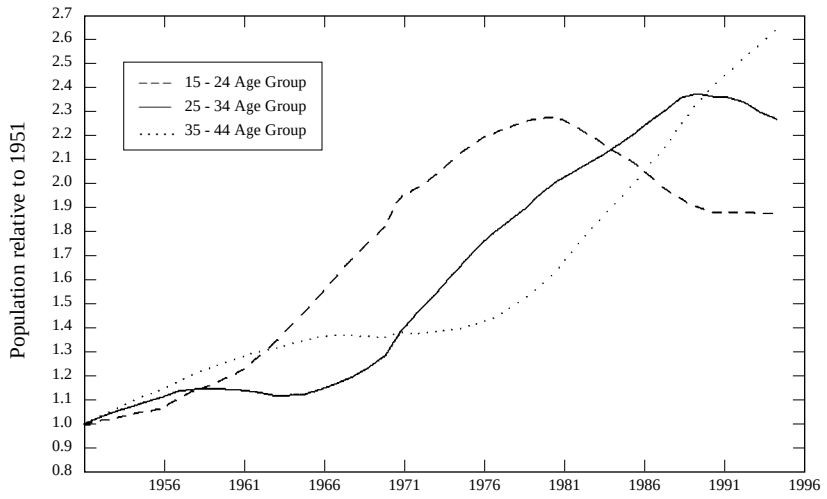
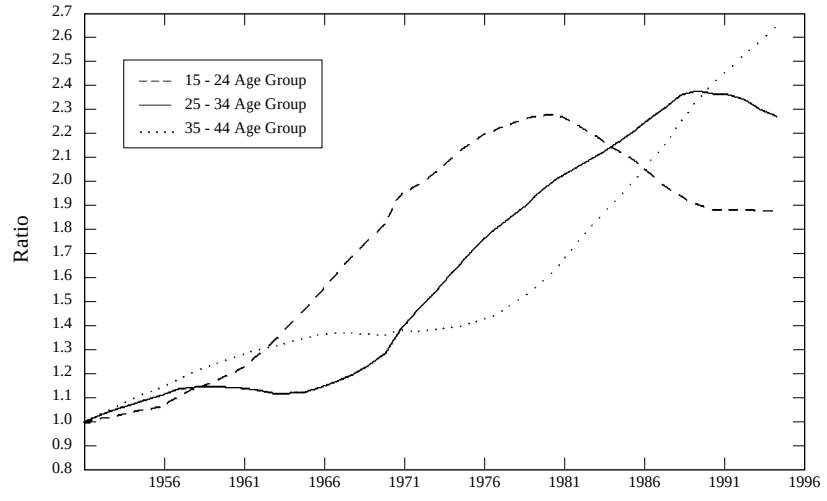


FIGURE 2

EMPLOYMENT-TO-POPULATION RATIO, BOTH SEXES, OVER AGE 15, 1976-1996



well as the ratio of the employment-to-population ratio for youths to that for males aged 25 to 54. The overall pattern seen in Figure 2 is not strongly in evidence for any of the age groupings presented for males. For males aged 15 to 24, the same strong cyclicality is evident as in Figure 2 but the overall trend is flat or downward. For all males over the age of 25, a sharp trend downward may be observed over the last 20 years with only small cyclical movements. The negative trend is often attributed to the impact of earlier retirement among men over the age of 55. However, the employment-to-population ratio for 25- to 34-year-olds falls by nearly 10 percent over this period. The trend for the latter age group suggests that trends in male employment are of more concern than might be warranted if they could be attributed purely to retirement decisions. Both the youngest age group and the 25- to 34-year-olds show strong cyclical patterns in their employment ratios. One might expect this feature in the case of young workers who have alternative uses of their time for investment in education and training. For the 25-34 age group the cyclicality is more of a surprise, as is the strong downward trend. Finally, the ratio of the employment-to-population ratio for youth to that for all workers over the age of 25 indicates that the relative position of youth is essentially unchanged from start to end of the period.

In Figure 3b, the results for females indicate much less cyclicality than that observed for males, and they show a strong upward trend for several of the age groups. The greatest cyclical variation is again evident in the youngest age group, with the drop being particularly large and persistent during the most recent labour market downturn. A comparison of cyclical peaks (1980 and 1989) indicates that an upward trend existed for youth before 1990. Relative to the employment patterns for those over the age of 25, however, employment for female youths fell dramatically over the period. Finally, in contrast to the situation for males, the 25-34 age group of females has more in common with older age groups than with youth. The 25-34 age group shows the same strong upward trend and minor cyclicality as the overall line for all age groups 25 and older.

One key result from Figures 2, 3a and 3b is that overall trends can hide very significant differences between sub-populations, and particularly between males and females. While females' employment ratios have strongly increased over the last 20 years, those of males have plummeted even for age groups not near retirement. Further (a perhaps surprising finding), the male series display more cyclicality than their female counterparts. Similarity between males and females appears mainly in the youngest age group, where both males and females have experienced sharp employment downturns in the 1990s.

FIGURE 3a

EMPLOYMENT-TO-POPULATION RATIO BY AGE GROUP, MALES
1976 - 1996

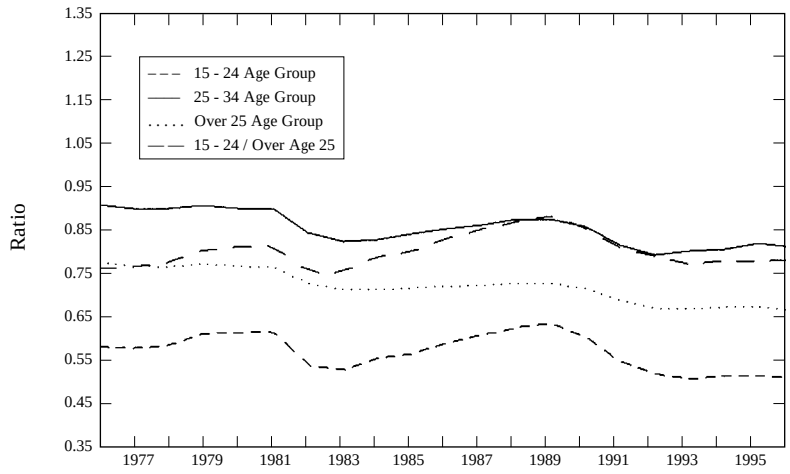
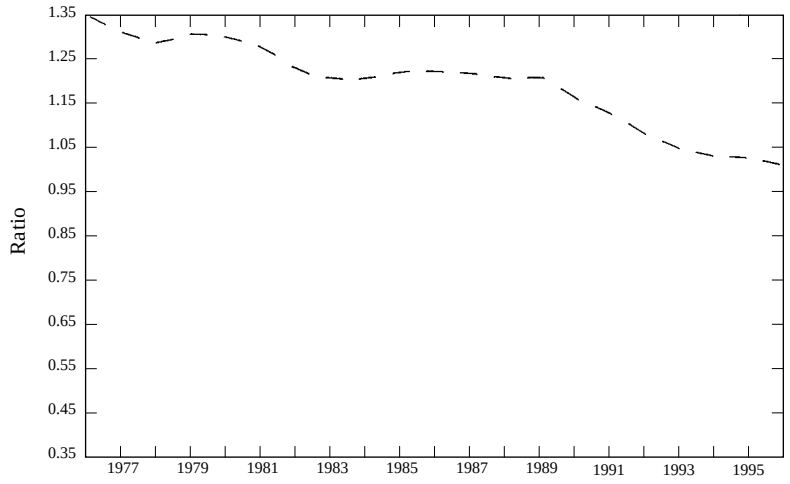


FIGURE 3b

EMPLOYMENT-TO-POPULATION RATIO BY AGE GROUP, FEMALES
1976 - 1996



Employment Rates by Education Group

Strong trends and interesting patterns for sub-populations are also evident from an examination of employment trends by education level. Riddell (1995) shows that since 1980 there has been a substantial movement in the educational composition of the workforce away from the lowest education categories and toward postsecondary categories. In particular, over the period from 1980 to 1993, Riddell documents a 57 percent drop in the number of employed workers with an elementary education and a 77 percent increase in the number with a university degree. Those trends have accelerated in the 1990s (see Riddell, 1995, Table 2). Underlying these patterns are changes induced by the retirement of older, less educated cohorts as well as by the education choices of new cohorts, plus the poorer labour force performance of the least educated workers in economic downturns. Whatever the exact reason for the changes, however, the scale of the shifts is remarkable.

Tables 1-4 present employment-to-population ratios by gender, age and education for 1981, 1982, 1988 and 1992 respectively. A comparison of Table 1 to Table 3 shows trend effects from one cyclical peak (1981) to another (1988). It is not possible to arrive at a simple statement in terms of a common drop in employment rates for elementary-educated workers of both sexes or all age types. While such a trend exists for prime-age males, the employment rate of low-educated males aged 15 to 24 actually increases over this period. For males over the age of 25 in most education groups, the employment rates can best be described as high and relatively stable. Perhaps the main trend observable over this time period is the increase in the employment-to-population ratios for females over the age of 25 in all education categories above elementary - an indication that the trends for older females discussed earlier are present across virtually the entire education range. For young females, the pattern of increases and decreases in the employment rate across education categories is mixed. It is difficult to provide a full interpretation of the patterns for the youngest age group since they will reflect changes in employment opportunities as well as in school enrollment rates.

A comparison of Table 3 and Table 4 reveals how employment rates changed as the economy moved into the labour market difficulties of the early 1990s. For all age and sex groups, there are sharp reductions in the employment rates of individuals with an elementary education. For the youngest age groups, this finding may reflect decisions to stay in school longer in the face of a recession; for the older workers, however, it is an indication that the least educated bear the brunt of economic downturns. For workers over the age of 25, the recession has caused drops in employment rates for most education groups, with the smallest drops occurring for those with more than a high school education. Among young workers, declines may be seen in the employment rates for all male education groups but there is a substantial increase in the employment rate for females with a high school education.

TABLE 1

EMPLOYMENT-TO-POPULATION RATIOS, 1981
AGE GROUP AND GENDER

	15 - 24			25 - 34			35 - 54			ALL
Education	Male	Female	All	Male	Female	All	Male	Female	All	GROUPS
Elementary	.5758	.3862	.4941	.9036	.5160	.7096	.9083	.5055	.7158	.6769
High school, some or completed	.8072	.7144	.7611	.9723	.6745	.8168	.9667	.6756	.8099	.7927
Some postsecondary studies	.9199	.8629	.8925	.9650	.7820	.8789	.9722	.7555	.8664	.8820
Postsecondary certificate	.9472	.9304	.9377	.9761	.8331	.9012	.9869	.7858	.8741	.8988
Postsecondary degree	.9278	.9665	.9478	.9688	.8768	.9275	.9852	.8110	.9260	.9288
All	.8165	.7401	.7786	.9660	.7252	.8445	.9571	.6658	.8112	.8107

Note: Based on authors' calculations using the Survey of Consumer Finances.

TABLE 2

EMPLOYMENT-TO-POPULATION RATIOS, 1982
AGE GROUP AND GENDER

	15 - 24			25 - 34			35 - 54			ALL
Education	Male	Female	All	Male	Female	All	Male	Female	All	GROUPS
Elementary	.5238	.3594	.4557	.8667	.5019	.6844	.8964	.5030	.7047	.6591
High school, some or completed	.7824	.6882	.7360	.9589	.6828	.8136	.9489	.6660	.7965	.7785
Some postsecondary studies	.8791	.8291	.8540	.9722	.7874	.8886	.9771	.7369	.8667	.8676
Postsecondary certificate	.9186	.8820	.8974	.9776	.8226	.8961	.9823	.7734	.8683	.8856
Postsecondary degree	.8316	.9501	.8948	.9711	.8639	.9220	.9802	.8222	.9232	.9203
All	.7849	.7160	.7507	.9584	.7266	.8411	.9467	.6605	.8035	.7983

Note: Based on authors' calculations using the Survey of Consumer Finances.

TABLE 3

EMPLOYMENT-TO-POPULATION RATIOS, 1988
AGE GROUP AND GENDER

	15 - 24			25 - 34			35 - 54			ALL
Education	Male	Female	All	Male	Female	All	Male	Female	All	GROUPS
Elementary	0.6360	0.3805	0.5270	0.8479	0.5533	0.7098	0.8507	0.5390	0.6964	0.6652
High school, some or completed	0.8506	0.7563	0.8051	0.9614	0.7759	0.8678	0.9430	0.7594	0.8456	0.8400
Some postsecondary studies	0.9563	0.8907	0.9230	0.9727	0.8250	0.8989	0.9356	0.8054	0.8723	0.9001
Postsecondary certificate	0.9715	0.9412	0.9548	0.9832	0.8924	0.9358	0.9711	0.8351	0.8994	0.9234
Postsecondary degree	0.9474	0.9509	0.9494	0.9668	0.9092	0.9380	0.9738	0.8958	0.9413	0.9407
All	0.8648	0.7865	0.8262	0.9617	0.8153	0.8878	0.9387	0.762	0.8499	0.8555

Note: Based on authors' calculations using the Survey of Consumer Finances.

TABLE 4

EMPLOYMENT-TO-POPULATION RATIOS, 1992
AGE GROUP AND GENDER

	15 - 24			25 - 34			35 - 54			ALL
Education	Male	Female	All	Male	Female	All	Male	Female	All	GROUPS
Elementary	.5491	.3251	.4532	.7878	.4985	.6507	.7561	.5156	.6369	.6055
High school, some or completed	.7304	.6698	.7016	.9163	.7005	.8087	.9180	.7561	.8301	.7847
Some postsecondary studies	.9083	.8710	.8898	.9145	.8113	.8628	.9265	.7773	.8506	.8698
Postsecondary certificate	.9169	.8990	.9075	.9735	.8787	.9252	.9347	.8569	.8961	.9080
Postsecondary degree	.9209	.9297	.9263	.9595	.9189	.9391	.9684	.8701	.9265	.9308
All	.7832	.7405	.7623	.9360	.7971	.8663	.9182	.7793	.8482	.8334

Note: Based on authors' calculations using the Survey of Consumer Finances.

Finally, a comparison of Table 1 and Table 2 reveals the effects of the onset of an earlier recession. While we can see some of the same patterns as those at the onset of the recession in the early 1980s (the employment rates for the least educated decline in both cases), the movements are much smaller in 1981 and 1982 compared with 1988 and 1992. By this measure, the changes observed in the early 1990s cannot be attributed to a "standard" recession effect.

Overall, there is evidence of substantial downward shifts in employment rates for low-educated workers and upward shifts for the most educated. The 1990s witnessed sharper and more sustained falls in employment rates than occurred in the recession of the early 1980s.

Industrial Composition

The labour force has also undergone substantial shifts in its sectoral composition in the last two decades. Kaliski (1985) and Riddell (1985) discuss trends in industrial and occupational composition of the workforce up to the early 1980s, and Riddell (1996) extends the analysis into the 1990s. The main industrial composition trends before 1980 are a strong shift away from all primary sector industries, a rise in employment in manufacturing and construction, and a much stronger rise in employment in the service industries. Much of the growth in relative importance of the service sector occurred before 1973 but it has continued unabated to the present. In the 1980s, the manufacturing sector showed near-zero employment growth while the service sector grew strongly, particularly in the financial services industries. In the 1990s, employment growth in manufacturing turned sharply negative. Service sector employment continued to grow but within that sector there were very significant drops in growth in the financial services industries and the public sector. As Betcherman and Morissette (1994) note, the latter trend could be seen as particularly troubling for youth, for whom government jobs have provided a high-quality entry port to the labour force in the past. Finally, it is worth noting that youth and female workers account for a disproportionate share of the growth in the service sector.

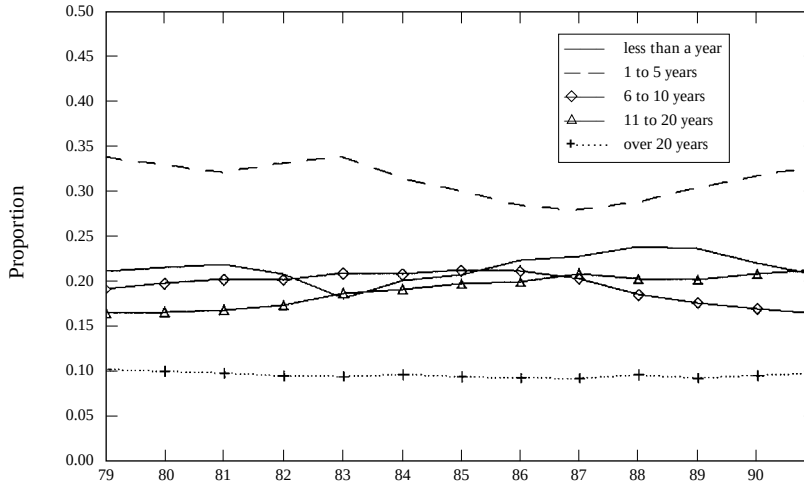
The stagnant growth in employment in Canada's manufacturing sector has fuelled an ongoing concern that significant structural change is occurring in the labour market, leading to more unstable work patterns. Riddell (1996) discusses this issue in the context of shifts in employment both across broad sectors and within the manufacturing sector. He concludes that there is little evidence of a recent increase in structural change across broad sectors relative to the 1960s and 1970s, but there is evidence of more upheaval within the manufacturing sector in recent times.

Trends in Job Tenure

To investigate whether perceived structural changes have created more job instability, Green and Riddell (1996) examine the distribution of non-self-employed job durations over time. Figure 4 (which recreates their Figure 1) shows the proportion of ongoing jobs of various (incomplete) durations in March of each year, from 1979 to 1991. On the basis of this figure there does not appear to be substantial evidence of increased job instability since the proportion of jobs that are of very short duration has not increased over time. There is some evidence of cyclicality, particularly in terms of reductions in the proportion of jobs lasting less than one year in the recessions of the early 1980s and early 1990s. The overall picture masks significant differences between subgroups, however. After controlling for business cycle conditions, Green and Riddell find statistically significant and substantial increases in the proportion of jobs lasting under one year for males and females aged 20 to 24 in virtually all education groups over the period from 1979 to 1989. Increases in this proportion are also evident for males aged 25 to 34 in all education groups, and for workers with less than a high school education in virtually all age groups (both males and females). The fact that, by this measure, there has been an increase in job instability for males aged 25 to 34 but not for females in this age group provides an interesting parallel to the trends in employment discussed earlier.

FIGURE 4

TENURE PROPORTION FOR THE ENTIRE LABOUR FORCE



It should be noted, though, that while positive trends are stronger for males in this age category, females still have a higher probability of holding jobs lasting one year or less. The increased instability for these groups is offset by a trend toward longer-lasting jobs among women over the age of 25 and men in the 35 - 44 age category. Overall, the job duration distribution has experienced a "hollowing out" of the middle: instability is greater for the young and least educated, and also for males aged 25 to 34.

Non-Standard Employment

Job instability may show up in shifts toward non-standard forms of employment as well as in changes in job duration. One interesting trend in this regard has been an increase in the proportion of self-employed workers in the economy. Crompton (1993) documents a slow but steady increase in self-employment from 1971 to 1991. Self-employment constituted 14 percent of total employment in 1989 and 15 percent in 1994 (Krahn, 1995). More specifically, for own-account self-employed (self-employed individuals who have no employees), the equivalent figures are 7 percent in 1989 and 9 percent in 1994, with the percentages being slightly higher for men than women. Self-employment seems not to play a large role in youth labour market experience, with only 5 percent of males and under 3 percent of females aged 15 to 24 being classified as own-account self-employed (Krahn, 1995). Self-employment rates increase significantly with age, as might be expected. There appears to be no trend toward self-employment among the youngest age cohort in the 1990s, but there is a slight (statistically insignificant) shift in that direction for workers aged 25 to 34 (Krahn, 1995).

Further evidence of reduced labour market stability is found in the rapid rise in part-time employment. From 1976 to 1994 the percentage of the workforce working less than 30 hours per week rose from 11 percent to 17 percent. Within that trend there are strong differences by gender and age. For example, part-time employment for females aged 15 to 24 rose from approximately 23 percent in 1976 to 46 percent in 1994. For males in the same age group, the increase was from 18 percent to 36 percent. For men aged 25 to 54, the part-time rate was only 4 percent in 1994. In the 1990s the rate of growth of part-time employment has essentially stopped, but this overall trend hides large growth in part-time employment for both sexes in the youngest cohort (from 40 percent in 1989 to 46 percent in 1994 in the case of females aged 15 to 24), offset by declines for all age groups aged 25 to 54 (Krahn, 1995). Whether these trends are to be seen as worrisome depends to some extent on whether the individuals involved are choosing part-time employment. The majority of part-time workers voluntarily work less than 30 hours a week. In 1995, the proportion of part-time workers who listed themselves as involuntarily employed part-time was 25 percent for 15- to 24-year-old males, 28 percent for 15- to 24-year-old females, 42 percent for males over the age of 25, and 32 per-

cent for females over the age of 25. However, there has been a strong upward trend in the proportion of involuntary part-timers for both sexes and all age groups in the 1990s.

Why has part-time work increased in importance for young workers but not for their older counterparts in the 1990s? The close similarity of trends in the involuntary part-time component for youth and older workers in the 1990s suggests that the answer does not lie in relatively poorer labour market conditions for younger workers. Instead it may be related to the strong increase in school enrollment for 15- to 24-year-olds in the same period. If that is so, the rise in youth part-time employment may be less of a concern than it first appears. We return to this point later when we discuss enrollment trends.

Job instability may also be indicated by increases in contract jobs with a fixed termination date set in advance. An increase in contract jobs, even if the distribution of job durations remains unchanged, would indicate a weaker connection between workers and a specific firm as well as a career path that involves more job switches. As with other types of non-standard work, contract jobs are more common among the young than in other age categories. In 1994, 17 percent of 15- to 24-year-old females and 16 percent of males in the same age category held contract jobs, while the figure was below 9 percent for the remaining workforce. In the 1990s there has been a small upward trend in the proportion of young workers in these categories. Most other age groups show either no increase or a slightly negative trend in the 1990s for females but there are increasing rates for males, with the percentage of males aged 25 to 34 who hold temporary jobs increasing from 6 percent in 1989 to 10 percent in 1994 (Krahn, 1995).

The various types of non-standard employment exhibit a high degree of overlap. For example, part-time jobs are also more likely to be of short tenure. To aid in understanding net movements in non-standard employment, Figure 5a plots the proportion of males in various age groups who worked full-year/full-time in various years. Full-year/full-time workers are defined as individuals who worked over 50 weeks in a year and who list themselves as full-time workers on their main job in a year. Not surprisingly, the proportion varies considerably for youths and older workers. For both youths and older age groups, it is tempting to compare 1988 with perhaps 1993 and to draw a conclusion that non-standard work has been on a steep upward path in recent years. This may be true in part, but a comparison with the early 1980s indicates that the proportion working full-year/full-time declined sharply at that time as well. In the third section, we attempt to untangle common year effects, such as might be caused by a recession, from “permanent” differences facing new labour force entrants in the 1990s versus those in earlier periods.

Figure 5b presents the same information as Figure 5a for females. Considerable similarity is apparent in patterns for males and females in the youngest age group. For both genders, there is a strong cyclicality and a very large drop in the proportion who hold full-year/full-time jobs in the 1990s. For

FIGURE 5a

PROPORTION OF THE MALE POPULATION WORKING FULL YEAR-FULL TIME, BY AGE GROUP, 1981-1993

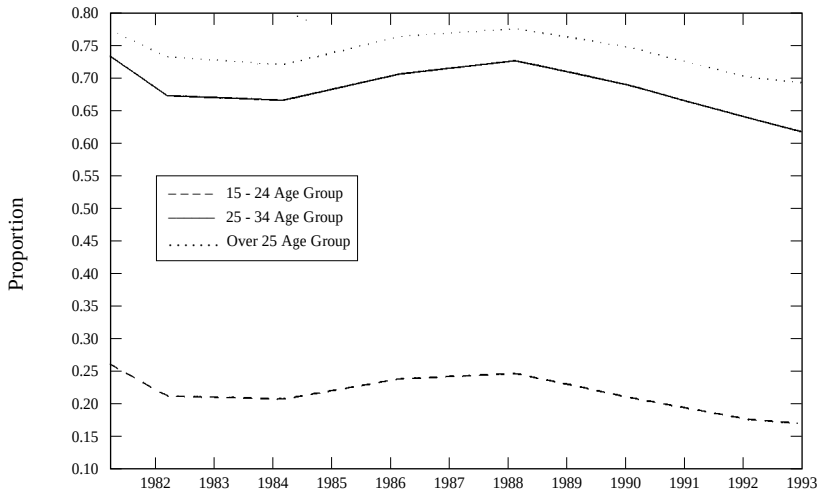
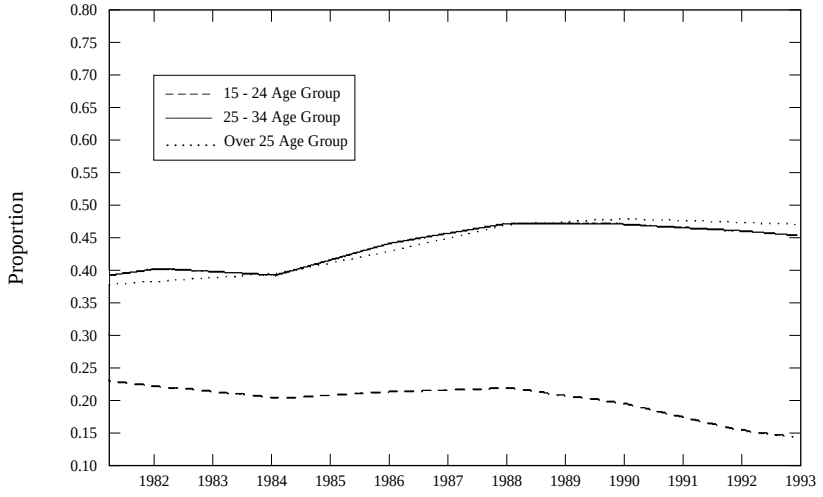


FIGURE 5b

PROPORTION OF THE FEMALE POPULATION WORKING FULL YEAR-FULL TIME, BY AGE GROUP, 1981-1993



older age groups, however, the pattern for females is much the same as patterns in employment rates seen earlier. In particular, a strong upward trend in the proportion of full-year/full-time workers through the 1980s becomes flat in the 1990s. The most striking difference between males and females is found in the age 25 - 34 category. The male pattern is much more similar to that for youths among males.

Non-standard employment as a whole can be summarized as following an upward trend, with some particularly sharp rises in the 1990s. The rises in the 1990s have been most noticeable for youths of both sexes and males aged 25 to 34. But while non-standard employment has certainly played a substantial role in adjustments by workers to the weaker labour market of the 1990s, it is not clear whether trends in the 1990s represent a cyclical reaction or a more permanent change. We return to this issue in the empirical work presented in the third section. It should be kept in mind, however, that none of the individual types of non-standard employment make up a very large proportion of total employment. Similarly, claims that the labour market has shifted dramatically toward unstable work arrangements are overstated, especially for prime-age workers.

Labour Force Participation

Underlying the employment trends we have been examining are movements in the labour force participation rates. Until the late 1980s these movements have been dominated by large and continual rises in the female participation rate, which was 23 percent in 1953 and approximately 60 percent in 1990. In the 1990s, the increase in the female participation rate has stalled. Figure 6a shows the participation rate for women in various age groups. For the youth component, aged 15 to 24, a very rapid increase up to 1981 slowed through the 1980s and then turned sharply negative in the 1990s. One might expect a downturn in youth participation in economic declines as youths respond to poor labour market opportunities by withdrawing and enrolling in education or training. However, a comparison of the small downturn in the youth participation rate in 1982-83 with the large drop in the 1990s suggests that something more than a standard cyclical response is occurring. For older age groups, the female participation rate has essentially stayed constant in the 1990s, with a slight fall for 25- to 34-year-olds and small increases for older groups (Butlin, 1995).

The patterns for males shown in Figure 6b are quite different. In contrast to females, the participation rate for males over the age of 25 shows a continual downward path over the last two decades, falling from 81 percent in 1976 to 74 percent in 1995. In part, this trend is a reflection of an ongoing move toward earlier retirement among men over the age of 55. However, the other two age group lines in the figure indicate that retirement is not the sole explanation of the overall trend. Males aged 15 to 24 show a pattern somewhat similar to females in the same age group. Their participation rate is essentially flat

FIGURE 6a

LABOUR FORCE PARTICIPATION RATE BY AGE GROUP, FEMALES, 1976-1996

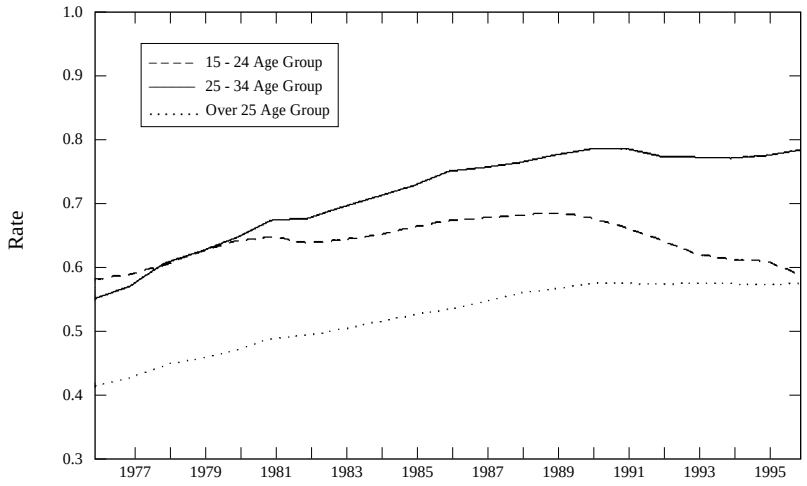
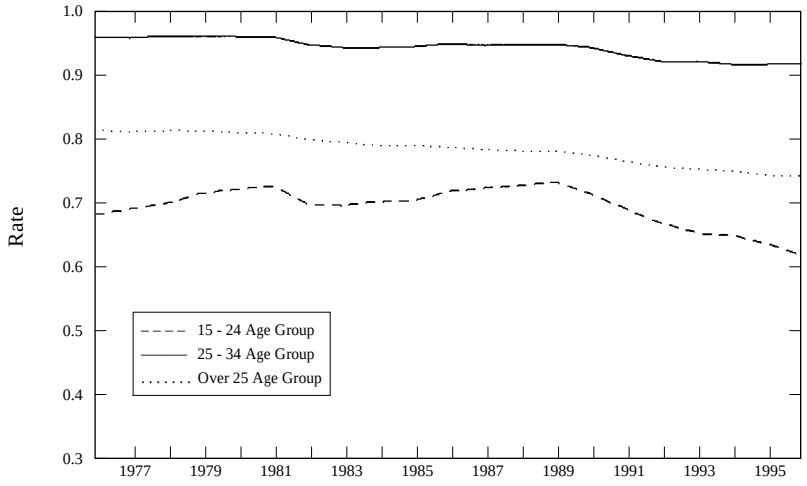


FIGURE 6b

LABOUR FORCE PARTICIPATION RATE BY AGE GROUP, MALES, 1976-1996



through the 1980s and then falls sharply, from 73 percent in 1989 to 64 percent in 1995. The male rate appears to be more cyclically sensitive than the corresponding female rate; again, however, it appears unlikely that drops in the male rate in the 1990s are simply a replay of the cyclical downturn in the early 1980s. More surprising than the recent decline in the youth participation rate is the fall in the participation rate for 25- to 34-year-old males. After remaining near 95 percent up to 1989, their participation rate fell to 91 percent by 1995.

Participation rates for males over the age of 25 can be summarized as following a downward trend with an accelerating decline in the 1990s. Females over the age of 25 experienced strong growth in participation rates up to 1989, followed by a plateau in the 1990s. Young males and females share a pattern of a relatively flat trend in the 1980s, turning into a large drop in the 1990s.

Unemployment

A useful way to understand the labour-related performance of the Canadian economy over the last two decades is to compare trends in the participation rate to trends in the employment-to-population ratios. For females, there are strikingly rapid increases in both participation and employment rates up to 1989. From 1981 to 1989, the labour force participation rate for females aged 25 to 34 increased by approximately 11 percent from 66 percent in 1981 to 77 percent in 1989. At the same time, the employment-to-population ratio for that group rose from 61 percent to 70 percent. The economy thus managed to provide a large number of new jobs for a very large increase in the labour force. The employment creation rate did not quite match the labour force growth rate over this period, however, and the result shows up in the unemployment rate. Figure 7a shows the unemployment rate by age group for females. As expected, the unemployment rate for females aged 25 to 34 increased slightly between 1981 and 1989. The patterns for all females over the age of 25 are very similar to those for females aged 25 to 34 in this period: rapid increases in the labour force participation rate, not quite matched by strong growth rates in employment. In the 1990s, as we have seen, the growth in participation stalled for women over the age of 25, and the unemployment rate pattern has been determined by employment growth that first declined and then recovered slightly.

For females aged 15 to 24, there is much more cyclical variation in all three rates. However, matching the cyclical peaks of 1981 and 1989, there may be seen an increase in the participation rate of 4 percent and an increase in the employment rate of 5 percent. For this group: mild (compared with older females) participation growth was more than matched by mild employment growth. The result was a drop in the unemployment rate for young women during the 1980s. In the 1990s both the participation and employment rates for this group have plunged, with the employment rate dropping faster in the early 1990s and causing a sharp rise in the unemployment rate. Overall, women have found the 1990s very different from any time in the previous two decades. Up

FIGURE 7a

UNEMPLOYMENT RATE BY AGE GROUP, FEMALES, 1976-1996

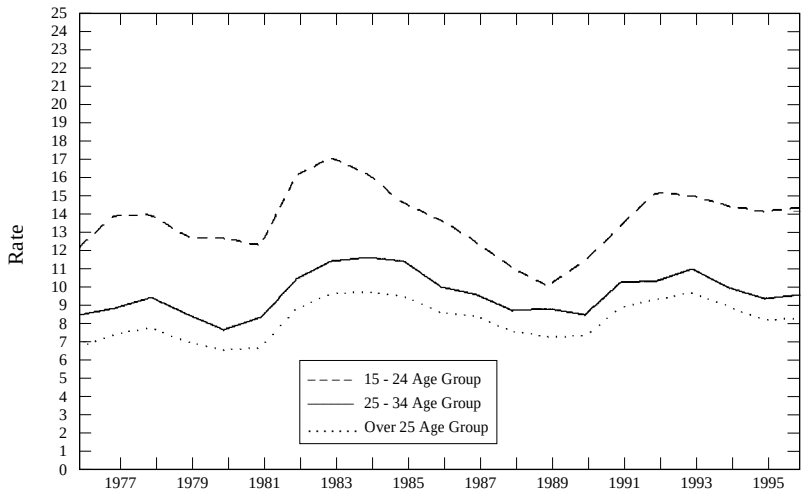
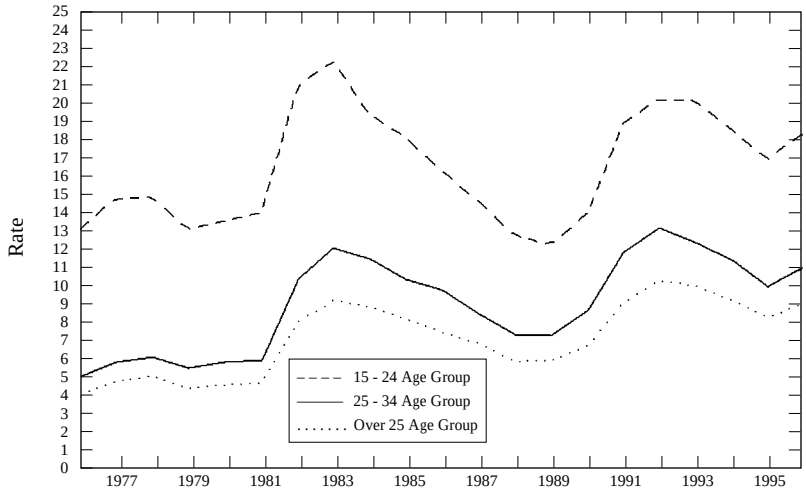


FIGURE 7b

UNEMPLOYMENT RATE BY AGE GROUP, MALES, 1976-1996



to 1989, variations in unemployment were generated by differing rates of increase in participation and employment rates. In contrast, the 1990s have witnessed stagnant or negative growth in most participation rates, accompanied by a decline and then resumption in employment growth for women over the age of 25 and a drop in employment growth for women under 25.

For males over 25, the past two decades brought continual declines in both participation and employment. While the decline has been quite smooth in the case of the participation rate, the employment rate has shown marked cyclical swings; the result is the large cyclical variation in the unemployment rates shown in Figure 7b. Again, the most surprising decline may be for 25- to 34-year-olds: their labour force participation rate fell from 95.5 percent in 1981 to 94 percent in 1989, at the same time as their employment rate fell from 89.4 percent to 87 percent. This group thus faced poorer employment outcomes offset by some withdrawal from the labour force as well as an increase in the unemployment rate. In the 1990s, the experience of 25- to 34-year-old men has been worse: their employment rate fell by 7 percent while their participation rate fell by 2 percent from 1989 to 1993. The overall pattern is in striking contrast to the positive employment growth for females in the same age group.

Males in the youngest age group followed a different pattern. Their employment rate actually grew from 1981 to 1989 while their participation rate was relatively steady, leading to a drop in their unemployment rate. Along with patterns in the 1990s, this situation is very similar to the pattern for females in the same age group. Movements in the youth labour market thus seem to differ from those in labour markets for older age groups of either sex. As with females, the male youth unemployment rate in the 1990s has not risen to the levels it reached in the recession of the early 1980s. On the other hand, for older males and females, unemployment rates in the 1990s have nearly matched or surpassed those in the early 1980s. Thus, while one would not describe youth labour market experiences in the 1990s as good, their outcomes in terms of unemployment are better (when compared with older workers) than in the recession of the early 1980s. This phenomenon is mainly the result of much greater labour force withdrawal among young workers in the 1990s; it masks the relatively poor (for young compared with older females) or relatively constant (for young compared with older males) employment experiences for youths in the 1990s compared with the early 1980s.

Table 5 presents unemployment rates by gender and education level. As might be expected, unemployment rates fall continuously as education levels rise for both sexes. For males, there is much stronger cyclicality in unemployment rates in the two lower versus the two higher unemployment rates. Unemployment rates for both elementary- and some high school-educated workers show very sharp jumps in 1990, to levels that are comparable with rates witnessed for these groups in the recession of the early 1980s. In contrast, the unemployment rate for individuals with a postsecondary degree does not increase substantially until 1992 but it reaches higher levels than those in 1982.

TABLE 5

UNEMPLOYMENT RATES BY EDUCATION LEVEL
YEAR AND GENDER

	1981		1982		1984	
Education	Male	Female	Male	Female	Male	Female
Elementary	0.1692	0.1582	0.1908	0.1658	0.1800	0.1676
High school, some or completed	0.1362	0.1245	0.1769	0.1515	0.1424	0.1357
Some postsecondary studies	0.0802	0.0737	0.1368	0.1190	0.0898	0.1045
Postsecondary degree	0.0325	0.0531	0.0432	0.0434	0.0485	0.0549
All	0.1151	0.1055	0.1470	0.1282	0.1213	0.1152

Note: Unemployment rates are calculated from the Survey of Consumer Finances. The unemployment rate equals the proportion of individuals in the labour force in the reference week who are without work and searching for work.

For females the pattern is similar, apart from the fact that unemployment rates climb much higher for males in the lower two education categories in the 1990s than for females in the same education groups.

Movements in unemployment rates can occur because more people enter unemployment (i.e., the state of being without work but searching for work), either through leaving a job or starting to search for a job when they are without one. Movements can also occur if there is variation in how long individuals stay in a given unemployment spell. The first avenue for unemployment rate movements is called the incidence of unemployment while the second is called duration. Incidence can be studied by examining movements in the probability that individuals will leave a job and enter unemployment, or that they will leave the "Not in the Labour Force" state (i.e., the state of being without work but not looking for work) and entering unemployment. The duration of unemployment spells is determined by the probability that an unemployed individual leaves unemployment by getting a job or ceasing to search for work. The latter movement can occur when unemployed individuals become discouraged about their job prospects and simply stop searching. As the economy moves through a cycle, the number of discouraged workers can vary a great deal, sometimes causing apparently perverse movements in the unemployment rate. For this reason, the unemployment rate can be described as a rubber ruler when it comes to measuring the business cycle.

Changing Patterns in Labour Earnings

Overall Trends

In recent years, researchers have directed considerable effort toward documenting changes in the distribution of labour earnings in Canada. The results provide a rather complete but intricate description of the changes that have occurred over the last 15 years. With the aim of offering a simple description of the major findings, we review this earnings literature by first documenting the overall movements in the distribution of annual earnings, then breaking down these movements into broad age and education groups, and finally discussing the breakdown of the observed changes between hours worked and hourly wages. Throughout we report findings for men and women separately. Most of the information summarized here derives from the Survey of Consumer Finances.

The overall changes in real annual earnings for men and women are summarized in Table 6. For men, median annual earnings have been declining since the early 1980s. However, the behaviour of the median does not summarize all changes appropriately; in particular, from 1981 to 1993 there has been substantial polarization. During this period, the gap between the top and bottom decile of the earnings distributions widened considerably: earnings of the top decile decreased by only 1 percent while those of the bottom decile decreased by more that 27 percent. This increased disparity in earnings indicates a particularly

TABLE 6

PERCENTAGE CHANGE IN ANNUAL REAL EARNINGS BY SELECTED DECILES, ALL EARNERS

	1981-88		1988-93	
Decile	Males	Females	Males	Females
10–			10 11	
–		17	12	
50	–4	1–		5 10
90	0	9–		1 6

Note: Based on authors' calculations using the Survey of Consumer Finances, various years.

harsh drop in absolute and relative earnings for those at the bottom of the distribution. Recent work by Morissette and Bérubé (1996) further suggests that the observed changes in annual earnings actually reflect changes in lifetime earnings. Using a panel data set based on income tax records, Morissette and Bérubé show that the increased dispersion in earnings over the 1980s was not associated with increased mobility across the income distribution. Therefore, the observed increased polarization of annual earnings over the 1980s can be reasonably interpreted as indicating increased inequality in permanent income.

The picture for women is substantially different from that for men. The earnings of women continued to grow throughout the 1980s and early 1990s. As might be expected, much of the growth in women's earnings is due to increases in annual hours worked. In fact, when we focus exclusively on full-year/full-time workers (an approach that limits the changes in earnings attributed to changes in hours worked), we observe that the earnings for women in the bottom decile have actually fallen relative to the median.

Breakdowns by Age and Education

Once it is recognized that there have been substantial movements in the earnings distribution, it is natural to ask whether the observed changes are attributable to changes in the composition of the workforce or to changes in earnings between different groupings of workers. The decomposition that has attracted the most attention is on the basis of age (or experience) and education groupings. Effort has also been devoted to assessing the importance of changes in industrial and occupational composition (see, for example, Richardson, 1994). Since the latter decomposition explains little of the overall trends, we concentrate on documenting how the increased inequality in earnings relates to age and education.

The first important finding related to age and education (see, for example, Morissette, Myles and Picot, 1993) is that the increased polarization of earnings observed over the 1980s is not due simply to a change in the age-education composition of the working population. In fact, as we shall see later in this paper, the changes in the age-education composition of the workforce have most likely contributed to a narrowing of earnings disparity.

Table 7 reports changes in earnings for different age and education groupings. The period covered is from 1981 to 1993. It should be noted that the analysis must be split by gender to obtain a clear picture of the changes. The first and perhaps most important observation from this table relates to age. For both men and women there were considerable declines in the absolute and relative earnings of workers aged 17 to 24 and, to a lesser extent, workers aged 25 to 34. In contrast, most workers aged 45 to 54 experienced increasing earnings during this period.

TABLE 7

PERCENTAGE CHANGE IN REAL ANNUAL EARNINGS BY AGE AND EDUCATION, 1981-93
GENDER

	Male	Female
I. All earners		
16 - 24 years	0.36	0.24
25 - 34 years	0.16	0.06
35 - 44 years	0.10	0.15
45 - 54 years	0.02	0.29
Educational level		
Elementary	0.20	0.03
Some high school	0.12	0.07
Some postsecondary studies	0.19	0.11
Postsecondary certificate	0.12	0.06
University degree	0.05	0.09
II. Full-year/full-time workers		
16 - 24 years	0.14	0.01
25 - 34 years	0.07	0.03
35 - 44 years	0.05	0.17
45 - 54 years	0.04	0.05
Educational level		
Elementary	0.07	0.08
Some high school	0.06	0.06
Some postsecondary studies	0.01	0.02
Postsecondary certificate	0.08	0.02
University degree	0.03	0.06

The changes in earnings across different education groups reported in Table 7 show no clear pattern of increase or decrease in the returns to education. This observation contrasts sharply with findings for the United States, where changes in earnings have been strongly and positively related to education. One possible explanation for the discrepancy is that institutions in Canada may better protect older workers and, as a result, any downward pressure on wages for less educated male workers would appear only among young or less experienced Canadian workers. If this is the case and we assume that Canada is subject to the same fundamental wage pressures as the United States, we should expect changes in Canadian earnings to be much more positively related to education levels among young workers than among the population at large. This is precisely what is found in Bar-Or et al. (1995). In particular, for workers with only one to five years of experience (i.e., mainly young workers), Bar-Or et al. report that the 1980s saw a substantial increase in the relative earnings of university- over high school- educated workers.

In summary, the 1980s and early 1990s have been a period of widening disparity in labour earnings. Part of the greater disparity is due to the fall in earnings for young workers and especially young less educated workers. Notwithstanding the importance of these between-group changes in earnings, it should be emphasized that they do not explain all the observed increase in disparity. In fact, as noted by Morissette, Myles and Picot (1993), an important fraction of the increased disparity in earnings has arisen from disparity within age-education groupings. Therefore, even though older workers have on average fared better than younger workers, there are many older workers who have also experienced substantial deterioration in labour market outcomes.

Weekly Earnings, Hours Worked and Hourly Wages

The previous discussion concerns changes in annual earnings and therefore considers changes in both hours worked and hourly wage rates. To provide an accurate picture of labour market trends, it is useful to break down changes in annual earnings into hours and wage rate components. To this end, we begin by briefly discussing whether changes in weekly earnings mirror changes in annual earnings and how changes in weekly earnings relate to changes in annual weeks worked. We then proceed to describe the decomposition of weekly earnings into weekly hours and hourly wages.

Richardson (1994) documents changes in the distribution of weekly earnings from 1981 to 1992 and reports a pattern of rising inequality very similar to that found for annual earnings. In effect, the similarity between changes in the distribution of weekly and annual earnings can be inferred indirectly from Table 7. As seen in this table, age-related changes are quite similar across the samples of all earners and the sub-sample containing only full-time/full-year workers. Since full-year workers undergo only limited changes in the number of weeks worked, this observation indicates that increased dispersion in weekly

earnings has been a factor contributing to the increased dispersion in annual earnings. The increased inequality in annual earnings cannot be attributed exclusively to increased inequality in the number of weeks worked.

Kuhn and Robb (1995) provide further information relevant for understanding how changes in weeks worked has contributed to changes in the distribution of annual earnings. For the period from 1971 to 1991, Kuhn and Robb found changes in weeks worked to be highly positively related to changes in weekly earnings. This finding indicates that variations in weeks worked actually amplified the effect of increased weekly earnings inequality on annual earnings. In particular, Kuhn and Robb's results suggest that the large fall in the bottom quintile of the annual earnings distribution was due to a combined effect of falling weekly earnings and a drop in the number of weeks worked per year.

Morissette (1995) provides information on the breakdown of weekly earnings into its hourly wages and weekly hours components (see also Morissette and Sunter, 1994). Beginning with weekly hours, Morissette documents a substantial hollowing of the weekly hours distribution. For example, over the period from 1981 to 1989, he finds a 9 percent decline in the fraction of male workers working between 35 and 40 hours per week. Simultaneously, he finds an increase of almost 4 percent in the fraction of male workers working more than 50 hours a week. Morissette also reports that the increase in the over-50-hours work week is most prevalent among older and more educated workers, while younger and less educated workers have an increased incidence of part-time work (less than 30 hours per week). These observed changes in the distribution of weekly hours are also found to be quite widespread, arising in most industries and occupations.

Documenting changes in the distribution of hourly wages is somewhat problematic in Canada given the limited reliable data. Nonetheless, using the Survey of Work History (1981) and the Labour Market Activity Survey (1988), Morissette, Myles and Picot (1995) provide information on how the distribution of hourly wages changed between 1981 and 1989, and how these changes are related to changes in the distribution of weekly hours. The overall picture indicates that the distribution of hourly earnings has neither clearly deteriorated nor improved over this period. The finding might at first suggest that the observed increased dispersion in weekly earnings is therefore due entirely to the increased dispersion in weekly hours. However, this is not the case. Although the variance in hourly wages decreased slightly over the period studied, the covariance between hourly wages and weekly hours has increased substantially. This increase in covariance is the main contributor to the increased dispersion of weekly earnings. In fact, for women it is solely because of this increase in covariance that there has been a rise in the variance of weekly earnings.[2] If we combine information regarding weeks worked and weekly hours, we reach the conclusion that the increased dispersion in annual earnings

is due mainly to an increased dispersion in annual hours worked and its increased covariance with hourly wages.

Although the above discussion suggests that there has been no marked change in the overall distribution of hourly wages, such an assumption hides important changes in hourly wages between the different age and education groupings. Morissette, Myles and Picot (1995) document a substantial deterioration of hourly wages for young workers and a marked improvement for older workers, as was the case for annual earnings. This phenomenon may reflect the fall in the proportion of young workers employed in high-wage sectors, such as goods producing sectors and government, and the rise in the proportion of young workers employed in the relatively low-paying sectors of retail trade, food and accommodation (see Riddell, 1996). The pattern is less clear for education categories but it nevertheless suggests that hourly wages for more educated workers increased to some extent, especially for workers with a university degree.

YOUTH ADJUSTMENT, EDUCATION AND FAMILY FORMATION

THE PREVIOUS SECTIONS DOCUMENT how employment and labour earnings have evolved over the last 15 years. One of the most striking features noted is the marked deterioration of labour market conditions for youth. An obvious question is how youth have responded to these changes. In particular, how have the changes affected education decisions, living arrangements and family formation?

Possibly the most notable change over the last 15 years is the significant increase in school enrollment. According to Card and Lemieux (1996), in 1981 approximately one third of youths aged 15 to 24 were enrolled as full-time students. By 1995 slightly more than one half were enrolled, a finding that implies an increase of over 50 percent. In comparison, over the same period, enrollment rates in the United States increased by less than 15 percent. It should be emphasized that Canada started the period with a lower enrollment rate than the United States. However, by around 1990 Canada's youth enrollment rate had caught up to that of the United States, and by 1995 Canada's rate was over 5 percent higher than the U.S. rate. The increased enrollment is strongly reflected in the increase in university attendance. Riddell (1995) reports that in 1982-83 only 20 percent of 18- to 21-year-olds were attending university, while by 1990-91 the figure had risen to over 30 percent.[3] The implication is that postsecondary enrollment increased by a phenomenal 70 percent (*Education Quarterly Review*, spring 1996).

The large increase in school enrollment has occurred alongside changes in living arrangements and family formation. For example, Card and Lemieux (1996) report that the proportion of 20-year-old men living with their parents increased from 67 percent in 1981 to over 76 percent in 1994, while the proportion of women living with their parents went from 54 percent to 63 percent.

The decline in the proportion of young adults starting families is even more pronounced. In 1981, about 16 percent of men aged 20 were the head or spouse of their own household; by 1994 that figure had fallen to 8 percent. For women of the same age, the decline was from 31 percent to 20 percent.

A rather clear picture emerges from the behaviour of youth. In response to decreased labour market opportunities, young men and women have continued living with their parents, prolonged formal schooling and postponed family formation. One question that arises is whether the substitution of education for work accounts for most of the fall in employment for this age group. If it does, employment is being replaced by investment in skills. If it does not, declines in employment correspond to increases in non-utilized human resources. To shed some light on this issue, it is helpful to examine changes in inactivity rates for young men and women.[4] The inactivity rate is the proportion of people who are neither working nor attending school in a reference week. For men aged 15 to 19, the inactivity rate decreased from 14 percent in 1981 to 7 percent in 1988 and finally to 6 percent by 1993. For men aged 20 to 24, the inactivity rate remained close to 20 percent over the entire period. We may thus infer that most of the drop in young men employment has been due to substitution by schooling (full- or part-time) as opposed to inactivity.

The picture for women is slightly more complex since changes in activity rates at least partly reflect changes in child rearing. Not surprisingly, the inactivity rate fell substantially from 1981 to 1993. Even in the sole category of young women without children, we observe that the inactivity rate decreased from 10 percent to 5 percent for females aged 15 to 19, and from 20 to 16 percent for females aged 20 to 24. Again, these patterns support the view that the recent deterioration in labour market conditions have not led to considerable increases in inactivity among young people but have instead pushed them toward prolonging their education.

LOOKING BEYOND THE MAJOR TRENDS

BY ANY OF A NUMBER OF MEASURES from the data presented in the first section, it seems clear that a wide variety of workers experienced little labour market success in the early years of the 1990s. In making predictions for the next decade, it is clearly necessary to evaluate the extent to which these outcomes are responses to a temporary, if somewhat prolonged, cyclical downturn or represent fundamental, permanent shifts in the labour market. The aim of this section is to shed light on the nature of current changes and, in particular, to determine whether recent changes represent an ongoing process or the adjustment to a major one-time event.

We proceed by examining what has happened to different cohorts as they advance from the age of 25 to 38.[5] Even though our overriding concern is about outcomes for youth in the next decade, we focus on 25- to 38-year-olds for three main reasons. First and most important, in evaluating impacts of labour market changes on youths we need to know whether the impacts will continue to affect them throughout their working lives. One of the main reasons analysts focus on youth is a concern that bad outcomes at the start of life can permanently scar workers and thus are more important than outcomes at a less sensitive stage of the life cycle. Alternatively, if new employment arrangements in an economy demand more flexibility of young workers but those workers are still able to move into stable work patterns when they are older, concerns about increased turbulence in the youth labour market might be lessened. To understand which of these outcomes is relevant, we need to evaluate labour market experiences of workers as they enter the part of the life cycle immediately after their youth. While youth is a time when we might expect individuals to be flexible and to spend substantial amounts of time investing in education and training, the ensuing years are a time when we might expect individuals to settle into longer-term jobs and accelerating career paths. Understanding whether that transition to more permanent jobs has changed in recent years is an important element in evaluating future prospects for youths.

The second reason for focussing on 25- to 38-year-olds is that there have already been extensive studies of younger workers. There is thus more to be gained from examining the transition period as individuals pass out of their youth. Third, we believe that the work histories of these individuals may be particularly informative about changes occurring in the labour market since this age group has more limited substitution possibilities that younger individuals (especially in terms of education and living arrangements). In effect, by focussing on this age group we can more reasonably interpret changes occurring as a cohort ages in terms of changes in demand as opposed to changes in supply.

Our analysis centres on the changing nature of age-experience profiles for different measures of labour market outcomes. We begin by focussing on annual labour earnings since this is a quite comprehensive measure of labour market performance. In fact, we present results using earnings averaged over samples

that include individuals with zero earnings and both self-employed and regularly paid employed workers. Movements in our earnings measures will thus reflect changes in employment rates, weeks worked per year, hours worked per week and hourly wages, as well as movements into and out of self-employment. What we want to know is how the relationship between age and earnings has changed. Has the age-earnings relationship deteriorated for successive cohorts? If so, is the fall decelerating or accelerating? Alternatively, for more recent birth cohorts, do earnings begin at a lower level but grow faster with age? By answering such questions we hope to better isolate the nature of recent change and thereby have a basis on which to project into the future.

Figures 8 through 11 report realized age-earnings profiles for different birth cohorts as they advance from the age of 25 to 38. The figures are given for men and women separately and are divided according to broad education groupings. Our low education group comprises individuals having at most a high school diploma. Our high education category comprises individuals with at least one postsecondary degree or certificate. Note that an individual in our low education category may have some postsecondary education but not a postsecondary degree. The 11 cohorts we follow correspond to individuals aged between 25 and 26 in the years 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990 and 1992. We refer to each of these years as the year of entry of a cohort (since it is the year a given birth cohort enters the 25- to 38-year-old group). The years of observation used are 1981 to 1993; accordingly, different cohorts are within our observation window for different lengths of time. For example, we follow the early cohorts when they are in their thirties, while the later cohorts can be followed only while they are in their twenties. The earnings measure is the real average yearly labour earnings (in 1981 dollars) of all earners within a cohort. The data is drawn from the Survey of Consumer Finances and the exact years of observation are 1981, 1982, 1984, 1986, 1988, 1990, 1992 and 1993.

Several observations emerge immediately from an examination of Figures 8 through 11. First, it is remarkable how much flatter are the age-earnings profiles for women than for men. In particular, women appear to have almost no earnings growth as they age, while there appears to be substantial growth for men. Second, average earnings for men are quite similar at age 25 for the two education categories but increase much faster for workers with higher education.

To obtain a first impression of how age-earnings profiles may change across the different entry cohorts, it is helpful to examine the differences in earnings at a particular age. For example, let us consider highly educated males at age 29. It is clear that earnings at age 29 have been lower for more recent cohorts than early ones, and that the difference is substantial (approximately 25 percent). In contrast, for highly educated females, the cohort ranking is essentially reversed: average earnings at age 29 have been higher for more recent cohorts than earlier ones. These observations suggest that any characterization of changes in age-earnings profiles is likely to be very different for females and males.

FIGURE 8

REAL EARNINGS BY COHORT, MALES, LOW EDUCATION

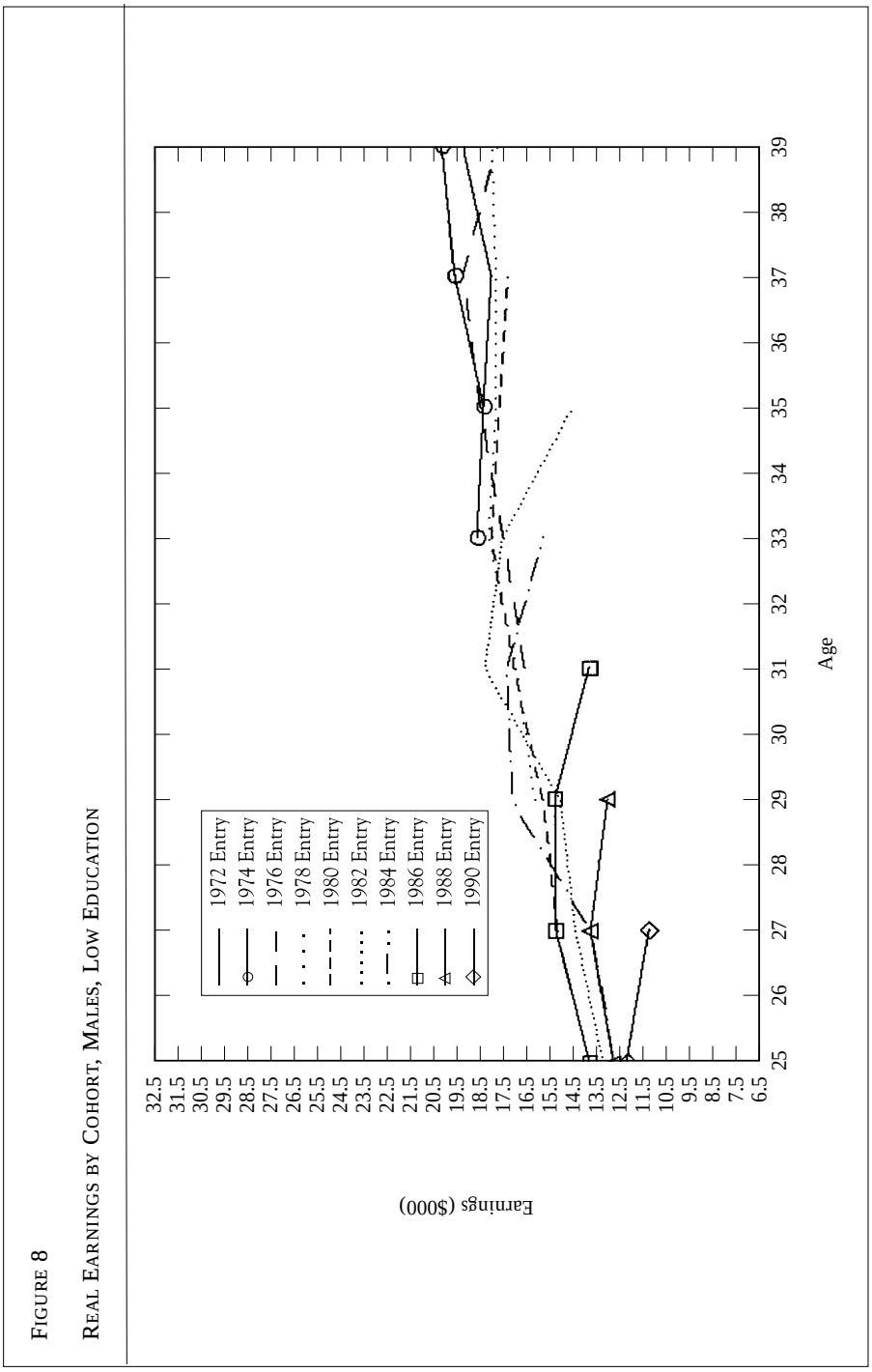


FIGURE 9

REAL EARNINGS BY COHORT, MALES, HIGH EDUCATION

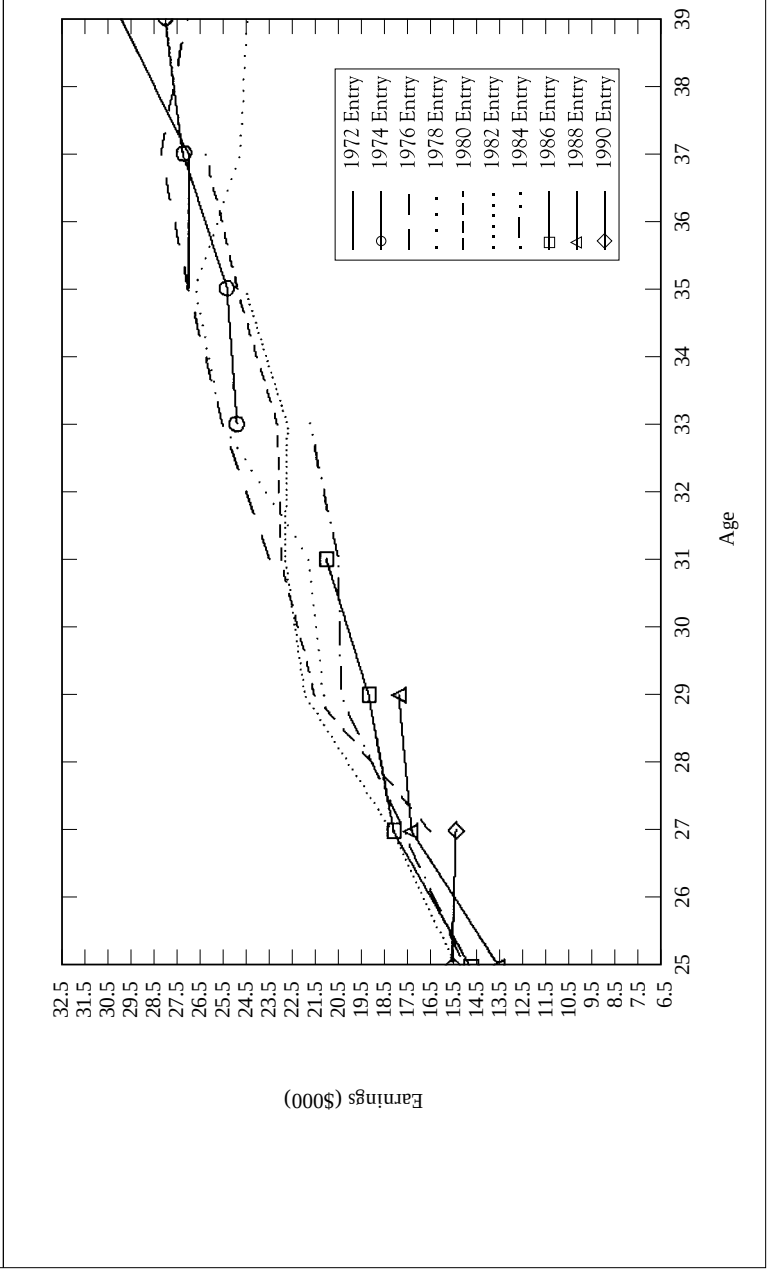


FIGURE 10

REAL EARNINGS BY COHORT, FEMALES, LOW EDUCATION

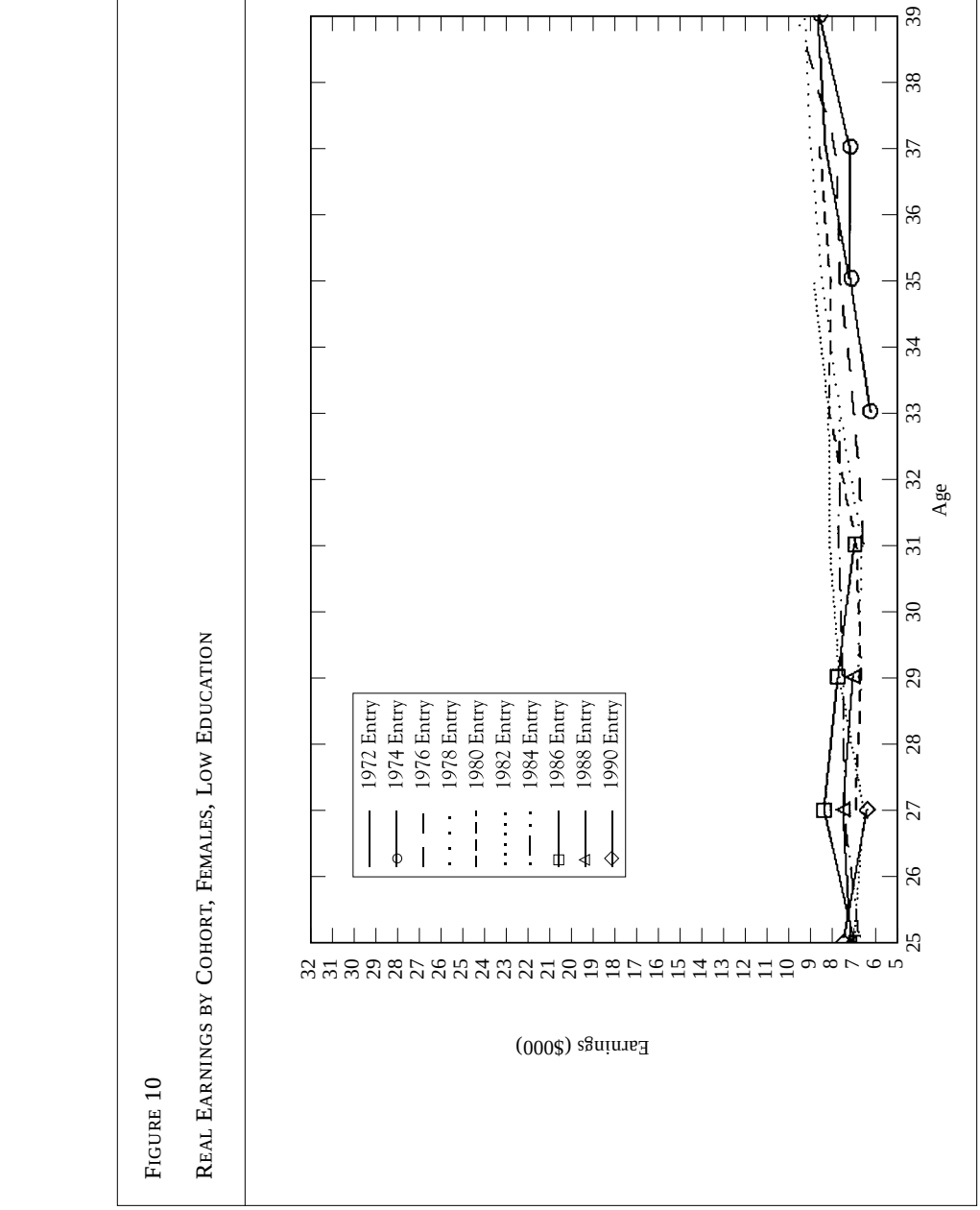
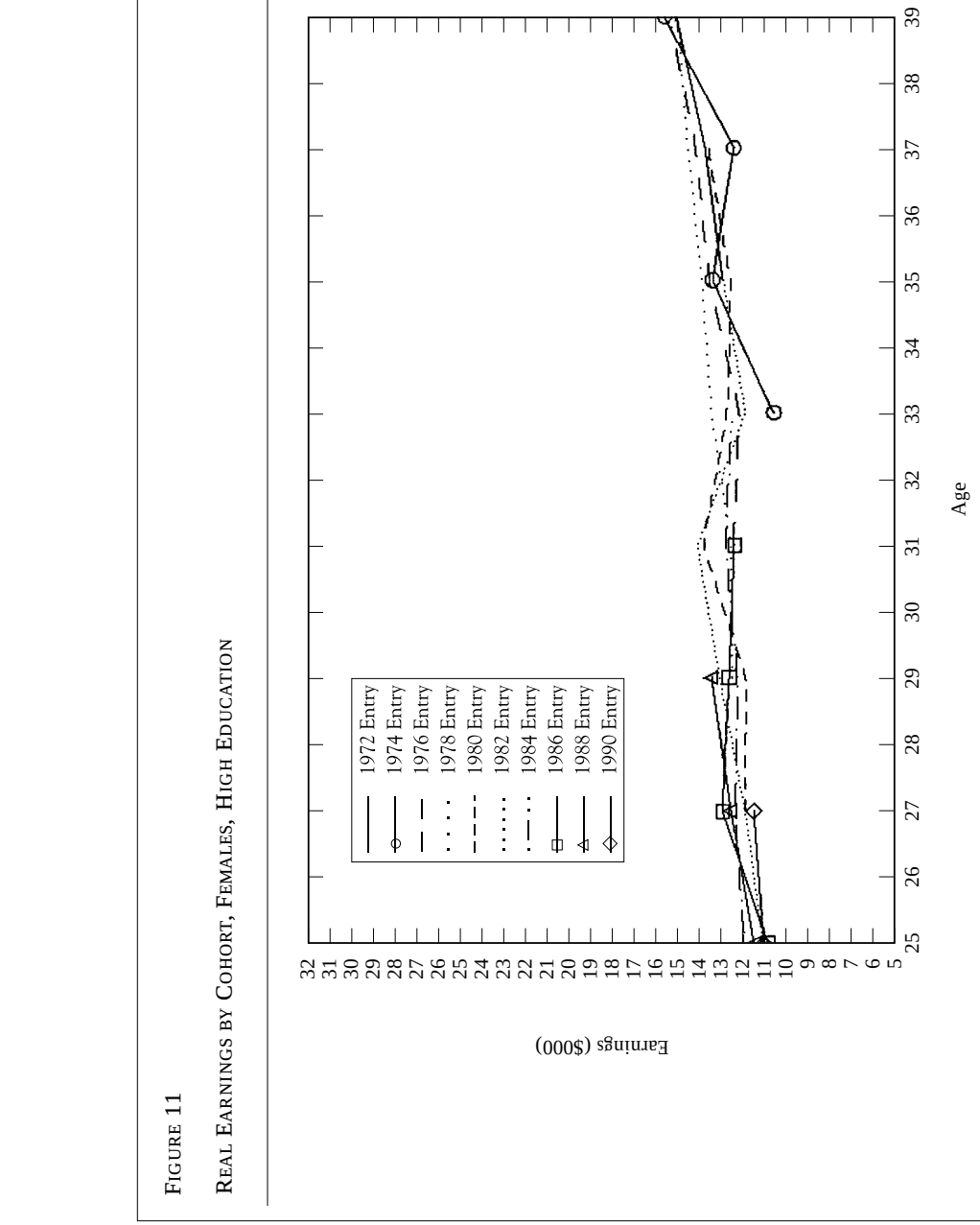


FIGURE 11

REAL EARNINGS BY COHORT, FEMALES, HIGH EDUCATION



The difficulty with making inferences about the ranking of age-earnings profiles by examining different cohorts at a particular age is that the observations are taken at very different points in the business cycle. For example, let us again look at highly educated males at age 29. The observation for the 1988 cohort is taken in 1992, a time of a business cycle trough. Therefore it should not be surprising that this cohort has lower earnings at age 29 than most other cohorts. To make an inference about average labour market opportunities, it is necessary to control for business cycle effects. In Figure 11, this could be done by comparing earnings at age 29 for the 1978 cohort with that of the 1988 cohort since both observations date from years of depressed labour market conditions. We turn next to a more systematic approach to delineating cohort effects while holding constant the effects of the business cycle.

Estimating Cohort-Specific Age-Earnings Profiles

Earnings observed for workers of a particular age (e.g., 29) at a particular time (e.g., 1992) can be conceptually related to three underlying effects. The first of these is what we will term a *year effect*, that is, an effect common to all workers at that time. The year effect will capture the impact of common events such as recessions. The second effect is what we will call a *cohort effect*; this captures the average earnings level of individuals who entered the mature labour market at a particular time, compared with those who entered at a different time. Knowing the cohort effect, one can assess whether recent labour market entrants are disadvantaged compared with earlier entrants in terms of their average long-run earnings. The third effect is an *ageing effect*; this represents earnings growth that occurs naturally over a worker's life cycle, holding constant any differences across cohorts and any year effects. Earnings for a 29-year-old in 1992 will reflect whether 1992 was a bad year, plus whether the individual entered in a relatively good cohort, plus the fact that this individual is relatively early in his or her life cycle.

Earnings ought to be broken down into each of these components in as flexible a manner as possible. The difficulty with such a decomposition is that the three effects are related through an identity: if we know a person's entry cohort (e.g., the cohort that turned 25 in 1988) and the year in which earnings were observed (e.g., 1992), we can calculate the individual's age exactly (in this case, 29). Econometrically, a flexible representation of the three effects in an earnings regression would include dummy variables corresponding to each age, entry cohort and year of observation. In that case, setting a particular entry cohort and year-of-observation dummy variable to 1 would always imply that a particular age dummy variable would also be set to 1. The result is a singular covariate matrix. The three pieces of information (cohort, age and year) are thus not independent and their effects cannot be independently identified without some extra restriction. The most common approach to this problem is to impose a normalization on one or more of the effects. For example, we could

assume that year effects exactly follow the business cycle and that the business cycle can be captured using the unemployment rate. In that case, year of observation dummy variables could be replaced with the unemployment rate and the year effect, cohort effect and age effect variables would no longer add up perfectly. With this normalization, flexible estimation of both age and cohort effects is possible in principle.

In our empirical work, we run regressions of the log of average earnings for a particular cohort in a particular year on a set of variables designed to capture cohort, year and age effects. We impose two restrictions on our specification. First, for parsimony we restrict the age effects to be captured by a quadratic in age. Second, we include a set of dummy variables corresponding to the different years of observation but group 1981 and 1988 together to form a grouped omitted category. The latter restriction reflects an assumption that 1981 and 1988 are at identical stages in the business cycle. It should be noted that this restriction allows us to identify cohort, age and time effects. All year effects are estimated relative to the business cycle stage occurring in 1981. We also include a complete set dummy variables corresponding to each of the 11 cohorts described earlier.

Before discussing results of this estimation, it is worth clarifying the assumptions underlying our specification. First, by allowing for a full set of cohort dummies, we are allowing the age-earnings profile to have a different intercept for each cohort. However, we are not allowing the age-earnings profile to change shape with the different cohorts. Since this assumption is rather restrictive, we explore alternative specifications below. Second, we are restricting the shape of the age-earnings profile to quadratic. Although this is again restrictive, our exploration of alternative specifications has not found it to be unduly so. Third, by allowing for a restricted set of year dummies, as opposed to parameterizing business cycle effect directly as a function of the unemployment rate, we are allowing the effects of the downturn of the 1990s to be arbitrarily different from that associated with the downturn of the 1980s. This approach seems particularly attractive since there is considerable discussion about whether or not the 1990s recession was similar to previous ones. Nonetheless, it should be emphasized that our identifying strategy imposes the assumption that there is no common trend affecting all cohorts between 1981 to 1988.

The results of our decomposition of earnings into cohort, age and time effects are presented in Figures 12 to 15. In Figures 12a to 12d, we plot the estimated value of cohort dummies for different gender and education groupings. The value of a cohort dummy can be interpreted as the average earnings of the cohort at age 25 if the labour market conditions were those prevalent in 1981. In each of these figures we also plot the estimated quadratic trend associated with the cohort effects. The first element to be noted from Figures 12a to 12b is the marked difference in pattern for males and females. In particular, average earnings are successively higher for more recent cohorts of women, while the opposite is true for men.

FIGURE 12a

COHORT EFFECT FROM LOG REAL EARNINGS, FEMALES, LOW EDUCATION, 1972-1992

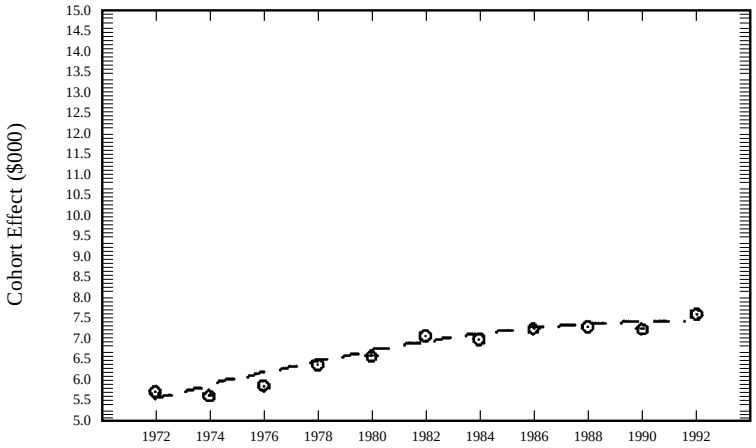


FIGURE 12b

COHORT EFFECT FROM LOG REAL EARNINGS, FEMALES, HIGH EDUCATION, 1972-1992

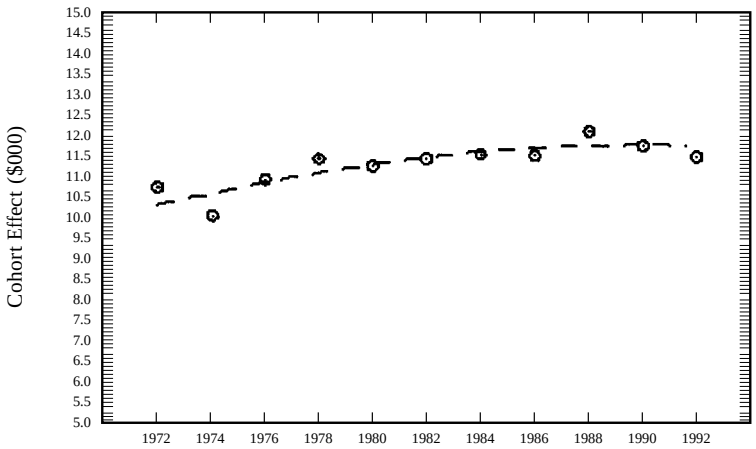


FIGURE 12c

COHORT EFFECT FROM LOG REAL EARNINGS, MALES, LOW EDUCATION, 1972-1992

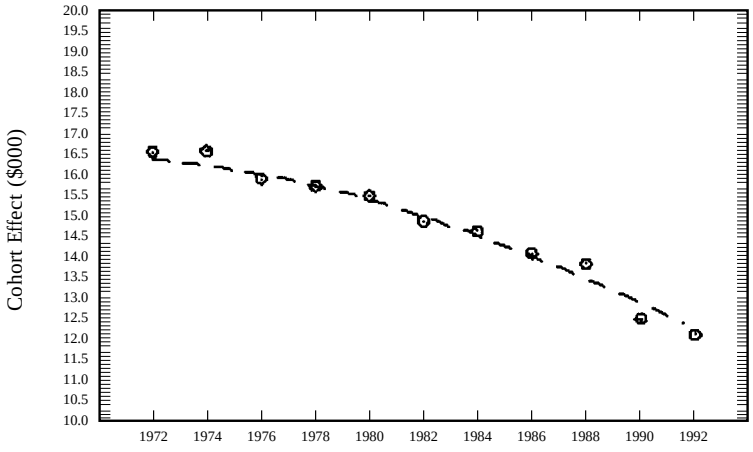
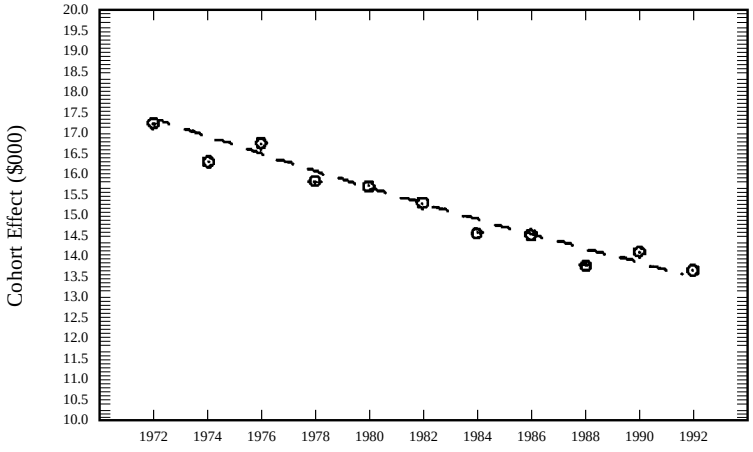


FIGURE 12d

COHORT EFFECT FROM LOG REAL EARNINGS, MALES, HIGH EDUCATION, 1972-1992



The pattern revealed by the estimated cohort effects is quite discouraging for young males, and especially so for men with lower education. For both high- and low-educated males, a recent cohort is estimated to earn about 30 percent less than a cohort born 20 years earlier. In both cases, there is no sign that the deteriorating labour market outcomes for more recent cohorts is likely to stop or reverse itself in the near future. In fact, the evidence suggests that the fall in earnings for recent cohorts of low-educated males is actually accelerating. It should be recalled that these estimated effects are net of business cycle effects, and their reversal should not therefore be expected simply as a result of the economy's emergence from the prolonged recession of the 1990s. The only possibly hopeful sign in this gloomy picture is the relatively small change in cohort effects for highly educated cohorts reaching the age of 25 in 1988, 1990 and 1992. Viewed in isolation, these estimated effects might indicate that future cohorts of highly educated males can expect no further deterioration in earnings levels. Viewed as part of the overall trend, however, they appear as a brief pause in a sharp decline.

The pattern of cohort effects for women reveals that more recent cohorts earn 15 percent to 20 percent more than earlier cohorts. However, the evidence also suggests that the increase in earnings for younger women is tapering off, with very little discernible change since the mid-1980s. A comparison of the pattern between men and women also reveals the extent of convergence in earnings. For example, the male-female earnings differential for the 1972 cohort was approximately 70 percent, while it was less than 20 percent for the 1992 cohort.

Figures 13a to 13b plot the estimated year effects for our four gender-education pairs. The value of a year effect can be interpreted as the average earnings at age 25 in different years if no cohort effects were present. In all four figures, a standard business cycle pattern is observed, with a first trough between 1982 and 1984 and a second trough in 1992 and 1993. One interesting observation is that the trough of the 1990s recession appears worse, for all groupings, than that of the early 1980s recession. It is remarkable how the amplitude of business cycle effects is very different for men and women. The lower-educated males display the largest cyclical sensitivity of earnings, followed by the higher-educated males. The cyclical sensitivity of female earnings appears considerably milder in comparison. This might be viewed as surprising since women are typically supposed to be less committed to the labour market and thus more likely to react strongly to business cycle fluctuations. However, the lack of cyclicality might reflect greater female flexibility as women move into the labour force in recessions as part of the “added worker” effect.

Figures 14a to 14b plot our estimates of the cohort-specific age-earnings profile, after controlling for business cycle effects. As might be expected from the information contained in Figures 12a to 12b, the age-earnings profiles are successively lower for more recent cohorts of men, while they are successively higher for cohorts of women. The slope of the age-earnings profiles are also

quite different across groups. In particular, higher-educated males exhibit substantial earnings growth (in the range of 40 percent to 50 percent) as they advance from 25 to 35 years of age. In contrast, lower-educated women gain only about 10 percent over these years.

One important restriction we imposed when estimating the age-earnings profiles presented in Figure 14 is that the slope of these profiles has not changed over time. In particular, this restriction rules out the possibility that more recent cohorts, especially men, may start at a lower level of earnings but experience more earnings growth as they age. To explore such a possibility, we re-estimated our cohort-specific age-earnings profiles allowing for the age profile to change with the different cohorts. The results from this alternative specification are presented in Figures 15a to 15d.[6]

Before commenting on Figure 15, we should mention that we did not find much statistically significant evidence in favour of the hypothesis that the slope of the age-earnings profiles changed between cohorts. Nonetheless, we believe that the results presented in Figures 15a to 15d are interesting because of the direction of the estimated effects. In particular, for men the results are actually contrary to the view that more recent cohorts enter at lower levels of earnings and experience faster growth as they age. In effect, we find that more recent cohorts exhibit slightly less growth as they age. It is also interesting to note that this evidence to some extent contradicts the view that recent changes in the labour market largely reflect an increase in the skills premium; if this were the case, we should observe an increase in the slope of age-earnings relationship for the younger cohorts to reflect the increased value of experience.

The pattern of female age-earnings profiles presented in Figures 15a and 15b also provide an alternative view of the changes occurring between cohorts. For example, from these figures it appears that the improvement in earnings for younger cohorts of women was mainly a phenomenon of the 1970s. Since 1982, it appears that the new cohorts of women may actually be losing ground in comparison to their slightly older counterparts. In this respect, the evidence suggests that newer cohorts of women may have begun experiencing a pattern of change similar to that occurring for men.

In overview, the evidence presented in Figures 12 through 15 suggests the following for men: younger cohorts are successively earning less; far from being temporary, this phenomenon is ongoing and may actually be accelerating for less educated men; and more recent cohorts are not catching up with older cohorts as they age and may be losing more ground. In contrast, recent cohorts of women are earning more than their counterparts of 20 years ago, but the earnings increase has come to a halt and may actually have begun reversing itself.

FIGURE 13a

YEAR EFFECT FOR REAL EARNINGS, FEMALES, LOW EDUCATION, 1981-1993

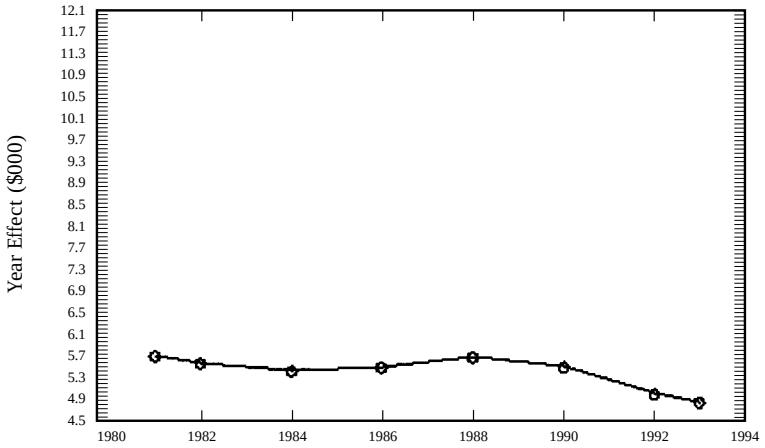


FIGURE 13b

YEAR EFFECT FOR REAL EARNINGS, FEMALES, HIGH EDUCATION, 1981-1993

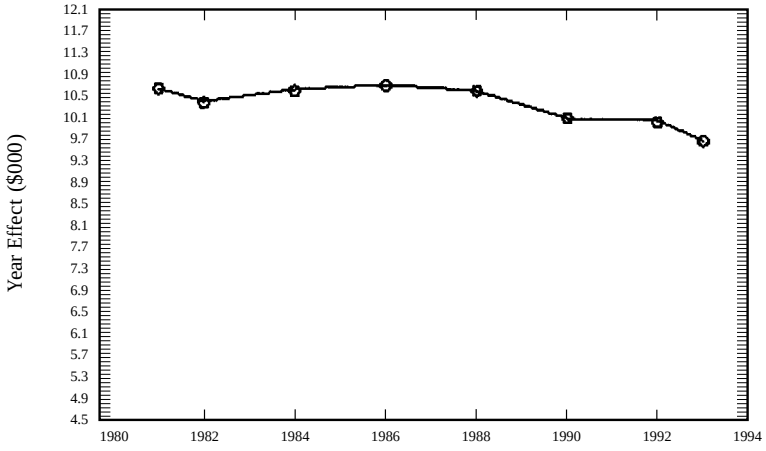


FIGURE 13c

YEAR EFFECT FOR REAL EARNINGS, MALES, LOW EDUCATION, 1981-1993

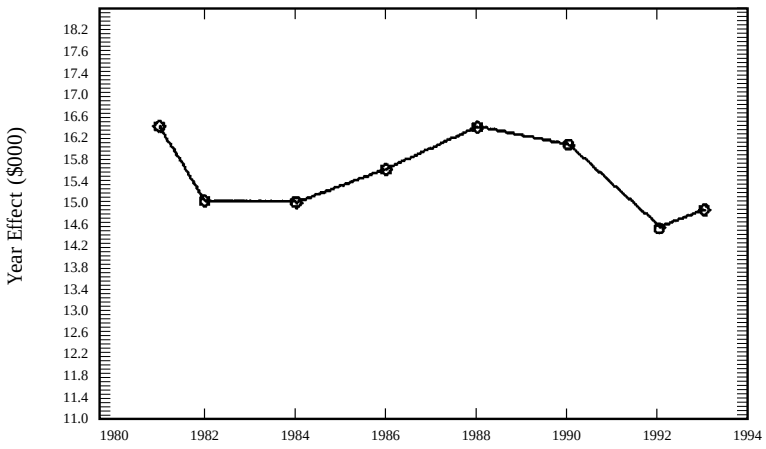


FIGURE 13d

YEAR EFFECT FOR REAL EARNINGS, MALES, HIGH EDUCATION, 1981-1993

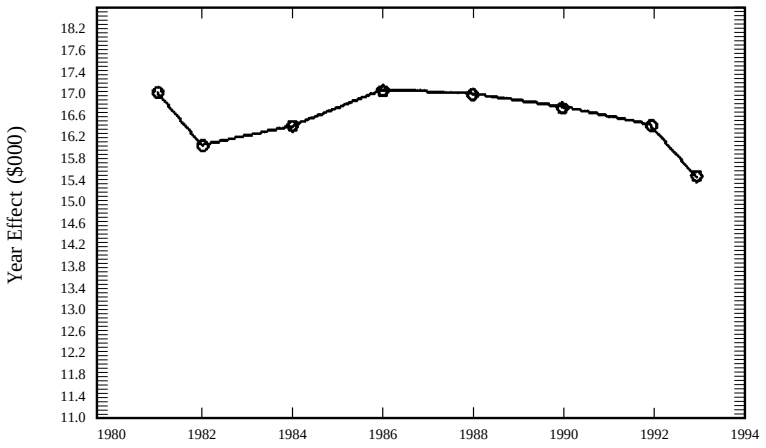


FIGURE 14a

AGE-EARNINGS PROFILES FOR VARIOUS COHORTS, FEMALES, LOW EDUCATION

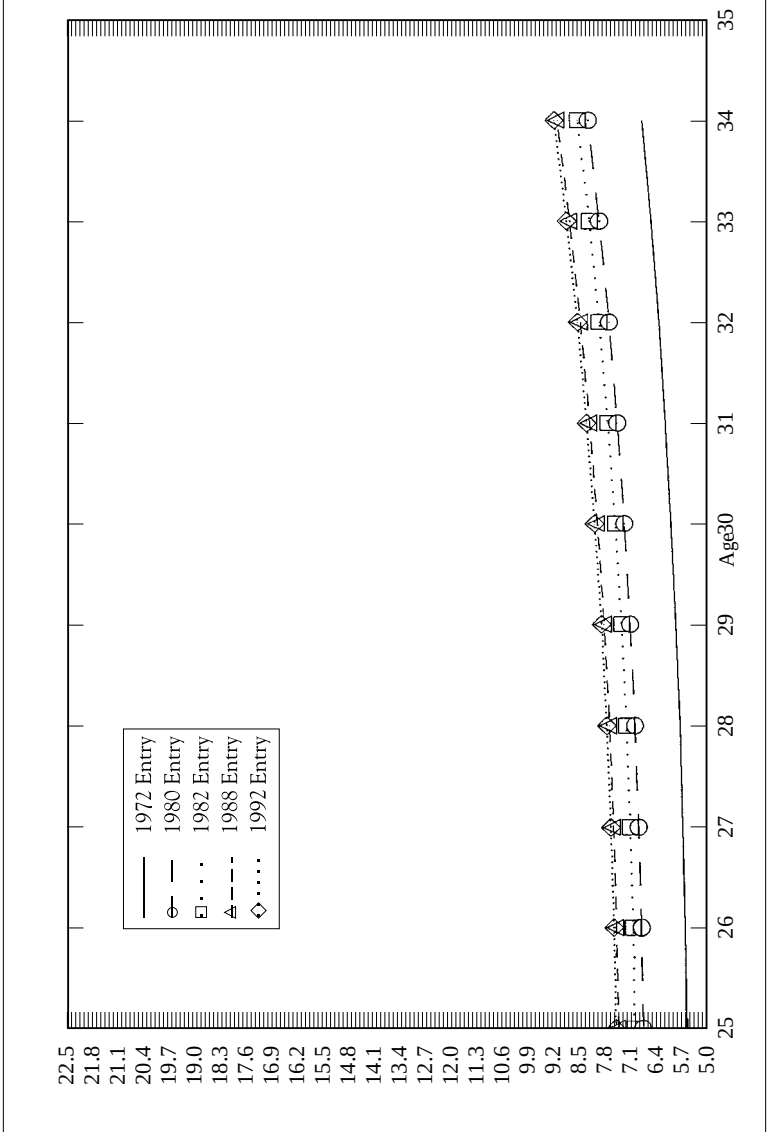


FIGURE 14b

AGE-EARNINGS PROFILES FOR VARIOUS COHORTS, FEMALES, HIGH EDUCATION

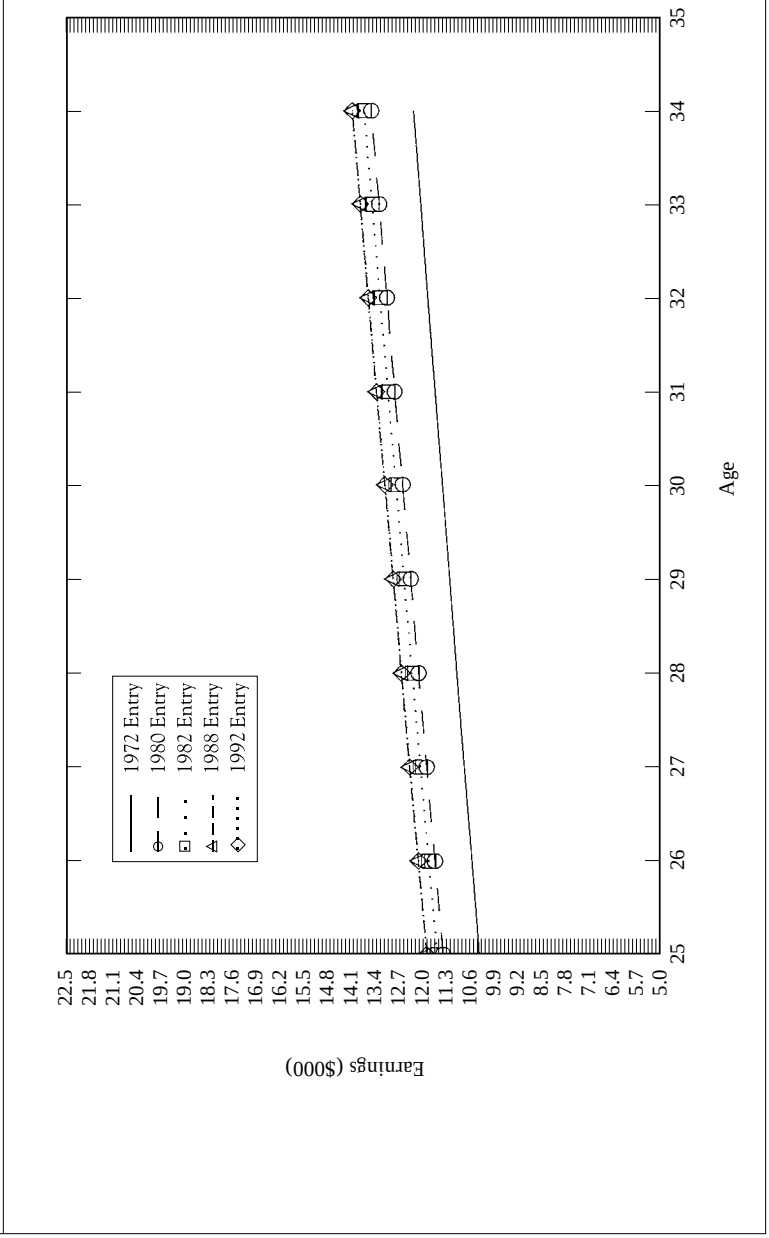


FIGURE 14c

AGE-EARNINGS PROFILES FOR VARIOUS COHORTS, MALES, LOW EDUCATION

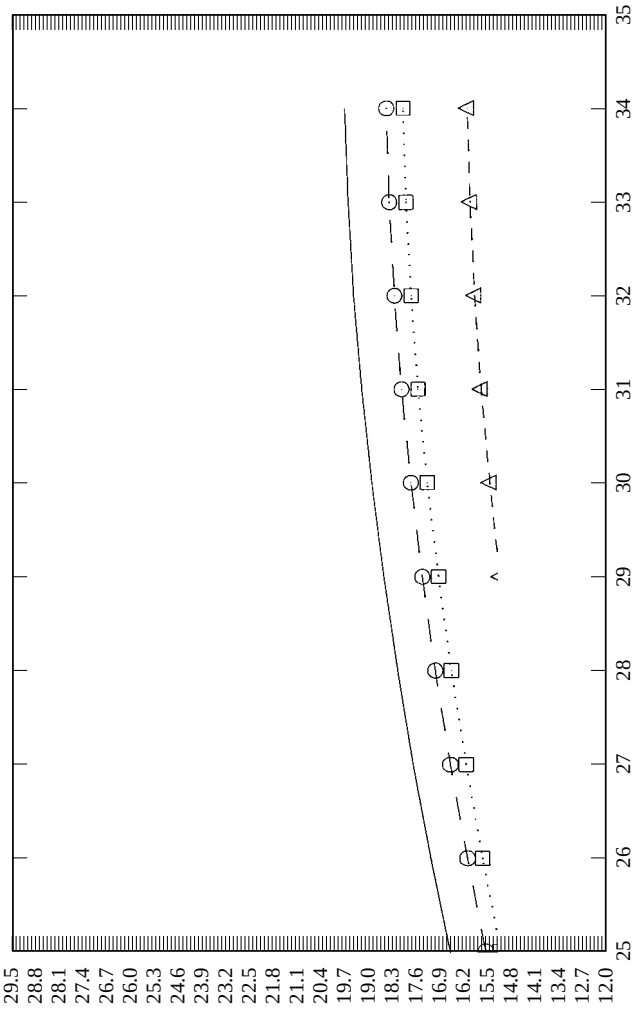


FIGURE 14d

AGE-EARNINGS PROFILES FOR VARIOUS COHORTS, MALES, HIGH EDUCATION

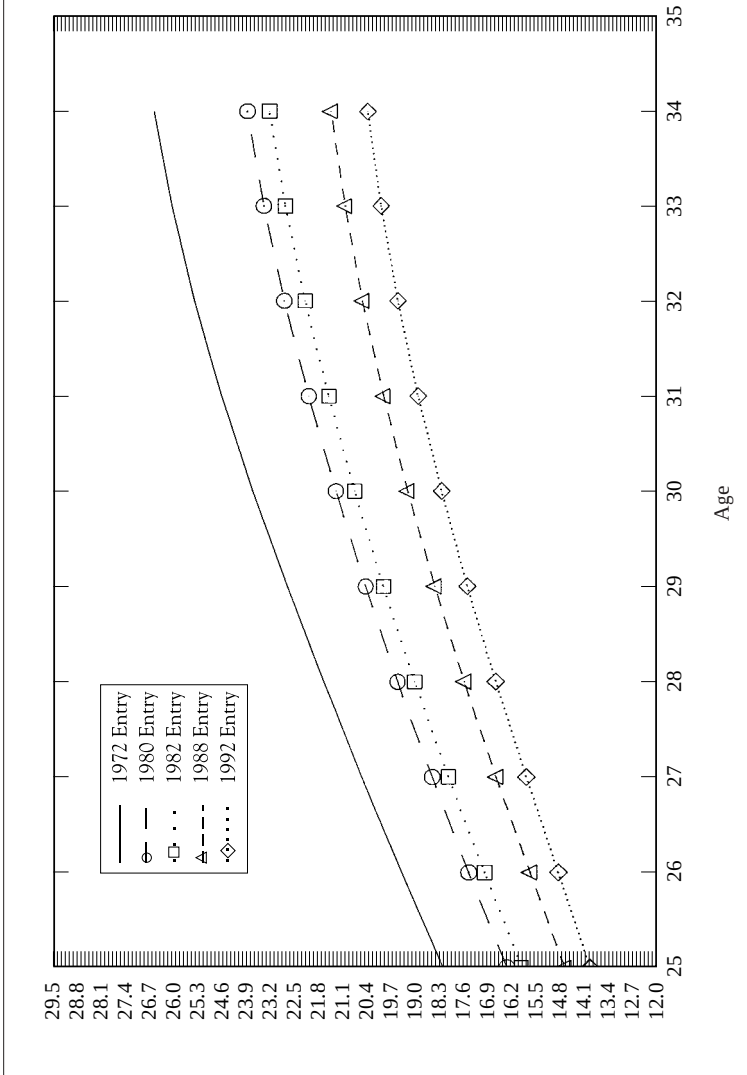


FIGURE 15a

AGE-EARNINGS PROFILES ALLOWING DIFFERING SLOPES BY COHORT, FEMALES, LOW EDUCATION

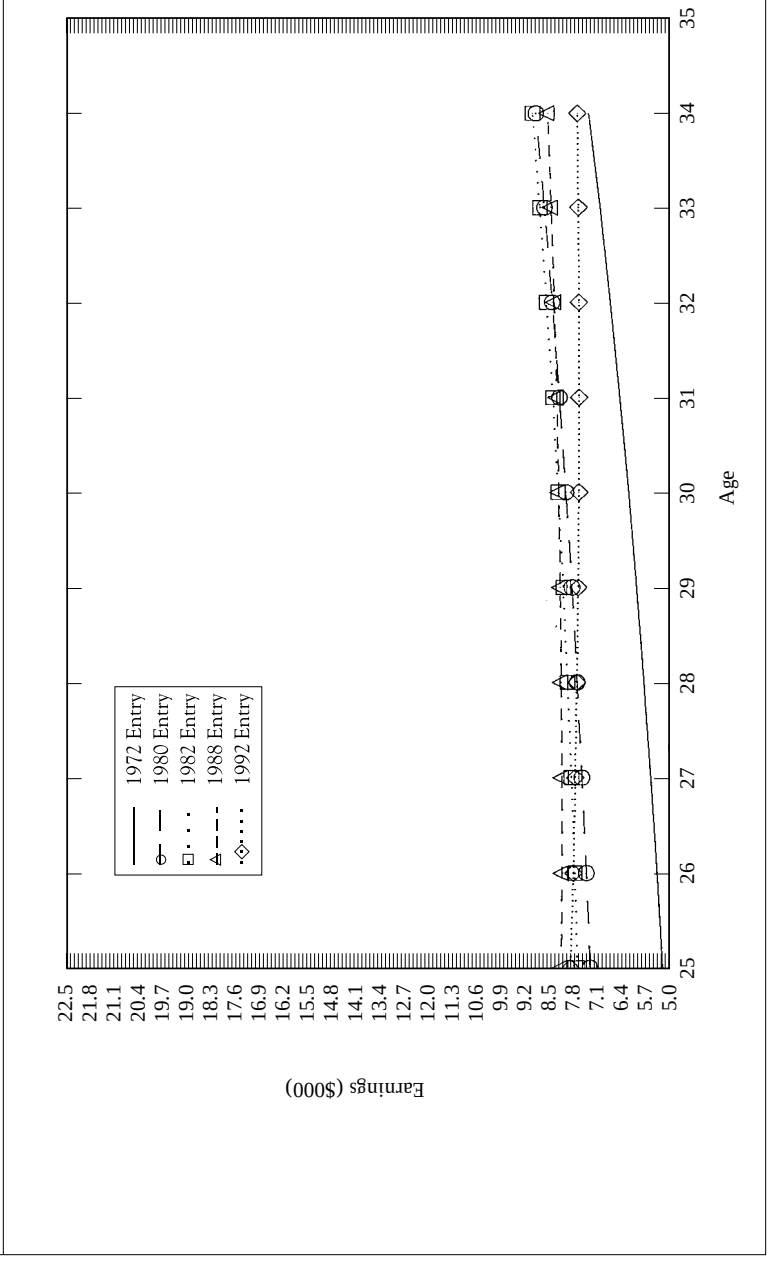


FIGURE 15b

AGE-EARNINGS PROFILES ALLOWING DIFFERING SLOPES BY COHORT, FEMALES, HIGH EDUCATION

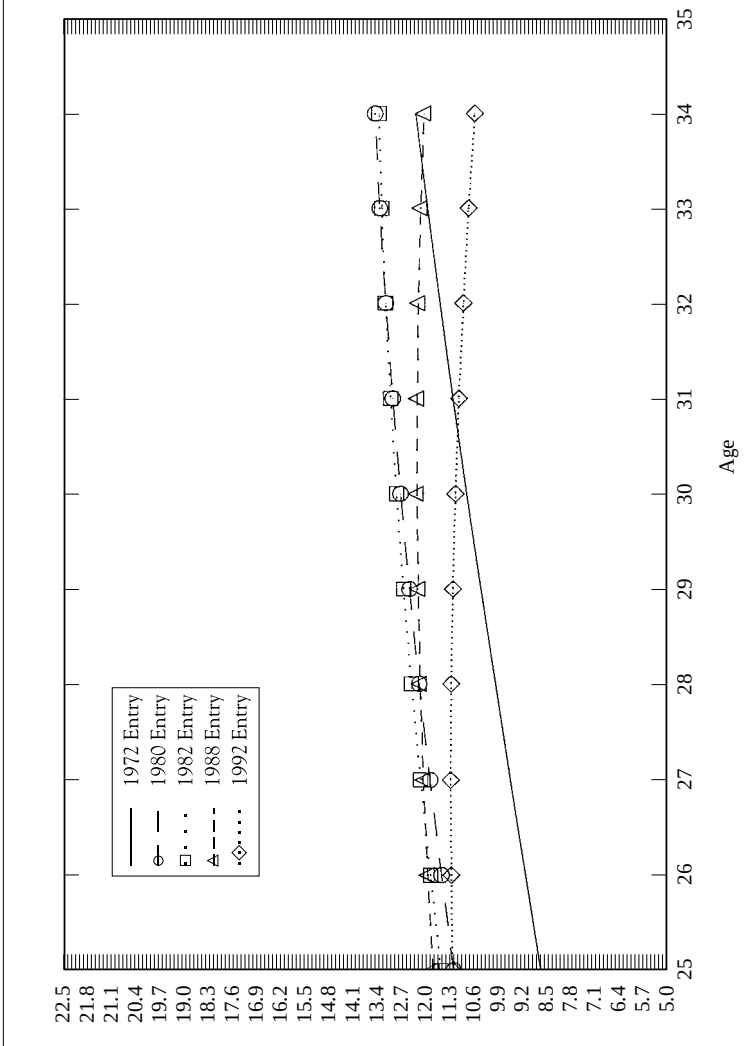


FIGURE 15c

AGE-EARNINGS PROFILES ALLOWING DIFFERING SLOPES BY COHORT, MALES, LOW EDUCATION

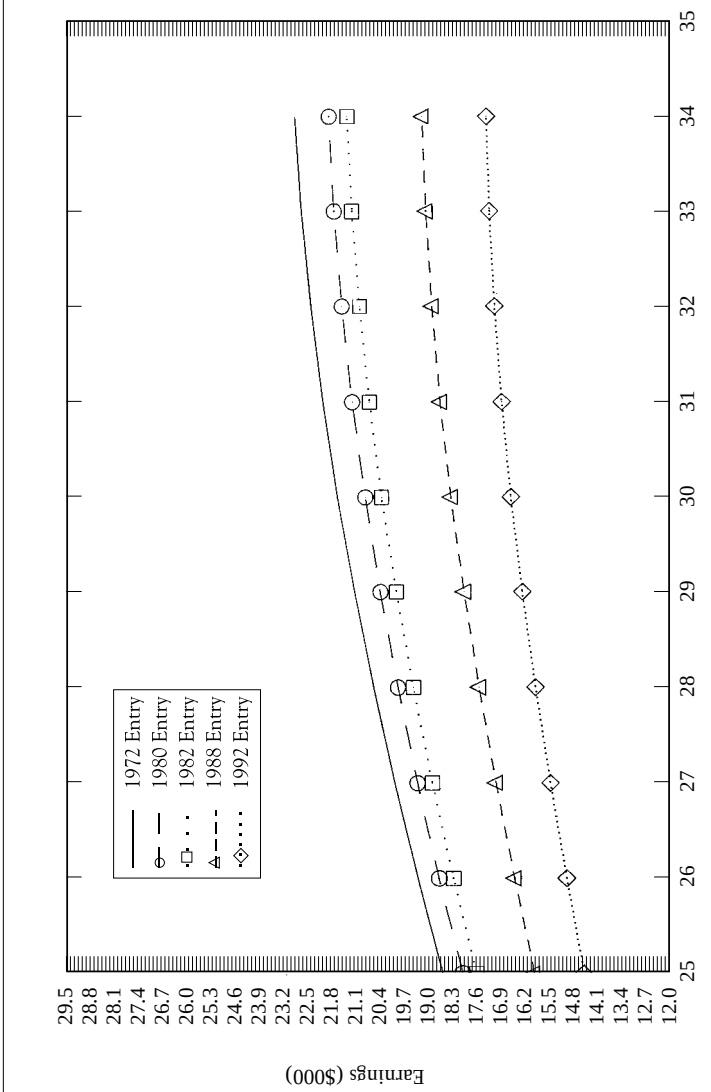
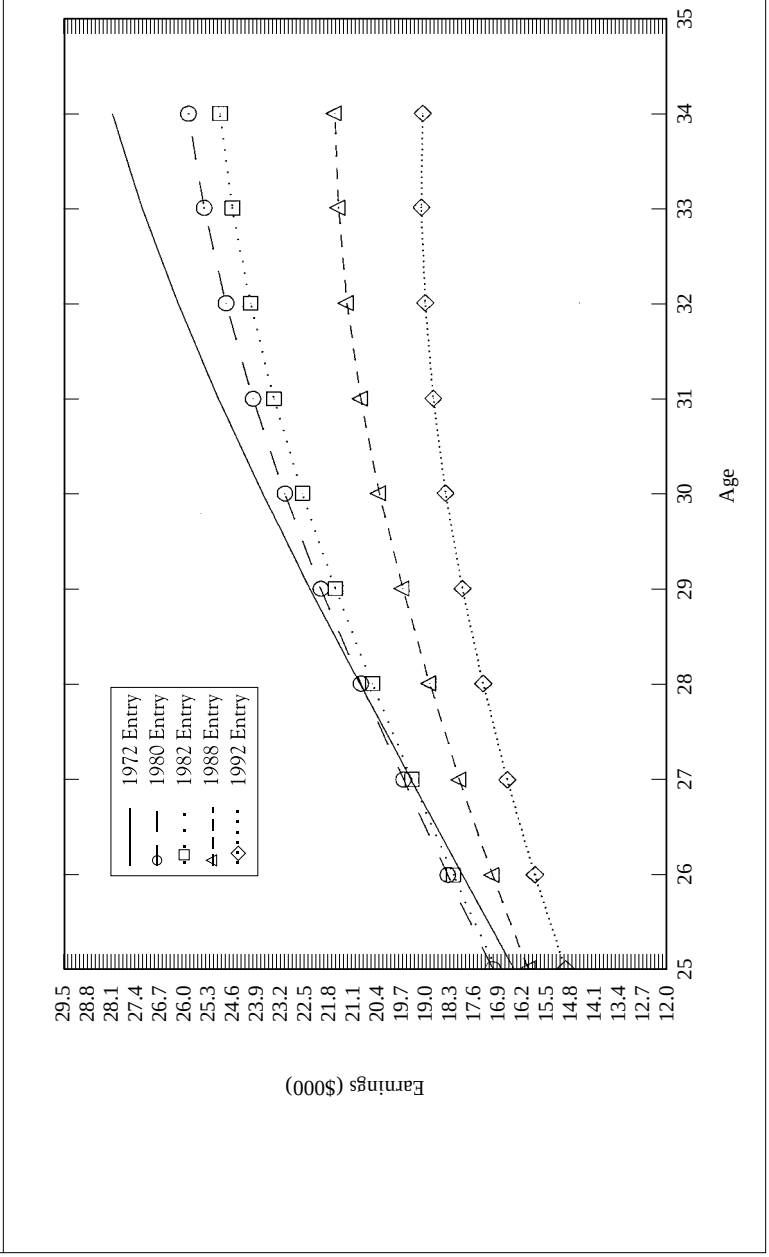


FIGURE 15d

AGE-EARNINGS PROFILES ALLOWING DIFFERING SLOPES BY COHORT, MALES, HIGH EDUCATION



EARNINGS COHORT EFFECT FOR FULL-YEAR/ FULL-TIME WORKERS

AS DISCUSSED EARLIER, THE EARNINGS MEASURE USED in the above cohort analysis reflects a wide variety of effects. In particular, movements in the measure will reflect movements in employment and hours as well as hourly wages. In this section and the next, we attempt to understand the sub-component changes that are driving the movements in overall earnings. As a first step, we present estimated cohort effects for the earnings of full-year/full-time workers. Since all of the individuals used in constructing these earnings measures work, the measure will not directly reflect changes in employment. This is particularly important in comparing men and women since, given the employment rate pattern presented in the first section, changes in employment are likely to be a very important determinant of overall earnings movements for women but not for men. The effects of movements in hours per week and weeks worked per year will also have reduced impacts on full-year/full-time worker earnings. This allows us to focus more directly on the price of labour, holding quantity movements aside. The main drawback of using earnings for full-year/full-time workers is that selection into and out of the sample caused by lay-offs, hirings, etc. will cause selection bias. Thus, full-year/full-time earnings may actually go up in recessionary periods if the least able workers are laid off first. This complicates the task of drawing precise conclusions. It should be noted that the earlier earnings measure, since it pertains to the whole population, does not suffer from selection effect problems.

Figures 16a to 16b present plots of cohort effects for average earnings for full-year/full-time workers. The estimated cohort effects come from a log earnings regression specification that is exactly the same as that used in estimating cohort-specific age-earnings profiles. In particular, it includes a quadratic in age, year-specific dummy variables with 1981 and 1988 assumed to be equal, and a complete set of cohort dummy variables. The estimated coefficients on the latter form the basis for the plots in Figure 16. The main observation from Figure 16 is that the female cohort trends are reversed relative to those in Figure 12. Females face a negative trend in cohort effects for both high- and low-educated workers. The trend for low-educated females is moderate but the trend for more educated women is similar to that for more educated men. The trends for men in Figure 16 are very similar to those for men in Figure 12. The main conclusion to be drawn from this figure, though, is that strong upward trends in visible earnings for all females are due entirely to employment growth effects. Trends in wages, holding constant hours and employment effects, are similarly negative for men and women.

FIGURE 16a

COHORT EFFECT FROM LOG REAL EARNINGS, FULL-YEAR/FULL-TIME WORKERS, FEMALES, LOW EDUCATION, 1972-1992

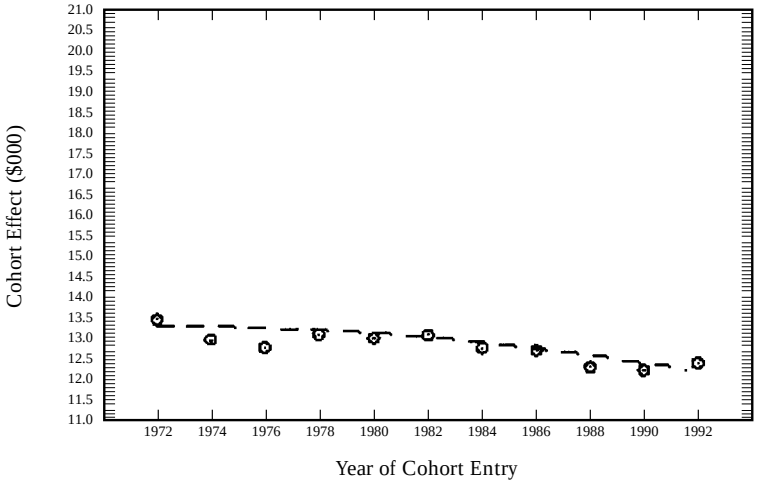


FIGURE 16b

COHORT EFFECT FROM LOG REAL EARNINGS, FULL-YEAR/FULL-TIME WORKERS, FEMALES, HIGH EDUCATION, 1972-1992

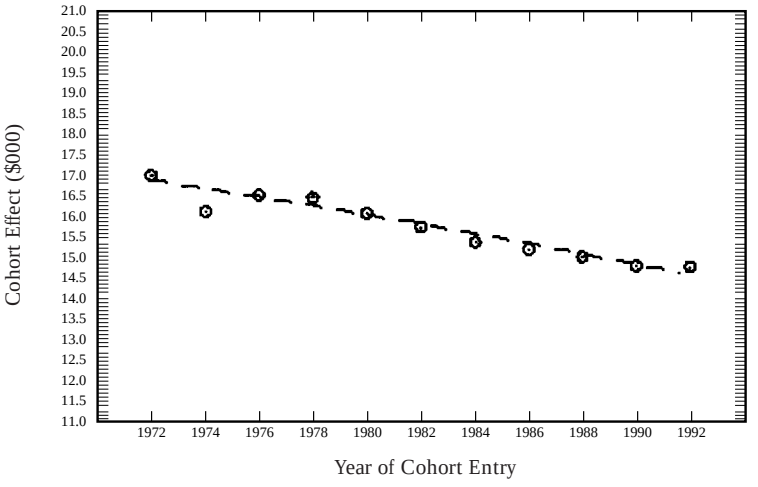


FIGURE 16c

COHORT EFFECT FROM LOG REAL EARNINGS, FULL-YEAR/FULL-TIME WORKERS, MALES, LOW EDUCATION, 1972-1992

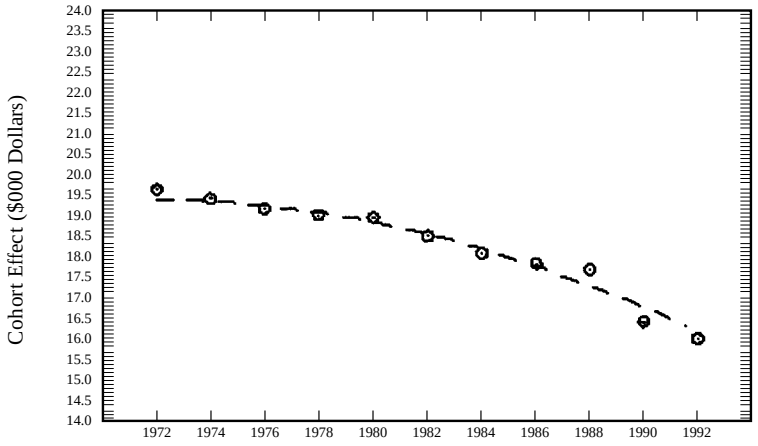
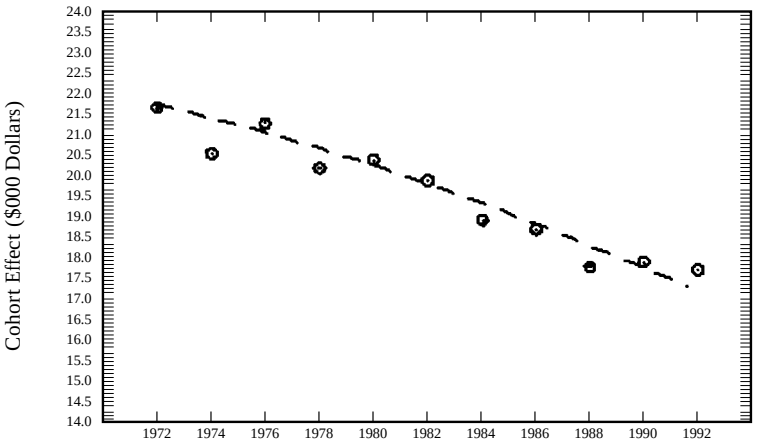


FIGURE 16d

COHORT EFFECT FROM LOG REAL EARNINGS, FULL-YEAR/FULL-TIME WORKERS, MALES, HIGH EDUCATION, 1972-1992



Cohort Patterns in Employment and Job Stability

THE PREVIOUS SECTION EXAMINED how recent cohorts fare in terms of annual labour earnings. It is useful to know whether the observed changes in earnings are associated mainly with changes in employment (as opposed to wages) in order to assess how people may find means of adjusting. Similarly, there is substantial concern in society about whether the paradigm defining relations between workers and firms is changing and how people will need to adjust to such change. It could therefore be valuable to ask whether more recent cohorts have less job stability or more part-time employment than previous cohorts. To answer these questions, we proceed in a similar manner to that used in describing cohort-specific changes in earnings. For all labour force measures examined in this section, we again estimate a regression specification that includes a quadratic in age, year-specific dummy variables with 1981 and 1988 effects restricted to be the same, and a full set of cohort-specific dummy variables.

We begin by examining the cohort pattern in employment rates, that is, the cohort pattern in the fraction of individuals employed in a given week. As before, after controlling for business cycle conditions, we seek to document how recent cohorts compare with older ones in terms of employment rates. Figures 17a to 17b plot estimated cohort dummies associated with employment rates. The value of a cohort dummy should now be interpreted as the employment rate at age 25 of a cohort if labour market conditions were similar to those in 1981. Once again, the estimated cohort pattern differs sharply by gender. For women, there is a marked increase over time, indicating that more recent cohorts have higher employment rates than older cohorts. The increase is particularly noticeable for lower-educated women. The 1992 cohort of low-educated women has an employment rate close to 30 percent higher than a cohort from the early 1970s.

The cohort pattern for men is substantially different from that for women. For higher-educated men there is essentially no evidence of a trend in employment rates across cohorts. This may seem surprising at first given the well-documented fact that young workers currently experience high unemployment and low employment rates. However, it must be emphasized that our estimated cohort effects are net of aggregate business cycle effects. Hence the evidence presented in Figure 17d suggests that recent cohorts of educated males do not fare worse than previous cohorts but that all cohorts are currently experiencing declines in employment rates.

The only group for which there appears to be a decreasing pattern in the employment rate is lower-educated males. For this group, the employment rate has dropped from 80 percent for the 1972 cohort to close to 74 percent for the 1992 cohort, a quite sizeable decline. Again, one of the interesting facts that emerges when comparing the figures is the degree of convergence between the employment rates for men and women. For higher-educated workers, the employment rate is essentially identical for recent cohorts of males and females.

To clarify the changing nature of employment relationships, Figures 18 and 19 provide information on measures related to the stability of work. In particular, Figures 18a to 18d report cohort patterns related to changes in the fraction of workers working full-time/full-year, and Figures 19a to 19d report similar information on the average duration of current jobs (average job tenure). Thus, after controlling for business cycle effects, in Figure 18 the value of a cohort dummy represents the fraction of workers from different cohorts working full-time/full-year at the age of 25.

The cohort pattern that emerges for the full-time/full-year rate is quite similar to that observed for the employment rate. For higher-educated men there is no clear trend, while for lower-educated men there is a substantial decline in the full-time/full-year rate. In contrast, for more recent cohorts of women the rate of full-time/full-year employment appears to be higher, especially in the case of more educated women. The decline in full-time/full-year employment for lower-educated males is again quite substantial. The likelihood that an individual will have a full-time/full-year job is 10 percent lower for a man from the 1992 cohort than his counterpart from the early 1970s.

Figure 19 provides a more direct look at the changing nature of employment relations since it reports information on how long jobs last for more recent cohorts. The main finding to emerge from this figure is that patterns now show similarity more by education group than by gender. For both lower-educated women and men, there appears to be a substantial decline in job tenure for cohorts entering after 1982. In contrast, for higher-educated workers there is virtually no evidence of such a trend. By itself this evidence offers little support for the idea of a profound switch in the nature of the employment relationship: if such a shift was occurring, we should observe it affecting new cohorts of highly educated workers, but we do not observe any such thing.

The overall picture that emerges from our cohort analysis of labour market outcomes is one of considerable heterogeneity. At one end of the spectrum we have recent cohorts of higher-educated women who experience increased earnings for all individuals, increased employment and increased or unchanged job stability. At the other end of the spectrum we have recent cohorts of lower-educated males with decreased earnings, employment and job stability. In between these two extremes, we have higher-educated males who experience decreased earnings but no substantial decrease in employment or job stability. Finally we have lower-educated women, who generally follow the same pattern as for higher-educated women except that they appear to be losing job stability.

Identifying the effects of a technological change is, of course, very difficult. In most studies, those effects are taken to be what is left after more easily measurable causes (such as shifts in industrial composition of employment) have been addressed. Accordingly the technological change effects reflect any measurement errors and errors arising from overly restrictive functional form assumptions.

FIGURE 17a

COHORT EFFECT FOR EMPLOYMENT-TO-POPULATION RATIO, FEMALES, LOW EDUCATION, 1972-1994

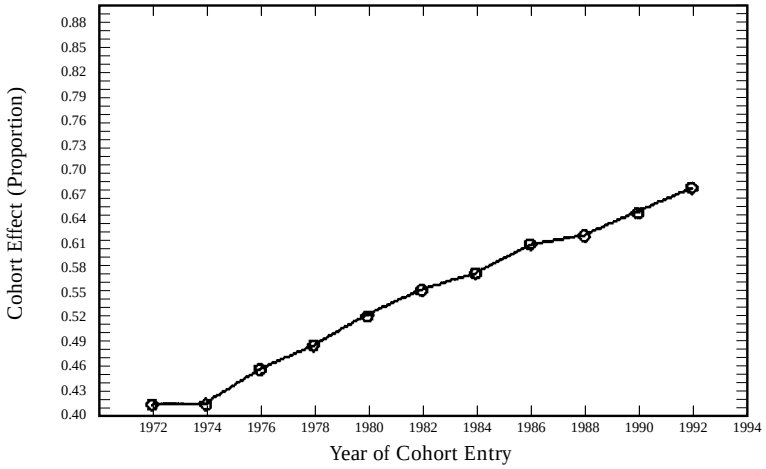


FIGURE 17b

COHORT EFFECT FOR EMPLOYMENT-TO-POPULATION RATIO, FEMALES, HIGH EDUCATION, 1972-1994

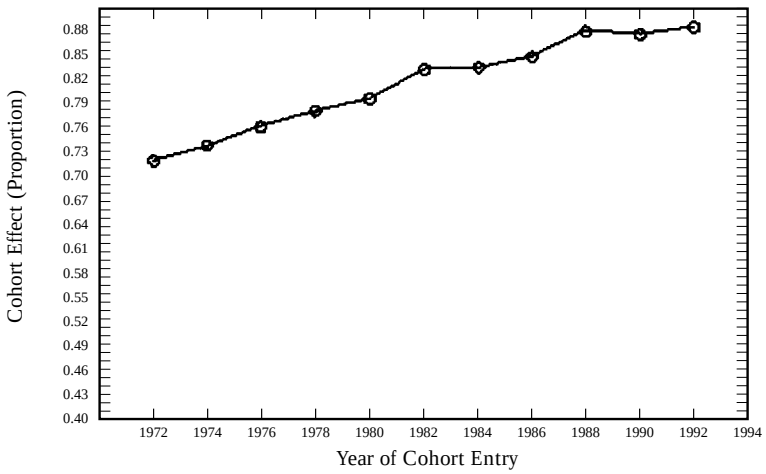


FIGURE 17c

COHORT EFFECT FOR EMPLOYMENT-TO-POPULATION RATIO, MALES, LOW EDUCATION, 1972-1994

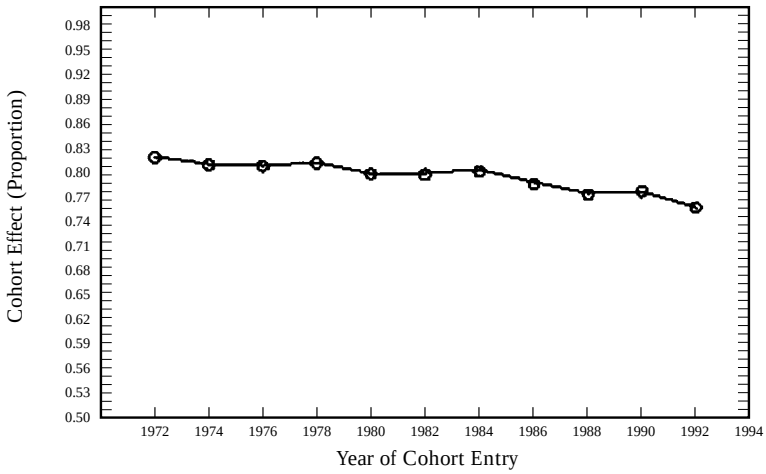


FIGURE 17d

COHORT EFFECT FOR EMPLOYMENT-TO-POPULATION RATIO, MALES, HIGH EDUCATION, 1972-1994

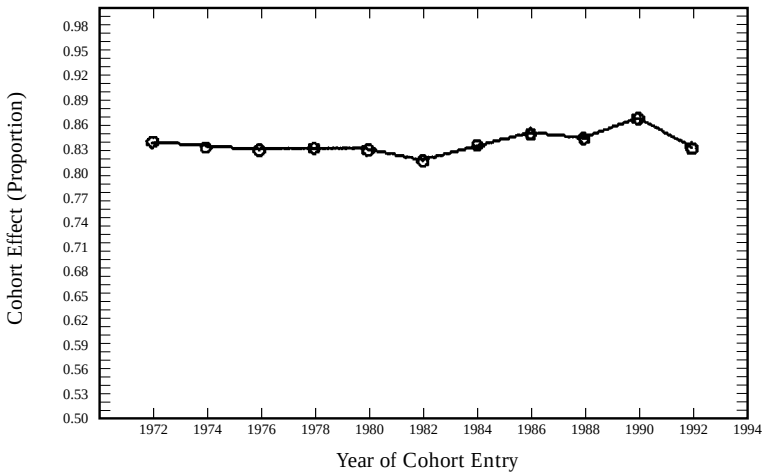


FIGURE 18a

COHORT EFFECT FOR PROPORTION OF FULL-YEAR/FULL-TIME WORKERS, FEMALES, LOW EDUCATION, 1972-1992

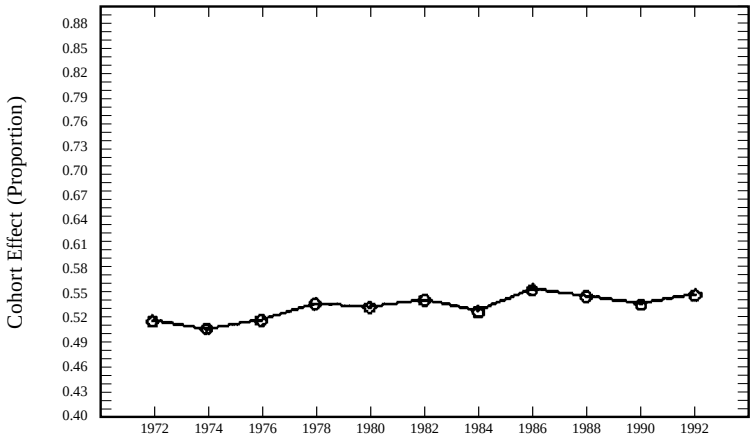


FIGURE 18b

COHORT EFFECT FOR PROPORTION OF FULL-YEAR/FULL-TIME WORKERS, FEMALES, HIGH EDUCATION, 1972-1992

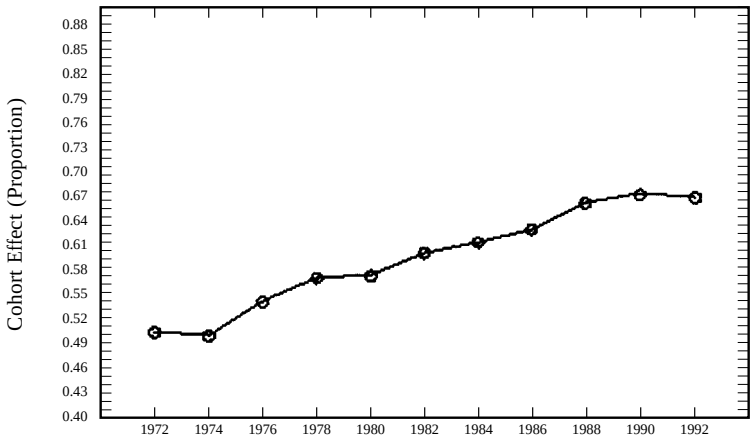


FIGURE 18c

COHORT EFFECT FOR PROPORTION OF FULL-YEAR/FULL-TIME WORKERS, MALES, LOW EDUCATION, 1972-1992

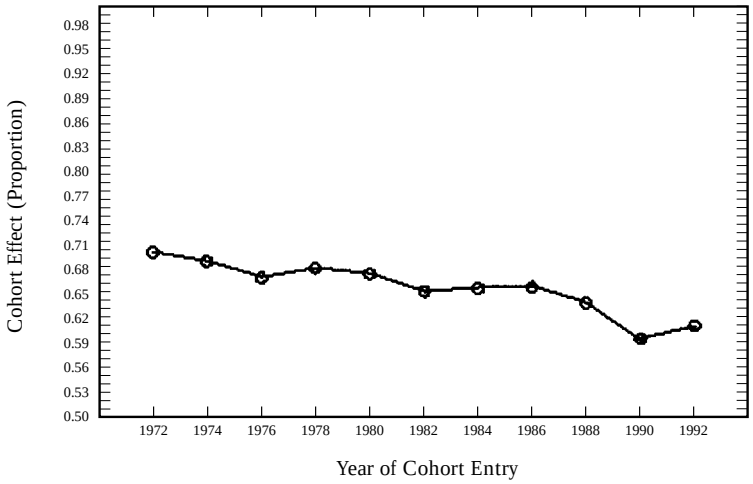


FIGURE 18d

COHORT EFFECT FOR PROPORTION OF FULL-YEAR/FULL-TIME WORKERS, MALES, HIGH EDUCATION, 1972-1992

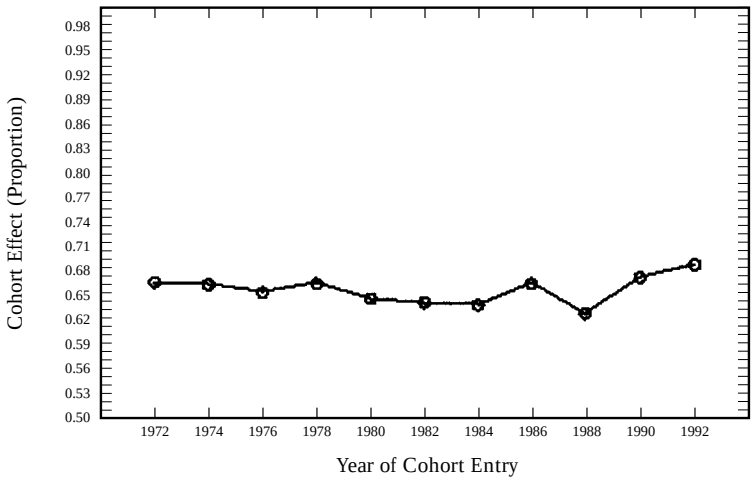


FIGURE 19a

COHORT EFFECT FOR AVERAGE JOB TENURE, FEMALES, LOW EDUCATION, 1972-1992

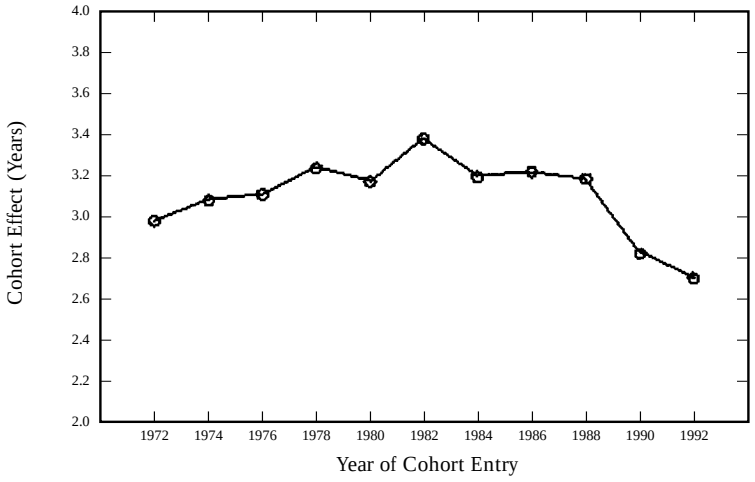


FIGURE 19b

COHORT EFFECT FOR AVERAGE JOB TENURE, FEMALES, HIGH EDUCATION, 1972-1992

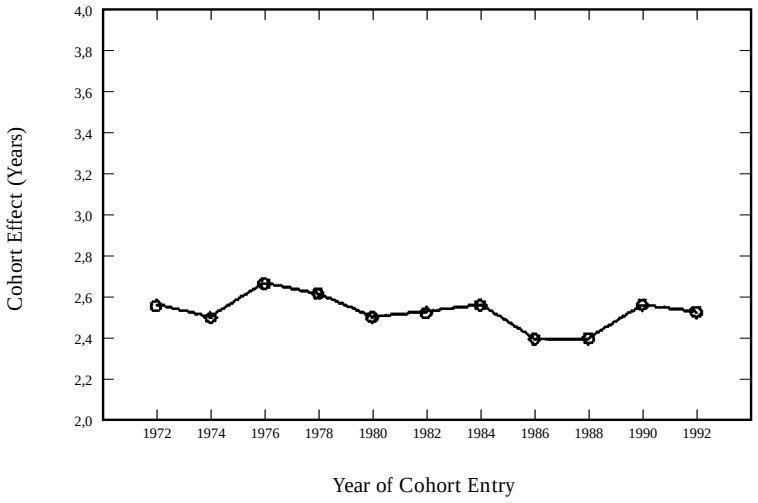


FIGURE 19c

COHORT EFFECT FOR AVERAGE JOB TENURE, MALES, LOW EDUCATION, 1972-1992

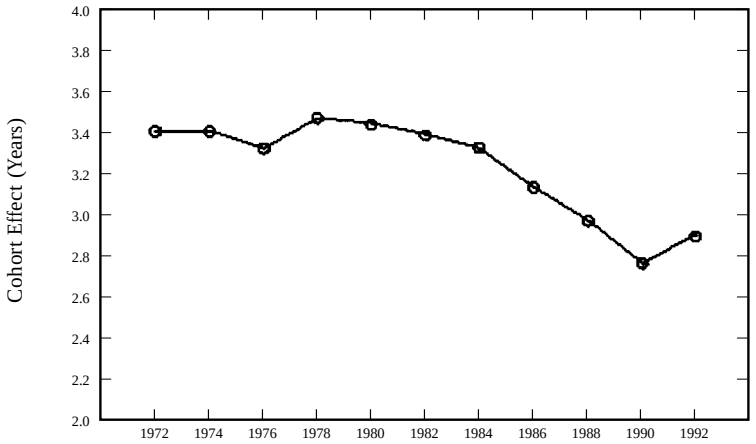
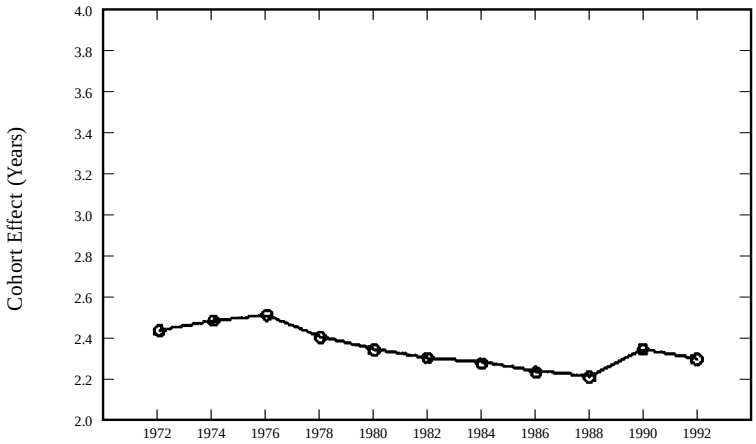


FIGURE 19d

COHORT EFFECT FOR AVERAGE JOB TENURE, MALES, HIGH EDUCATION, 1972-1992



A more direct attempt to measure technological change impacst will depend crucially on the definition of technological change. In the broadest sense, we can define an economy's technology to include not only the technical specifications embodied in physical capital but also work arrangements, institutions, etc. Such a broad definition fits with treating technological change impacts as the residual in an empirical analysis, but it provides the analyst with little of value for understanding the source of trends. Authors who have attempted to provide a more focussed definition of technological change have tended to concentrate on the computer revolution as the source of change in the 1980s and 1990s.

It would obviously be desirable to have a unified explanation of all recent changes in the labour market. Three main theories seem potentially reasonable, though none appears to us to provide a complete explanation for all or even most of the patterns discussed in the first section. The two most common interpretations in the existing literature revolve around the idea that what we are observing is the outcome of a shift in demand, and particularly a shift in demand favouring more skilled workers. The basis for this claim comes from what is sometimes called the "Econ 1" test: both earnings and employment outcomes have worsened for less skilled compared with more skilled workers. In a simple demand-and-supply framework, such a common movement in both price and quantity results only from a demand shift. The two main explanations differ in their identification of the cause of the relative shift: according to one, it is a "skilled-biased" technological change, while according to the other it is increased trade-related competition from low-wage countries. Whatever the underlying cause, the outcomes are mainly in terms of changes in employment as opposed to changes in hourly wages. The limited response of wages is potentially due to institutional rigidities as well as labour supply responses in the form of prolonged education. In particular, the large increase in the supply of educated workers helps explain why there has not been substantial wage increases for highly educated workers in response to favourable demand conditions.

A third possible explanation for observed changes over the last 25 years focuses on the substantial increase in the labour market attachment of women. This additional transformation of society provides the basis for understanding the divergent pattern of outcomes by gender. In fact, for the female labour market, the effects of changes in attachment appear to dominate any effects resulting from changes in skills-related demand patterns. The dominant pattern that emerges for women, once cyclical effects are disregarded, is mainly one of rather successful integration.

LOOKING FORWARD

WE TURN NOW TO THE TASK OF USING THE INFORMATION presented earlier in order to project into the future. We do this in two stages. In the first stage, we discuss predictions for the short run of about five years. These are short-term predictions of what we feel are the dominant trends in the labour market, and we believe that the predictions are plausible under a variety of scenarios and do not depend heavily on the actual underlying cause of change. Predicting further into the future requires assumptions about the underlying causes of the observed trends and how individuals are likely to adjust. Unfortunately, there is no clear consensus on the underlying causes. Accordingly, in the second stage of our analysis we set out two scenarios for the longer run, based on different hypotheses about the fundamental forces currently driving the economy.

SHORT-TERM PREDICTIONS

ONE OF THE MOST STRIKING THEMES EMPHASIZED in the previous two sections is the collapse of earnings levels for younger workers. Declines in average real earnings are observable in particular for men under the age of 35. The rise in female participation and hours worked over this period partly masks similar patterns for women. As previously noticed, however, if we focus on full-year/full-time workers, the same pattern of decline in real earnings is noticeable for young females. These declines are relatively continuous throughout the 1980s and appear to have accelerated in the 1990s.

To predict whether these earnings declines will continue, we need to separate apparently permanent negative outcomes for more recent labour market entrants from the general effects of the recession of the 1990s. Without such a separation, we are in danger of creating too gloomy a prediction simply because the most recent observations we have to work with occurred during a prolonged recession. In our analysis presented in the third section, we carried out an empirical exercise that permits such a separation for workers aged 25 to 38. In that section we argued that this is an interesting group on which to focus because it represents a crucial period in the life cycle, when we expect individuals to make a transition into a stable, long-term work pattern. If outcomes for this group are poor, predictions for new labour market entrants are indeed grim. We find a continual decline in the earnings levels of successive cohorts of male labour market entrants over the last 15 years, even after holding constant earnings changes associated with the business cycle and movements along a natural life cycle earnings path. For females, cohort effects estimated from average earnings numbers that include zero values for non-workers show the opposite pattern: a continual rise. Once we focus only on full-year/full-time workers, however, females also show a continual drop in cohort-specific earnings levels over time.

One might predict or hope that these sharply negative patterns apply only to the least educated workers. In fact, the decline affects more educated as well as less educated males; the only difference is that it seems to be accelerating for the latter while the former experience a smooth, continual decline. For female full-year/full-time workers, the decline is faster for more educated rather than less educated workers. This situation reflects the fact that in Canada (unlike the United States), there has been no substantial rise in returns to education in the last 15 years.

How would we project these trends into the future? For the least educated workers in particular, we see no evidence in the data to suggest that the earnings trends will slow down. Indeed, as mentioned above, the trends seem to be accelerating. For the more educated there is some slight evidence that the decline might have slowed for the most recent entry cohorts but this may only be a wishful reading of our graphs and certainly has no sound statistical basis. It seems reasonable to predict that real earnings levels will continue to decline for young workers in the short term. Having a higher education level may moderate the decline, but only slightly. Note that this is a discussion of cohort effects, i.e., long-term average earnings levels for a group of workers entering the mature labour market at the same time. If the current poor labour market conditions continue, the predicted declines for future new cohorts will be amplified by negative effects for all workers. If the Canadian labour market recovers from its depressed state, new entrants may generally have higher earnings than did their counterparts in the early 1990s but they will have lower earnings than cohorts at a similar point in the business cycle. Finally, we find no evidence that declines in entry-level earnings for new cohorts will be offset by faster earnings growth in the first part of their career. On the contrary, we find that newer cohorts suffer both in their initial earnings level and through a slower rate of growth of earnings.

The sharp decline in earnings levels across cohorts leads us to question whether there has been a general collapse in the labour market for young workers, showing up in employment outcomes and types of employment relationships, as well as in earnings. In our view, there is a popular notion that the Canadian economy is undergoing a so-called paradigm shift in employment relations. This presumably takes the form of a shift toward more short-term, part-time jobs and more self-employment. We do not find evidence to support such a general shift. If such a shift has occurred, it should show up in the cohort-specific component of the employment rate, job tenure and the proportion of workers who are full-year/full-time in our analysis in the third section. Further, to claim that something as substantial as a paradigm shift has occurred, we believe that one would have to witness significant changes for all types of workers. For low-educated males there are, in fact, substantial negative trends in the cohort effects estimated from employment rates, job tenure and the proportion of workers who are full-year/full-time. This indicates that more recent low-educated male entrants can expect poorer outcomes in these aspects over

the long term than those who entered the mature labour market in the 1970s or 1980s. However, there is no evidence of a significant negative trend in these measures for more educated males, and there are persistent positive trends in several of the measures for females. We do not deny the poor performance in terms of employment outcomes experienced by young workers in the 1990s. The benefit of our analysis is that we can assess whether these difficulties are the result of general problems associated with an economic downturn, the natural high turnover experienced among young workers, or more permanent negative effects for more recent entrants. Our assessment is that, apart from low-educated males, the recent poor performance does not signal permanently poorer outcomes for newer entrants in terms of employability and job stability. Accordingly, our second main short-term prediction is that we do not foresee a paradigm shift in the nature of labour market relations. Note that for males, the implication of our analysis is that there is an important increase in the return to a higher education in Canada; however, this increased return comes in terms not of earnings but instead improved prospects for stable work arrangements.

In light of the trends facing new cohorts (i.e., reduced earnings propects for all and decreased prospects for traditional employment relationships for lower-educated males), how may youth be expected to behave? First and most obvious, we believe that the recent increases in educational enrollment are likely to continue. In the past, the enrollment level has performed like a ratchet, with intermittent sharp increases followed by periods of slow growth or relative stability but never by decreases. This one-way movement suggests a process in which increases in enrollment "up the ante" in the labour market and all future generations are forced to meet that new, higher level. There is no reason to suppose that current increases in enrollment will be any different; and given our predictions for other trends in the low-educated labour market, there is every reason to believe that the increases will continue. Accordingly, we expect continual pressure for postsecondary education to expand and especially to maintain accessibility given the more limited resources of new cohorts. Second, there will be further postponement of family formation for a large segment of the youth population as a result of reduced earning capacity. Third, the poor labour market propects for young lower-educated males are likely to limit their social integration, with the possibility of significant negative side-effects such as increased crime rates and homelessness for this segment of the population. The increasingly poor outcomes for this group, plus continued polarization in earnings and employment, are also likely to generate increased social tensions between generations as well as within younger generations in the near future.

LONGER-TERM PREDICTIONS

TO MAKE LONG-TERM PREDICTIONS, it would obviously be desirable to have a unified explanation of the recent changes in the labour market. Three main theories seem potentially reasonable, though none seems to provide a complete explanation for all of the patterns discussed in the second and third sections. The two most common interpretations revolve around the idea that we are observing a shift in labour demand, and in particular a shift in demand that favours more skilled workers. The basis for this assertion comes from a very simple supply-and-demand interpretation. Since both earnings and employment outcomes have worsened for less skilled relative to more skilled workers, in a demand-and-supply framework one can explain such a common movement as the result of a demand shift. The two main causes given for this demand shift are (1) skill-biased technological change and (2) increased globalization of markets and, especially, increased competition from low-wage countries.

A third possible explanation for the observed changes over the last 25 years focusses on the substantial increase in the labour market attachment of women combined with the passage of the baby boom generation through the age structure. This explanation of change is based on increased labour supply and its associated general equilibrium repercussions. The attraction of the explanation is that it potentially offers a unified approach for understanding the extremely gender-divergent pattern of outcomes. In fact, for the female labour market, the effects of changes in attachment appear to outweigh any effects resulting from changes in skills-related demand patterns. The dominant pattern that emerges for women, once cyclical effects are eliminated, is mainly one of rather successful integration.

Which of these scenarios appears most relevant? In our view, there is very little evidence in the Canadian data supporting the skills-biased technological change explanation. Studies that emphasize this explanation use it to predict that there should be an increase in returns in terms of earnings to skills of all kinds: education- and experience-related skills as well as skills that are not observable in a standard data set. We find almost no evidence of increased earnings differentials across education groups over time. While we find some evidence of increased earnings differentials across very broad age groups (i.e, workers over age 35 versus youths), when following a particular cohort we find no evidence of increased returns to experience. This again reflects the advantage of our empirical approach of separating out cohort, age and time effects. It is true that there are increasing differentials between older and younger workers at particular times but the increase is due to declining cohort effects, not increasing age profiles. For skill-biased technological change to explain the patterns we observe, one would have to argue that the new technologies favour workers who entered the mature labour market in the early 1980s, and that newer entrants cannot reach the more favoured status as they gain experience.

This is clearly not what is meant by skill-biased technical change as discussed in the existing literature. Further, the technical change is often attributed to the impact of the computer revolution. It seems particularly dubious to claim that older cohorts have an advantage over new cohorts in their ability to adapt to and use computer technology. Finally, the point at which trends in inequality and changes in the earnings structure begin in our estimates is the early 1980s. Again, this seems a particularly bad fit with the computer revolution.[7] Hence, we choose to dismiss this explanation and concentrate on contrasting the predictions implied by the two alternative explanations.

If we interpret recent changes as mainly the result of increased international competition in both capital and labour markets, it appears reasonable to predict that the trends defined in the second and third sections will continue and possibly even accelerate – largely because globalization shows no sign of abating within the next 10 to 15 years. The opening up of China and the rebuilding of Eastern Europe are in themselves sufficiently important to ensure that it continues. In this case, our predictions for the longer term are very similar to those we discussed for the short term. Ongoing competition with low-skilled overseas labour will continue to generate poor outcomes for young and low-skilled Canadian workers, showing up in continued absolute declines in real earnings for this group and continued deterioration of employment outcomes for the least skilled. We again foresee high demand for postsecondary education as the only means for youth to slow down their relative decline. The net outcome will be increased polarization of earnings and of total income as the returns to capital, and more particularly to firm ownership, are bid up by the international competition. This polarization is likely to create enormous tensions between generations and social classes, and to place new demands on the Canadian redistribution system. In brief, under this scenario Canada will probably have an income distribution more like that of the United States within 10 to 15 years.

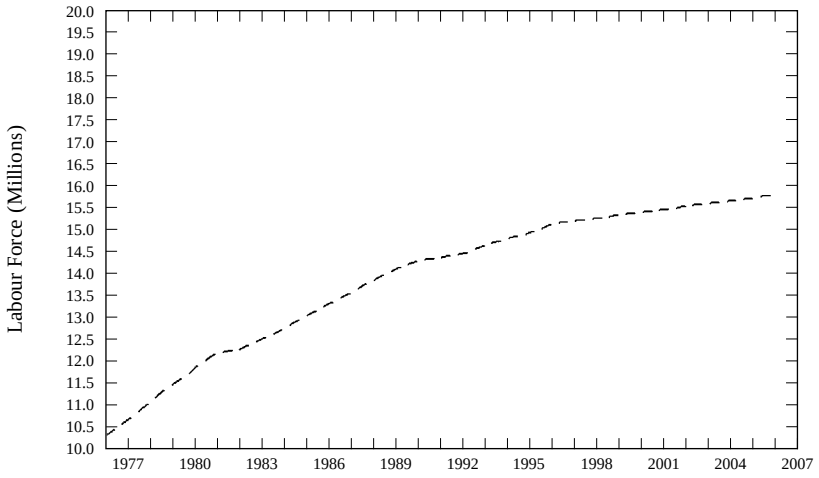
The second scenario identifies a different main determinant of the pattern observed for earnings and employment over the last 15 years: the large labour force increases generated by the entry of the mass of the baby boom into labour force ages and also by the strong rise in female participation. The increase in the labour force could have general equilibrium effects leading to increased labour demand and making possible the strong upward trends in employment rates among females. At the same time, the new entrants compete most directly with low-skilled males and could cause the relatively poor outcomes for that group, playing the same role as competition from overseas unskilled labour in the first scenario. It should be noted that, in general, a supply-based explanation such as this one is rejected in the existing literature because we observe both declining earnings and employment. While this holds true for unskilled males, for unskilled females we find a pattern of declining earnings but increasing employment. It should also be noted that more educated males and females in Canada face a pattern of decreases in earnings across successive

cohorts, along with stable or increasing employment. This finding fits with a supply shock varying by entry cohort. Indeed, under the most generous interpretation of our estimates, the decline in earnings levels for educated males has stopped for the three most recent entry cohorts, coinciding with the educated cohorts for whom the upward trend in employment has stopped. In contrast, employment rates for unskilled females continue to rise across recent entry cohorts, and the earnings levels of unskilled males continue to fall for recent cohorts. All of these findings fit well with results in Fortin and Lemieux (1996) for the United States; they note that increased earnings inequality is evident in the male labour market but that once male and female outcomes are combined, the often-studied trend toward more inequality is not so evident.

While this second scenario shares with the first the assumption that large increases in competition among unskilled labourers is the source of poor outcomes for unskilled males, there is an essential difference in the level of optimism associated with predictions generated from each scenario. Predictions from the first scenario are pessimistic because there is no reason to believe that the competition from overseas will abate. In contrast, we see evidence that the upward trend in female participation is slowing or stalling. In particular, participation rates for young females are already very close to those of males and therefore are unlikely to continue increasing substantially. If this is true, we

FIGURE 20

LABOUR FORCE, AGE 15 TO 64, 1976-2006



would predict that earnings for new cohorts are likely to stop falling relative to older cohorts, and that employment prospects for younger less-educated males may improve. This shift in turn could indicate a slowing increase in school enrollment rates and in delayed family formation. We do not, however, predict an absolute turnaround and recovery in the fortunes of new entrants, to the extent of a return to the levels of cohorts who entered in the early 1970s and 1980s. Society thus must still adjust to a situation with more inequality, delayed family formation and higher school enrollment than in the 1970s and early 1980s – even though many of our current redistributive and labour market institutions were created under quite different conditions in those earlier times. Nonetheless, such a challenge seems much easier to tackle than one of continually increasing polarization.

The truth probably is a combination of the two scenarios. Canadian workers will continue to be affected by competition from unskilled labour overseas, but domestic sources of increased supply will dry up. If that is true, then (to the extent that foreign competition is focussed on the least skilled) employment and earnings outcomes for more educated males and females will be more favourable, or at least no less favourable, compared with what was observed in the 1990s. Less-educated males, and perhaps less-educated females, will continue to face deterioration in their outcomes. The results could be continuing polarization across education groups and continuing increases in demand for education.

CONCLUSION

IN OUR ANALYSIS OF THE LABOUR MARKET, we have attempted to provide a useful summary of past trends and a discussion of how to project the trends into the next decade or more. We find five defining features of changes in the labour market over the last 15 years:

- First, there have been strong and persistent declines in earnings potential for virtually all types of workers. These trends are masked by increases in employment and hours worked among females; but once one focuses on full-year/full-time workers, the declines are evident for females as well. There is no evidence of the type of sharp increase in returns to education visible in the United States in this period.
- Second, the declines are partly due to a depressed labour market in the 1990s but they also reflect a relative decline in longer-term outcomes for recent labour market entrants. New entrants in the 1990s face a 20 percent to 30 percent lower level of real earnings over their lifetime than individuals who entered the mature (i.e., over age 25) labour force in the 1970s.
- Third, up to 1989 there has been a prolonged increase in participation and employment rates among females over the age of 25, but those trends have stalled in the 1990s.
- Fourth, employment outcomes for men differ sharply by education level: for the least educated, employment rates, average job duration and the proportion working full-year/full-time fall across successive entry cohorts, but for the more educated they stay constant. Given the lack of pervasive movement toward more unstable work patterns across age, education and gender groups, we regard as overstated the claims that there has been, or will soon be, a paradigm shift in the labour market.
- Fifth, perhaps in response to some of the above changes, there have been very substantial increases in school enrollment among youths plus delays in family formation. Overall, we derive a very heterogeneous picture of the last 15 years. Youths have suffered declines in real earnings. Young males have, in addition, suffered strong negative trends in employment outcomes. More education has helped young males escape negative employment outcomes but has not alleviated the negative real earnings trend. For females, the picture is dominated by the successful integration of large numbers of new entrants into the labour force.

In forming predictions, we divide our analysis into short- and longer-run forecasts. In the short run, we see continued negative trends in earnings for all young workers and in employment for the least skilled males. The increase in school enrollment levels will probably also continue. On the other hand, the long historic rise in female participation and employment rates appears to have stalled, especially for more educated females. In the longer run, it is necessary to explain the underlying causes of existing trends and how those causes will themselves change in order to make useful predictions. To this end we discuss two main theories. According to the first, increased competition from foreign unskilled labour has driven the trends, especially the negative trends for unskilled males. If that scenario is true, we predict a continuation of the trends we forecast for the short run, because there is no reason to believe there will be any abatement in overseas competition. The second scenario attributes observed trends to substantial increases in the labour force generated by the ageing of the baby boom and the increase in female participation rates over the last 15 years. If this scenario is true, many of the observed trends may moderate or stop since the baby boom entry into the labour force has stopped and we believe the female participation rate may have reached a plateau. With less competition from new labour market entrants, unskilled males may see an end to the substantial fall in their earnings and employment outcomes. We view this as a more optimistic scenario for the future. The truth is probably a combination of the two, with unskilled labour in Canada continuing to be affected by overseas competition but being relieved of the competition from increasing domestic sources of labour supply.

NOTES

1 Figures 1 through 3 are based on data from CANSIM.

2 The variance of weekly hours actually decreased for women, reflecting the fact that more part-time workers worked more hours.

3 The gender mix of university students has also changed. In particular, by 1994 the graduating class was composed of four women for every three men (see *Education Quarterly Review*, spring 1996).

4 Our calculation of inactivity rates is derived from the Survey of Consumer Finances.

5 For related work on cohorts aged 25 to 34, see Susan Crompton, "Employment prospects for high school graduates," in *Education Quarterly Review*, Vol. 3, No. 1 (spring 1996).

6 More precisely, we modified the previous specification to include an interaction term between age and cohort in order to allow the slope of the age-earnings relationship to change in a linear fashion over time. To estimate this effect as precisely as possible, we also restricted the cohort-level effects to be a quadratic function of cohort time.

7 In the broadest sense, an economy's technology can be defined to include not only the technical specifications embodied in physical capital but also work arrangements, institutions, etc. Such a broad definition fits with the common empirical practice of treating technological change impacts as the residual after competing measurable effects are addressed, but it provides the analyst with little of value for understanding the source of trends. Using such a broad approach to technology, it is always possible to define technological change in a way that fits the observed data. We focus on what we perceive to be the main, more narrow definition of technical change in the literature: a change, possibly related to the computer revolution, which is complementary to skilled labour and a substitute for unskilled labour.

BIBLIOGRAPHY

Bar-Or, Y., J. Burbidge, L. Magee, and L. Robb. "The Wage Premium to a University Education in Canada, 1971-1991." *Journal of Labor Economics*, 13, 4 (1995): 762-94.

Betcherman, G. and R. Morissette. *Recent Youth Labour Market Experiences in Canada*. Analytical Studies Branch, Statistics Canada, Research Paper No. 63, 1994.

Butlin, G. "Adult Women's Participation Rate at a Standstill." *Perspectives on Labour and Income*. Ottawa: Statistics Canada, (autumn 1995): 30-33.

Card, D. and T. Lemieux. "Multiple Modes of Adjustment: A Comparative Study of Youth in the U.S. and Canada, 1970-1995." 1996, mimeo.

Crompton, S. "The Renaissance of Self-Employment." *Perspectives on Labour and Income*, Ottawa: Statistics Canada, (summer 1993): 22-32.

Fortin, N. and T. Lemieux. "Rank Regressions, Wage Distributions, and the Gender Gap." University of Montreal: Centre de Recherche et Développement en Économique (CRDE), working paper 1096, 1996.

Green, D. A. and W. C. Riddell. "Job Durations in Canada: Is Long Term Employment Declining?" Centre for Research on Economic and Social Policy, University of British Columbia, Discussion Paper DP-40, 1996.

Kaliski, S. F. "Trends, Changes and Imbalances: A Survey of the Canadian Labour Market." in *Work and Pay: The Canadian Labour Market*, ed. W.C. Riddell, pp. 77-140. Toronto: University of Toronto Press, 1985.

Krahn, H. "Non-standard Work on the Rise." *Perspectives on Labour and Income*, Ottawa: Statistics Canada, (winter 1995): pp. 35-42. .

Kuhn, P. and L. Robb. "Unemployment, Skill and Labor Supply: Evidence from Canadian Microdata, 1971-1991." 1995, mimeo.

Morissette, R., J. Myles, and G. Picot. *What is Happening to Earnings Inequality in Canada*. Statistics Canada Analytical Studies Branch, Research Paper No. 60, 1993.

____. "Earnings Polarization in Canada: 1969-1991." in *Labour Market Polarization and Social Policy Reform*, ed. K. Banting and C. Beach, 1996.

Morissette, R. and D. Sunter. *What is Happening to Weekly Hours Worked in Canada?* Statistics Canada Analytical Studies Branch, Research Paper No. 65, 1994.

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Morissette, R. and C. Bérubé. *Longitudinal Aspects of Earnings Inequality in Canada*. Statistics Canada Analytical Studies Branch, Research Paper No. 94, 1996.

Richardson, D. *Changes in the Distribution of Wages in Canada, 1981-1992*. University of British Columbia, Working paper No. 94-22, 1994.

Riddell, W. C. "Work and Pay: The Canadian Labour Market: An Overview." in *Work and Pay: The Canadian Labour Market*, ed. W. C. Riddell, pp. 1-75. Toronto: University of Toronto Press, 1985.

____. "Human Capital Formation in Canada: Recent Developments and Policy Responses." in Keith G. Banting and Charles Beach (eds.), *Labor Market Polarization and Social Policy Reform*, Kingston: School of Policy Studies, Queen's University, 1995.

____. "Sectoral Structural Change and the State of the Labour Market in Canada." Department of Economics, University of British Columbia, 1996, mimeo.

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L. Osberg In preparing for this session, I was told that one of the authors wouldn't be here and the other author would be presenting 2 new papers rather than the one distributed. So it was a little bit difficult to prepare, but I was told that I have lots of time.

So to start off with, I want to first talk about the Betts paper and bring out some themes in it, which I'll try and return to in the end. Because the Betts paper is a discussion of technological change and one of the important points he makes right from the start is that technological change does not in itself create unemployment. Indeed, at the micro level, failure to innovate at a particular firm may cause job loss. What innovation really does is alter the mix of employment by firm and by industry. Technological change doesn't in itself alter the level of aggregate demand for labour. Although technological innovation shifts the structure of employment, it's other factors in the economy that determine whether the aggregate demand for labour is sufficient to reduce unemployment to tolerable levels.

The structure of the Betts paper is to survey the secondary literature on technological change and I just have 2 points that I'd like to bring out of that discussion. Most of my comments are going to be focused on the Beaudry and Green paper. First is that skill throughout the Betts paper is treated as a non-problematic concept. It's in practice measured by years of education or white collar status, but there isn't a direct measure of skill or certainly of the range of skills that are in use out there in the labour force. And a second point I think that is relevant to what I will talk about in a minute, is that there's relatively little attention paid in the paper to innovation in what I'll call soft technology of the organization or motivation of the workforce. Most of it is about innovation in the form of capital equipment or in the form of computer equipment, but not much mention is made about innovation in the way in which work is organized or in the way in which workers are motivated. And since I've done a number of case studies over the years I'd like to just give you a hokey diagram to give you a sort of a picture of the really complex four-cornered problem that I think that a lot of firms actually have to solve in practice.

I think that in, in practice firms are out there facing market demands which have both price and quantity and quality dimensions to them. They are faced at any given time with a certain technologically known set of hard technology options in terms of the physical capital of production, and in terms of the cognitive skills of individual workers, and then they also have the problem of how do they organize those workers and how do they motivate them over time.

What I'm going to say fits very well with a lot of what David said because I think that in practice that only some combinations of these packages are

feasible. If you want team production, by highly motivated teams you have to have some continuity of membership, and some continuity of employment. If you want workers to devote a lot of attention and energy to producing a high quality output then you must recognize that it is hard to get it out of the low wage labour force strategy.

As well, "quality" is in itself one of the most ambiguous of concepts that's out there in the market. Its actual practical definition changes by industry and often by customer. So the really important problem is solving the *customer's* definition of quality in that particular industry. For that you need highly motivated workers. So there are only some particular combinations of strategies are really available to firms. Basically in the end if you want to charge a high price you've got to have customers that think you provide a high quality product and you're going to be restricted in the type of employment strategy you follow.

And for sure you need the cooperation, the active cooperation, of workers. Not the unwilling or forced cooperation, but the active cooperation of your workers at the level of the individual workplace. And that theme of cooperation is going to be what I want to come back to.

I think one of the problems we have sometimes in the policy debate is that a great many of us came out of an economics background and we're kind of taught in graduate school to focus on the quantifiable, which means we tend to focus in on what we can measure fairly easily in terms of hard technology and in terms of price based competition. And the sort of inherently fuzzier notions of organizational and motivational strategies and of quality production is something they do talk about over in the business school, but we don't typically do in economics very much.

Now to turn to the Beaudry and Green paper, which I think complements very, very nicely this whole issue, the first point is this is very high quality work. It's a very high quality analysis, primarily of micro data drawn from surveys of individual households. Individuals in those surveys report their labour market incomes and their own characteristics. And those outcomes of course are the result of some intersection of demand and supply out there in the labour market.

We're talking about a story that essentially comes down to technological change and the nature of technological change. So it is I think an important caution to note that we don't actually have evidence from individual firms and they don't project demand trends, either in the aggregate or at the level of the individual industry. And for those people who are worried about structural change and industrial mix or about the problem perhaps of aggregate demand, there isn't any direct attention to

their concerns. So one question you can ask throughout, as you go through is how much can we learn from one side of the labour market.

I think we can learn a great deal about outcomes. In the patterns paper they tell us a great deal about the nature of outcomes in the Canadian labour market. They follow birth cohorts through successive waves of the Survey of Consumer Finance. Again, the level of education is the measured variable. Again, we don't have direct measures of skill or skills and personally I think that schooling is very important, but it's an input into skill rather than skill necessarily itself.

The strategy is to compare the age earnings profiles of different cohorts and by level of education. And the bottom line conclusion is fairly depressing and dismal, that we have much poorer earnings for recent male labour market entrants relative to the 60's and 70's. -and that there's no evidence of increased returns to experience. There's been a shift down in earnings profiles. And so if Canada is inherently, in some sense a materialistic society, in some important sense it's not delivering the goods to new entrants to the labour market.

Now one of the really important issues is that we want to separate out cyclical phase and structural trend. And the whole focus of the discussion of outcomes is to assess the importance of structural trends. Now I can't help discussing this without noting that the term cyclical has this sort of comforting kind of neutral tone to it. When you talk about "cyclical" it has a "what goes down must come up" kind of optimism. And it's sort of a neutral thing "out there". Nobody did or can do much.

But there is an older vocabulary which referred to "demand deficient" unemployment, which is basically the same thing. And it talked about the impacts of demand deficient unemployment on wages and on the wage structure. And going back a long time, people were worried about inadequacy of jobs. Now of course in talking about "demand deficient" unemployment there was always the recognition that there are some stochastic shocks hitting the economy at any point in time, some coming from trade, some coming from technology, some coming from the climate, some coming from wars, Y2K, whatever. All these stochastic shocks are always hitting the economy. But the phrase "demand deficient unemployment" dares to leave in the possibility that macro-economic policies might also play a role.

I fly up to Ottawa every once in a while and I find that there's a very popular premise in Ottawa that macro-economic policy has been optimal, always and forevermore. And if we think that macro-economic policy has always just been optimal then we're left with these stochastic shocks from

one period to the next and so we can take the structural trend as some sort of moving average of the past, perhaps even the recent past.

Well you know I don't live in Ottawa anymore. Suppose this isn't true. t. Just suppose. In that case it becomes quite important how we control for the cyclical phase of the economy.

In the Beaudry and Green patterns paper the intent is to control for the cyclical phase of the economy by using the U.S. detrended unemployment rate as an instrument for the Canadian unemployment rate. In the paper itself there isn't a direct estimate of anything you could look at as a NAIRU or structural or equilibrium level of unemployment of the Canadian economy.

Now there is this hypothesis floating around that a lot of our experience in the 1990's didn't just happen to us because we had all these little cyclical shocks which hit the economy, but because we had an important macro-economic policy which excessively restricted aggregate demand compared either to U.S. policy or to potential output. And the implication of that I think is that if we use U.S. unemployment as an instrument we won't adequately control for the impacts of demand deficiency on the wage structure in Canada in the 1990's. Mention has already been made of some of the reversals of the trend to increased wage dispersion in the U.S. in recent years.

Low unemployment does matter. It may take a while to filter down through the queue to the really disadvantaged of the labour force, but low unemployment rates do matter a lot. If we do not adequately correct for the level of potential demand deficiency in the economy we're going to be ascribing to structural trends what we should ascribe to made in Canada macro-economic policy.

Now, the most provocative question really is when Beaudry and Green focus on <u>why</u> we have these trends in the Canadian labour market. There's a provocative new and unified explanation of labour markets with very strong policy implications. It turns out that David and I have a little bit of a disagreement about just when and whether and how much the returns to education in Canada may have increased in recent years. I was quite convinced by the Bar-Or study and I believe that what was true in the U.S. of a rising university/high school differential has not been true, at least through the 80's and 90's in Canada. So we'll have to resolve that in some further discussion.

But let's just take it as argued and let's cut right to the bottom line of the Beaudry-Green paper, which is kind of strong. <u>Rising levels of education are bad news for workers</u>. An increase in the percentage of highly

educated causes a decline in the wage of both low and high skilled groups, in their model. In their model the mechanism is induced capital scarcity and I think there's an implication which I'm not particularly fond of myself. It would be rational for the trade union movement to organize a campaign against post-secondary education funding and thereby shift this trend in the percentage of highly educated in the opposite direction and get wages for both low and high skilled workers moving up again. So naturally since I'm not fond of that implication I want to ask a question.

How do I know if this is true? Well, the strategy of the paper is to have an abstract micro model of the labour market and to estimate a reduced form aggregate production function of the Canadian and American economies as a whole. And I think there's one problem, which they recognized in the paper that other micro models may also be consistent with the same aggregate production function. So we don't in a sense discriminate between a number of possible alternative hypotheses and there are a bunch out there - from institutional change to matching in the labour market, to these substantial change in wage norms or the political economy of bargaining.

Problem number 2 is that there isn't any direct presentation of evidence on the realism of the traditional or modern technology story.

But suppose they're right. Just suppose that this doesn't matter and just suppose they're right and that workers do lose from more education in the labour force as a whole and from the implementation of modern techniques. Why should workers cooperate in this process?

Now, this isn't the first conference in Ottawa I've been to on visions of Canada after the year 2000. In fact about 11 years ago the Economic Council of Canada had a conference called Perspectives 2000 and I see a lot of the same faces here as there were then. Now in that conference there was a broader agenda. There were papers on challenges for industrial relations. There was a paper on distributional issues and the future of the welfare state. There was a paper on consensus and economic performance. And it was clear in that conference's discussion that maintenance of a sense of equity in the Canadian polity and finding some way of reducing or mitigating potential conflicts in Canadian society were an important theme for Canada to examine as we moved into the next millennium.

Now the Economic Council of Canada isn't with us anymore and Industry Canada has a narrower mandate. The focus of the agenda has been business and government and their decisions. So I think that in the agenda setting exercise a number of crucial issues have simply fallen off the table.

In the current agenda of 1999, labour cooperation in implementing technical change is simply assumed, not examined. But I would go back to the micro evidence and to macro evidence to question whether taking labour for granted is likely to be a successful strategy in the longer term.

In the 1999 conference, as opposed to the 1988 conference, and with the exception of Harvey Lazar's intervention right at the first, trends in economic inequality and economic insecurity have not been on the agenda. Is it really true that they are irrelevant to the attainment of higher living standards for Canadians either as ends in themselves as an important part of living standards or as fundamental determinants of productivity and rising per capita incomes?

I think that there's a need for a broader agenda that pays much more attention to the maintenance of equity and the mitigation of conflict if we are actually to have the cooperation that we need as we head into the new millennium.

Thanks very much.

APPLAUSE

Public Perceptions of Canadians on Economic Issues:
From Reaganomics to "Humanomics"

by
Frank L. Graves, President
Ekos Research Associates, Inc.

Canada in the 21st Century: A Time for a Vision
Luncheon Address, Chateau Laurier, Ottawa
Centre for the Study Living Standards
September 17, 1999

What I want to do today is review what Canadians are thinking about the economy. In particular, I would like to look at this question of, whether there are any views out there on the idea of a new vision for the country that involves the economy and what might Canadians think about the topic. What would a vision for the 21st century look like if you were to go to the public and ask them how they would construct it? How prominently would the economy figure in Canadians' thinking about a vision for the 21st century? How would they balance their perceptions of the various sources of threat and opportunity out there? What areas of consensus might exist? What areas of division might exist? Furthermore, I think there is a growing reluctance from within the public to leave these questions to others, i.e., to the realm of economists or politicians or experts. The Canadian public today, like the citizens in most other advanced western countries, is much less deferential than they were in the past — much less willing to see these types of decisions made on their behalf, by others, behind closed doors. And they have very strong and specific views about issues surrounding whether or not, the country needs a new vision and how the economy should play in that vision.

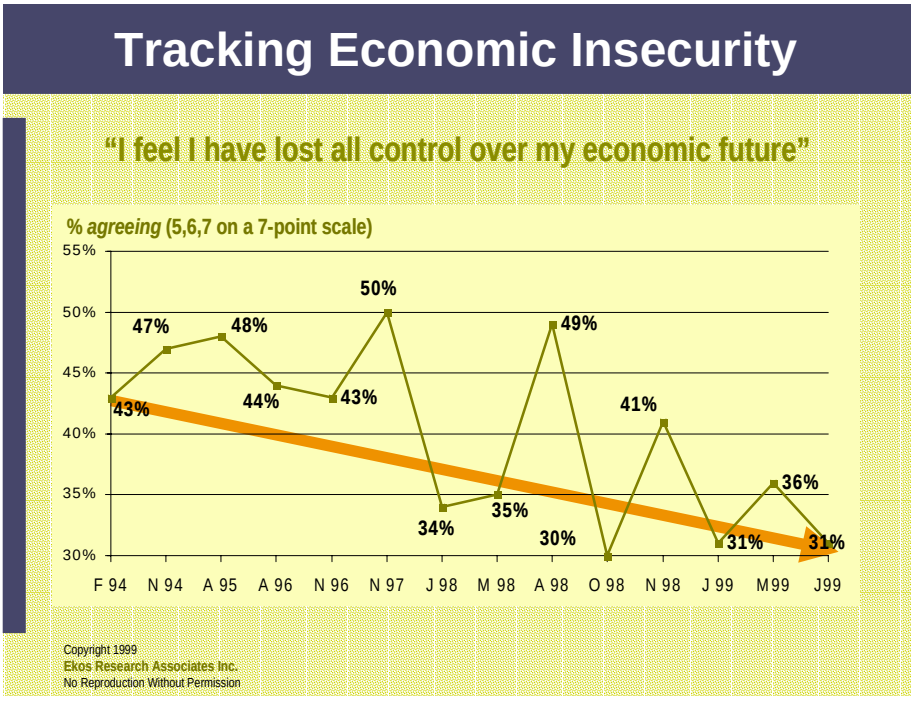
I would like to talk a little bit about how Canadians' perceptions of the economic landscape have changed and where they are right now; with a particular accent on what I think is a very interesting phenomenon. Substantial levels of confidence and optimism have emerged in the late part of this decade that stand in stark counterpoint to the high levels of insecurity and anxiety that gripped most Canadians at the beginning of the decade, and persisted for a large part of this decade. I want to talk as well about how Canadian attitudes to the economy have changed in a number of key areas, such as attitudes to globalization, attitudes to technology and more generally, the role of institutions and, in particular, the role of the state in linking expectations about the economy with the needs of citizens. I would like to talk about how Canadians' priorities for government have shifted or stayed the same.

There is a broad-based shift in expectations about the role of government, which we characterize as a move from approval of "Reaganomics" to what we call "humanomics". There is an emerging desire to see a new practical vision emerge after a period where Canadians have said, "We are pretty comfortable that at least some of our key areas of concern, with respect to issues like public finances, are now back in order". It is not as if Canadians are saying that everything's terrific, but we don't have the IMF telling us they are going to shut us down next week or the Wall Street Journal telling us that we are a Banana Republic. There has been a broad sigh of relief on that front, and now Canadians feel perhaps that the table is set for doing something a little more ambitious, yet

quite different, from what would have constituted a vision for the country say 20 years or even a decade ago.

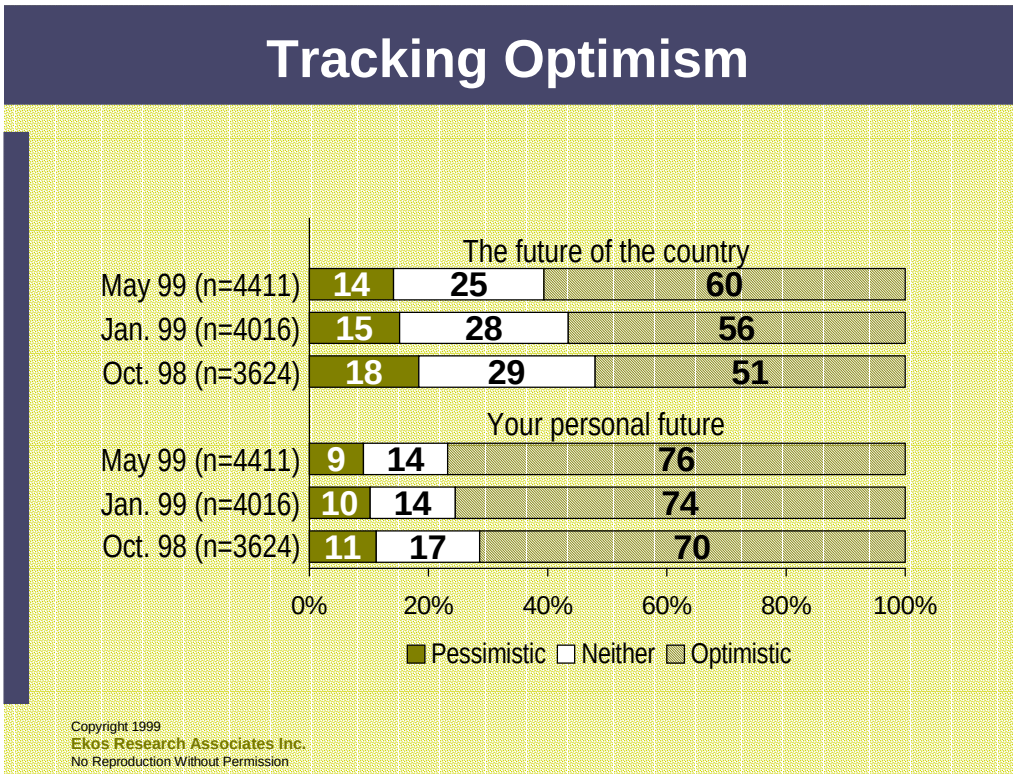
On that note I would like to talk a little bit about what Canadians are telling us about productivity and whether they think that's a worthwhile topic for governments and others to be looking at. How they understand the concept and whether, properly framed, it could constitute a new national agenda. There will be a package of these materials to share with you later so I'm going to describe some of these key changes of focus.

I want to first talk a little bit about the issues of insecurity and optimism. At the early part of the decade, we were finding that roughly half of Canadians were agreeing with the proposition that they'd lost all control of their economic future, which is a rather stark proposition. In fact only about 1 in 5 Canadians disagreed with that proposition. What we found as we continued to measure that question through the decade was that it fluctuated quite wildly although we have seen a steady pattern of decline such that in the last 12 months, it had dropped to just over 30% of Canadians actually saying that they felt that broad sense of economic anxiety.

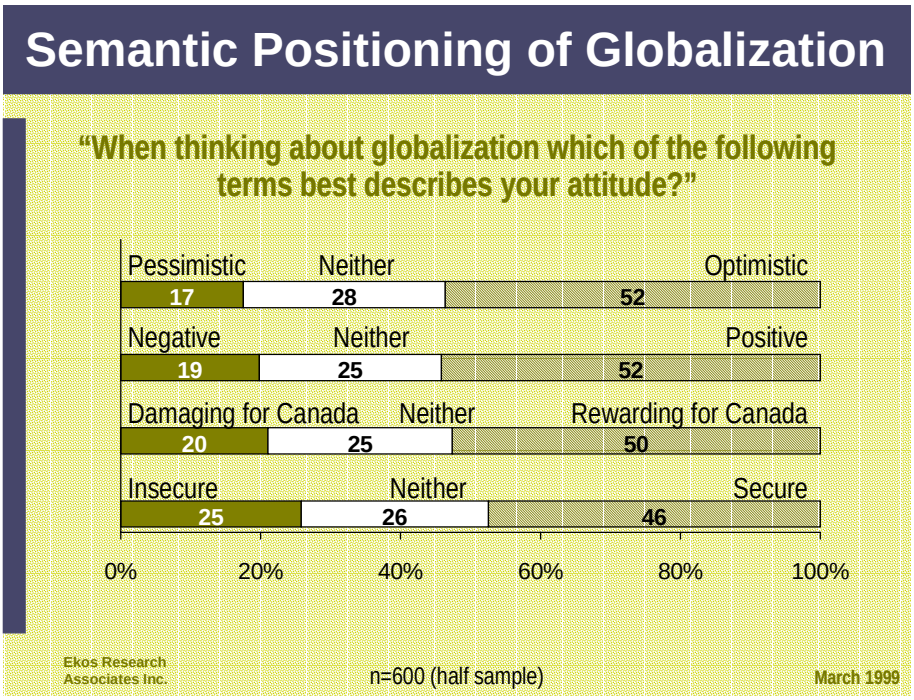


What's interesting about this is that it is been linked to a shift in attitudes to institutions. What drove a lot of the high levels of mistrust and anger at institutions in general and governments in particular was this sense that the economy was this frightening place, which even with my own best efforts couldn't guarantee a place for my children and me in the future. As that sense of visceral anxiety has become less palpable for Canadians, it has also produced a corresponding return in confidence, both in their own situations, but also more willingness to see governments return to some sort of an active agenda. Again, albeit a very different kind of active agenda than what we saw in the past.

We find that Canadians are now, by a surprisingly large margin, telling us that they are feeling quite optimistic about their personal future. In our most recent sounding over the summer, we found less than 10% of Canadians said that they were pessimistic about their personal future, whereas 76% told us that they felt optimistic. This was also linked to a stronger sense that the country was going to actually move forward and improve in the future.

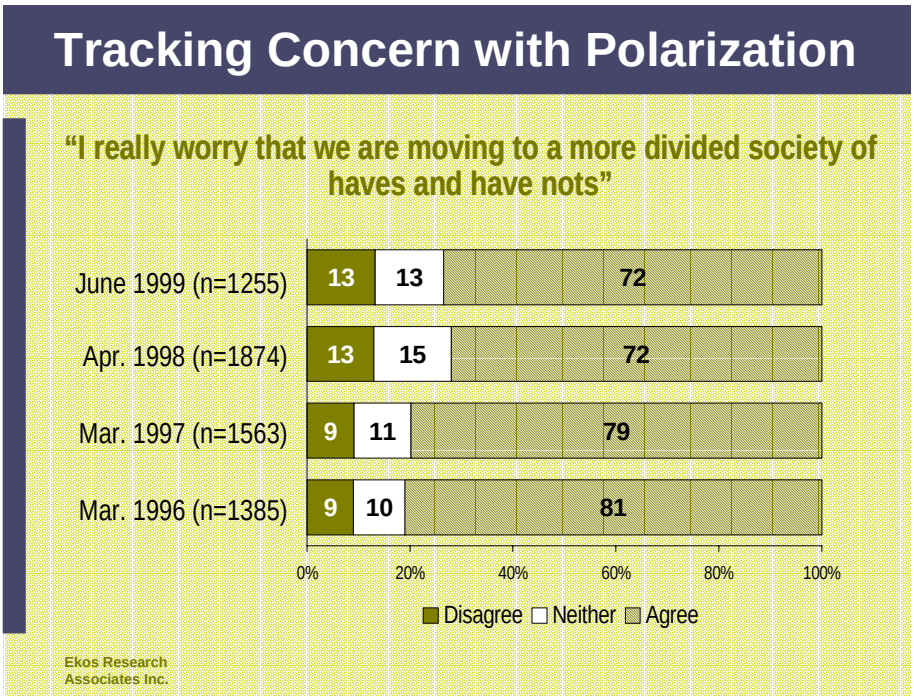


Another area that has seen a fairly striking shift in Canadians' attitude as a whole, the whole question of globalization. As we reached the conclusion of the last decade you would have found Canadian society badly divided in debates about trade liberalization, NAFTA and so forth, with the majority of Canadians being offside. As we approach the close of this decade you see a full qualitative flip. By a margin of over 2 to 1 Canadian support further trade liberalization and believe that the impacts of globalization are largely positive for them and for the country.



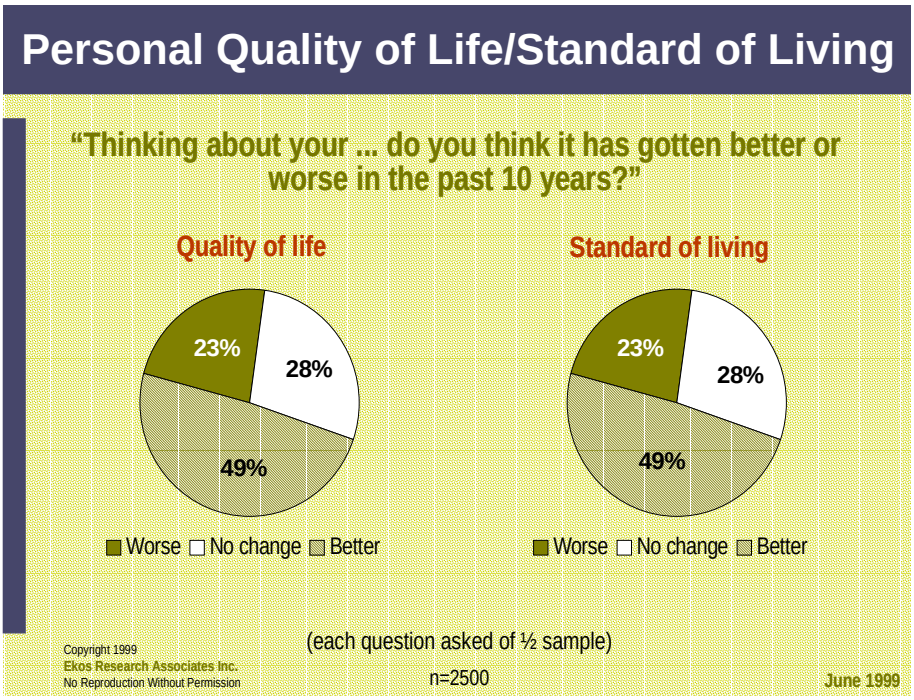
When we asked them to position the concept of globalization and to say, for example, does it make you feel optimistic or pessimistic, by a margin of 3 to 1 Canadians say it generates a sense of optimism. It is also seen as being more rewarding for Canadians, making them feel more secure than insecure. I see real change in attitudes to globalization and a willingness to see ourselves in much more positive sense, about our position in the global economy.

At the same time we have seen rising levels of concern with polarization. Canadians are telling us by about 72% agree and only 13% disagree, they are really worried that we are moving to a more divided society of haves and have nots.



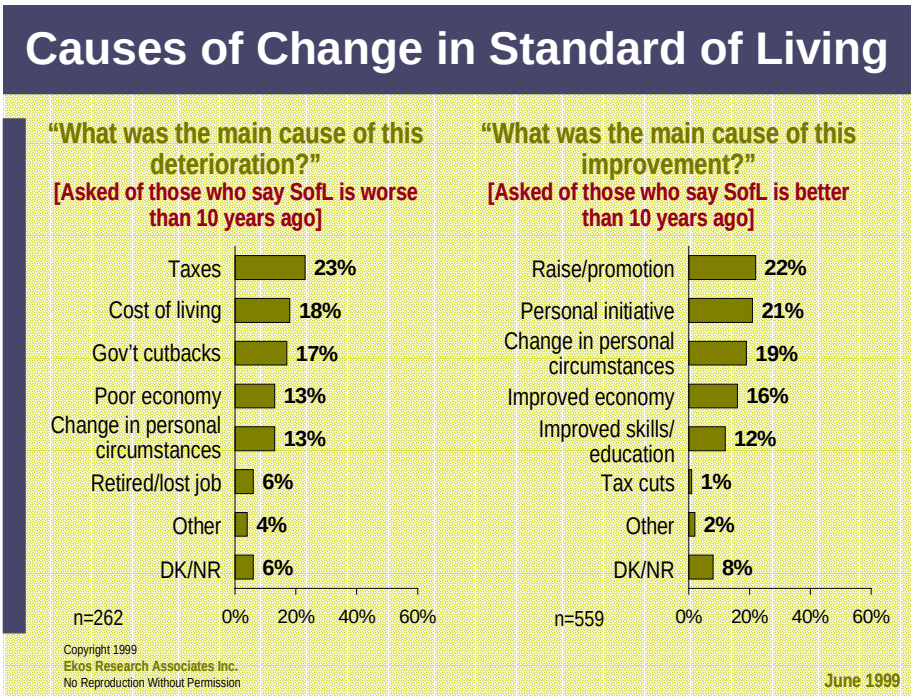
They link this to growing levels of "individualism" and to growing levels of "Americanization", which they tell us by again a margin of about 2 to 1, they see as negative trends. What we have seen more recently is a slight decline in the incidence of people who say they are worried about polarization and when we discuss this in focus groups with Canadians, we see a growing sense of resignation, even despair; perhaps Canadians are becoming inured to the impacts of polarization and believe that it may just be one of the inevitable consequences of the bargain that we struck to manage this transition to a new knowledge-based, global economy.

Turning to the issues of standard of living and quality of life, we asked Canadians to tell us whether they thought their standard of living had improved or declined over the last 10 years. We found that about 1 in 4 Canadians said that it had gotten worse, while almost 50% of Canadians said that their standard of living had actually gotten better.



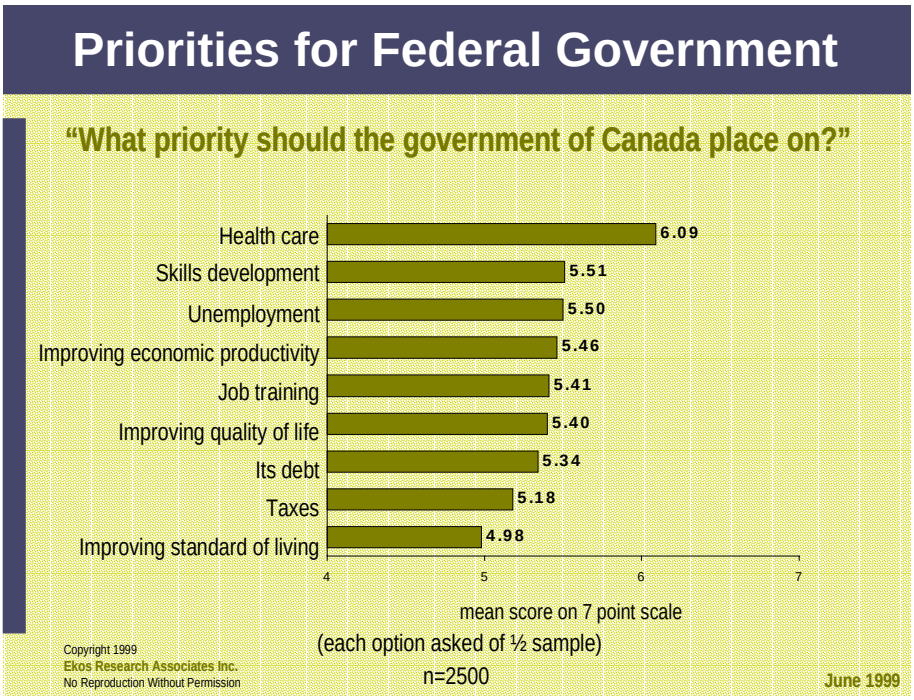
What is peculiar here is that when we asked them "did your income actually improve or get worse", a plurality of Canadians said that their income had actually gotten a little bit worse. This seems to indicate that respondents draw a distinction between "standard of living" and "income". Perhaps this is related to the fact that they see technology and other factors as having produced better lifestyles (i.e., that their actual standard of living has improved), even as their actual incomes have declined somewhat. Most Canadians expect that their income and standard of living will be decisively better in the future.

Interestingly enough, when you probe and ask Canadians, "why do you think your standard of living might have improved," they tend to attribute improvements to personal heroism or acts of arduous effort in a period of tough times. On the other hand, for those Canadians who say that their standard of living has gotten worse, which is roughly 1 in 4 Canadians, they tend to attribute this largely to governments who, they say, have authored their misfortune.



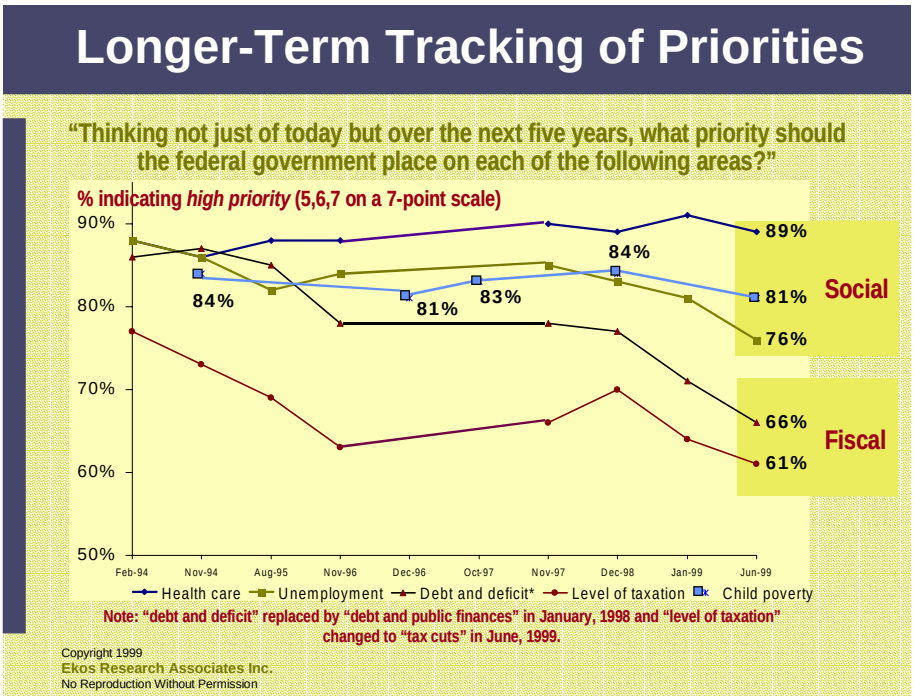
This puts governments in the somewhat uncomfortable position of not being able to appropriate any of the credit for personal progress, yet still being seen as the author of personal misfortune.

Now, if we turn to the questions of what priorities Canadians see for government, particularly as they apply to some of the economic areas, the top priorities for Canadians revolve around human investment themes: health, education, kids, jobs and so forth. However, when we put topics such as productivity on the list of priorities for the federal government, along with issues like unemployment and job training we find that it actually strikes a pretty strong chord with Canadians.

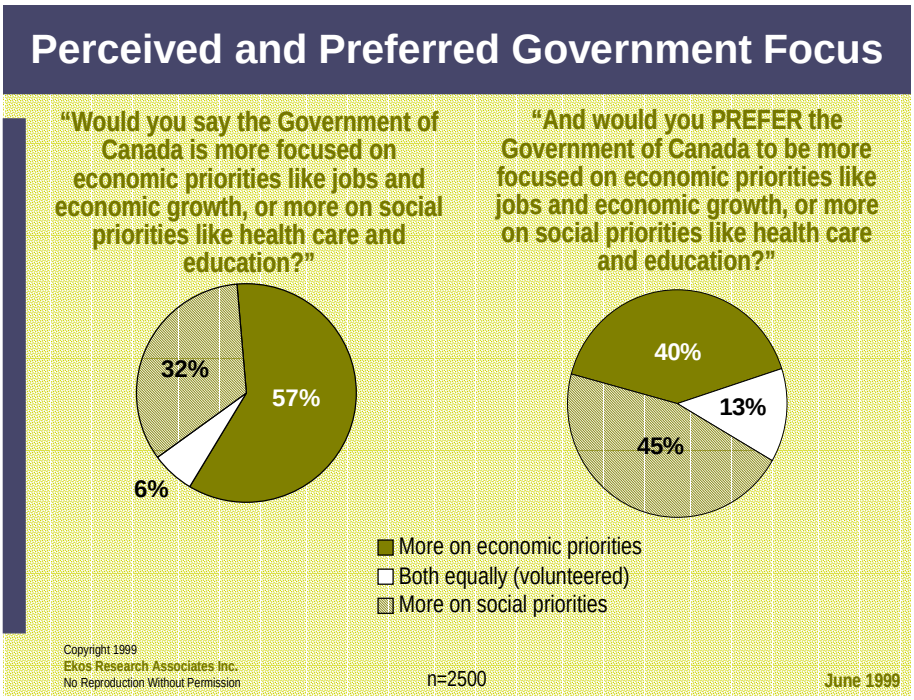


About 75 to 80% of Canadians tell us that they think that improving economic productivity is an important priority for the federal government and that number has actually risen slightly over the last couple of years. That puts it in the same range as for example issues like unemployment, which has actually come down as a priority for the public as they recognize the labour markets are performing better. It puts productivity as an issue, significantly behind the roughly 90% who identify health care as a top priority, but very much in the range of penultimate concerns, which outstrip, by a significant margin, concerns with issues like taxation, the debt and national unity. So it is an important priority for Canadians.

If we were to track Canadians' priorities over the decade you would see some fairly interesting trends.



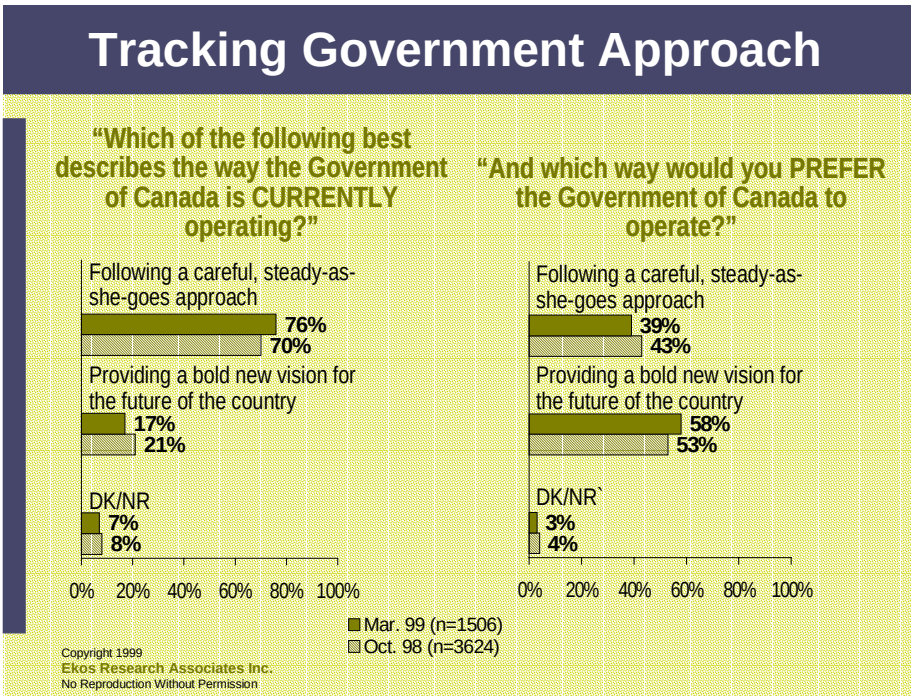
At the beginning, not at the absolute beginning of the decade, but let us say in 1993, when the current government first took office, we found three issues were virtually tied in importance as the top issues for Canadians: health care, jobs and public finances (debt and deficit). At that time, around 85 to 90% of Canadians were saying these issues were top priorities. About the same time, we found about 75% of Canadians telling us the level of taxation was an important priority; not insignificant, but certainly well behind the top three. In tracking these issues over time (while asking the questions in exactly the same way), we have found that health care actually rose through this period to become a dominant priority, reaching about 90%. Issues like jobs are still an important priority at 76%. The issue of deficit and debt, which was running at close to 85 to 90%, actually dropped down to about 66%, as Canadians said, "Oh well at least we are now not in the same kind of vicious mess that we were in the middle part of this decade". The other trend that I think is quite revealing is concerns with the level of taxation. Contrary to the claims that there is an incipient tax revolt out there and that tax rage is rife, as a priority issue for Canadians, concern with taxation has actually *declined* to 61%. It is not that most Canadians, in fact virtually all Canadians, won't tell you my taxes are too high and I would like immediate tax relief. It is just that when this issue is placed in hard tradeoffs with some of the other priorities such as health and education, most do not see tax reduction or tax relief as having the same level of urgency. In fact, most Canadians more or less agree with the current pace and balancing of the federal government on this particular topic.



An interesting related phenomenon is the way Canadians now perceive government's response to areas that are termed economic priorities, such as jobs and growth, and to more social priorities like health care and education. By a margin of about 2 to 1, Canadians believe that the government has been focused more on the economy (60% to 30%). When you ask them, however, how they would *like* to see the government focus itself, we find about 45% of them saying they would actually prefer that the government were to focus on the social priorities rather than the economic ones.

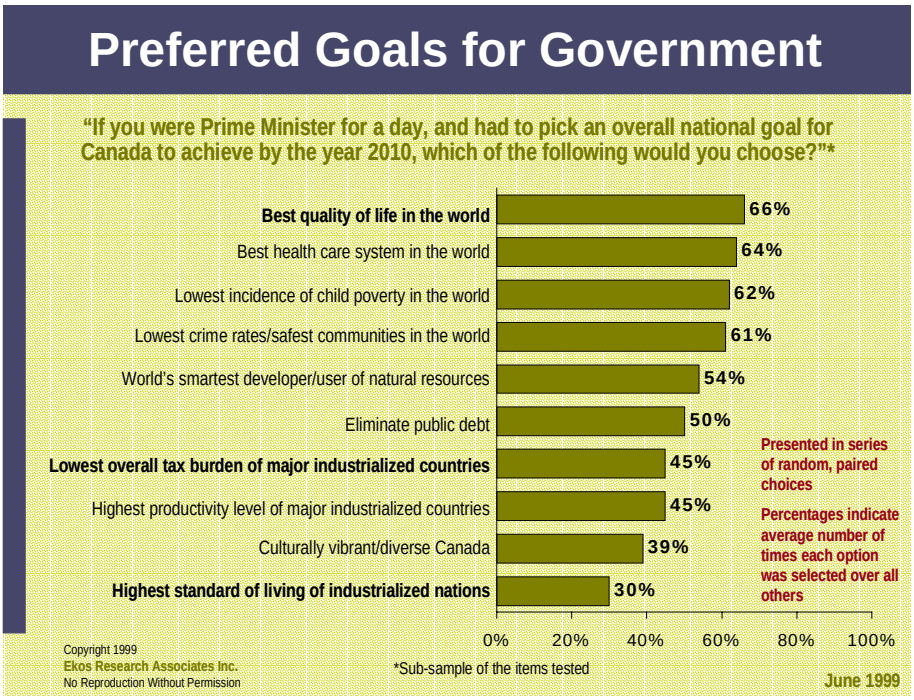
So, in a sense, they would like to see the economic and social priorities more balanced. When this is probed in qualitative group sessions with these same individuals what they really tell you is, "you know what, I don't like talking about those things in separate bailiwicks. More and more, we think that it is an artificial dualism and that we have to talk about having a healthy economy as a precondition for having strong social programs and that in fact we can see strong social programs contributing to a healthy economy". Unlike some of the fairly toxic debate between left and right models about who pays and who benefits from government, we now really want to talk about putting those things together in a much more of an explicit and interdependent form of policy development.

Turning to the topic of vision, we've been specifically asking Canadians for some time, would you characterize what the government of Canada is doing as more of a "steady as she goes" approach or would you characterize it as providing a "bold new vision". Not surprisingly, by a margin of about 76 to 17% most Canadians say we are in fact following a careful steady as she goes approach. Only 17%, most of them here in Ottawa, believe that we are providing a bold new vision for the country.



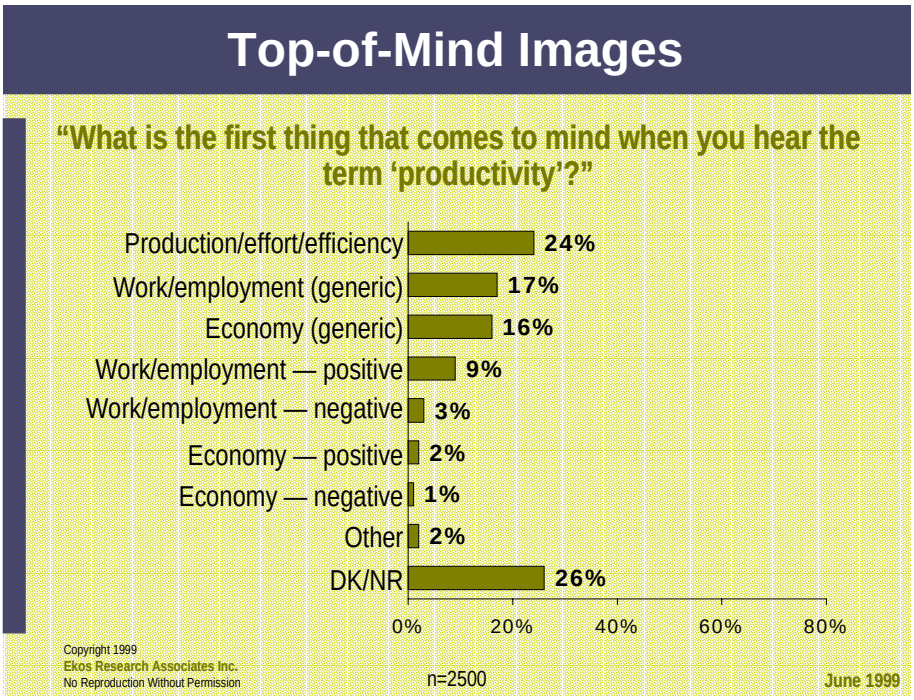
That number has actually been declining through time, as Canadians become more convinced that we are seeing more of a managerial, rather than a visionary, approach. Now that's not necessarily so bad. Canadians aren't all that bold themselves these days. They've just come out of a period of some considerable torment and turmoil. A few years ago almost even numbers would say, "You know what, steady as she goes that's pretty good, I've had enough vision and thank you very much we'll take steady as she goes". However, what we found creeping into the data recently, linked perhaps to the millennium and other factors, and a sense that there is more money available to do things and that there are new challenges facing the country, is that the percentage of Canadians who we've characterized as frustrated visionaries, those who would like a bold new vision but are seeing steady as she goes are now the largest category out there. About 60% of Canadians say they would actually prefer a bold new vision. When we tested what kinds of things would constitute a plausible new vision for the country we found Canadians are not looking for a grand vision building of the sort that we had in the past with a lot of rhetoric surrounding things like the LBJ administration's "great society" or the Trudeau administration's search for the "just society" or perhaps a moon shot or those kinds of grand things. Rather, they are looking for a much more practical, results-oriented and human-focused type of vision.

When we provide forced trade off exercises and ask respondents to pick between various alternative visions we come up with, at the top of a list of 10 potential frames for a new national agenda, having "the best quality of life in the world", a pretty ambitious statement, as the one that won most times against all other choices.



Interestingly enough, the one that came last, which only won about 30% of the time against the 66% of the time that quality of life won, was having the highest standard of living in the world. "I think it is instructive that Canadians while wanting a high standard of living, don't want to *define* their society or themselves in these narrow economic terms. Also noteworthy is that "having the lowest overall tax burden" reckoned in the bottom half of those defining statements. Things that were towards the top, in addition to quality of life, were "having the best health care system", "the lowest incidence of child poverty", "the lowest crime rates". This gives a flavour of the emphasis on issues surrounding human well-being and human outcomes.

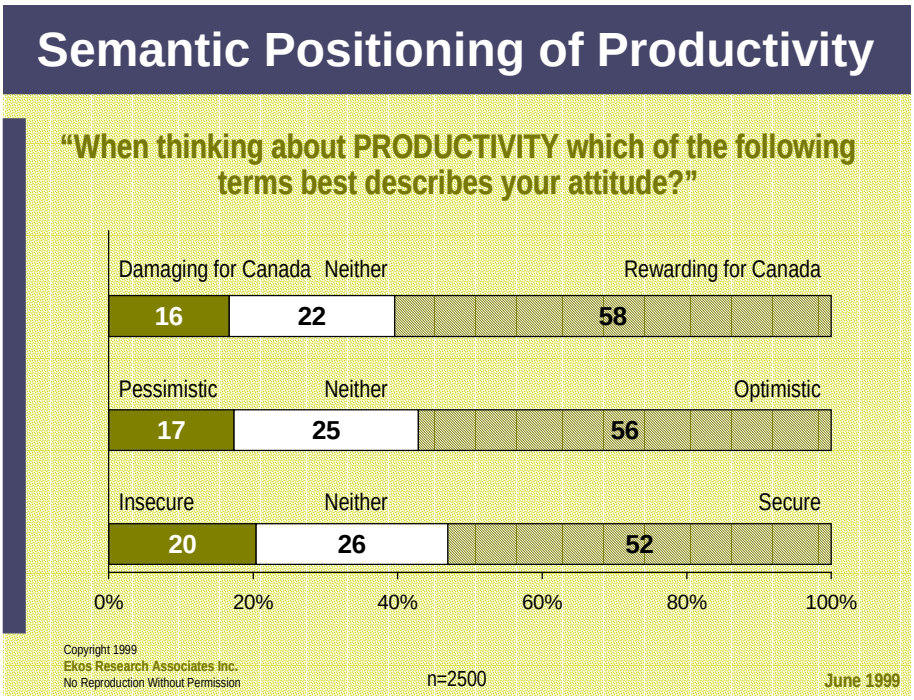
We did some probing with Canadians about what they thought about the "P" word, (productivity). Was it a frightening word, did they even understand what it meant? Our responses serve as an antidote to some of the received wisdom about Canadians' interest and concerns with productivity. I have already told you that they thought productivity was a pretty sensible priority for the federal government with the vast majority identifying it as something they thought both senior levels of government should be dealing more with in the future. When asked to say what was the first sort of thing that came to mind when they heard the work "productivity", 75% of a sample of 2,500 Canadians conducted (early this summer), came up with something.



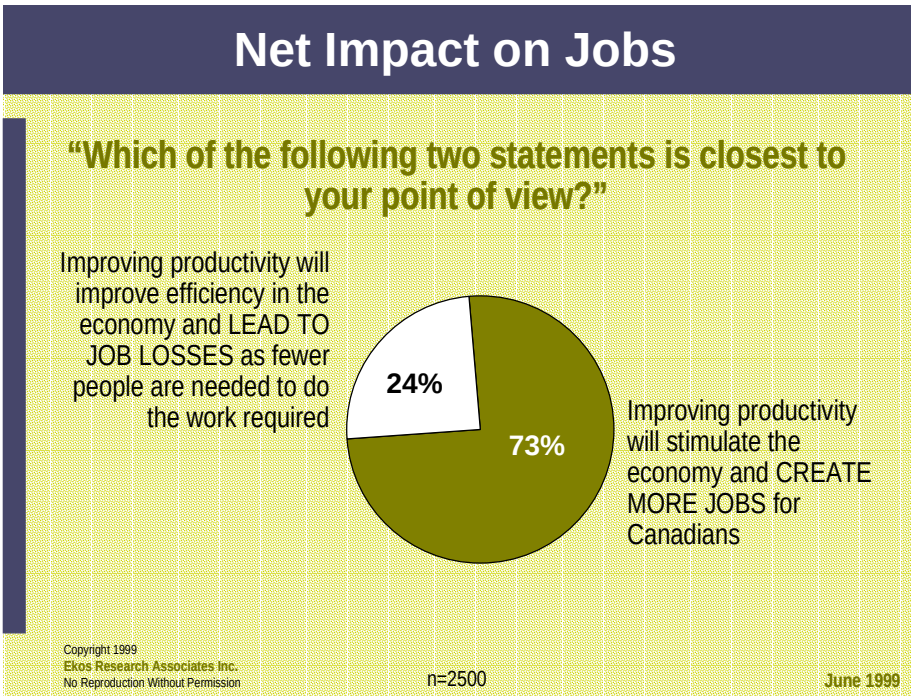
As can be seen from the slide, a large number of those responses resembled what economists would talk about when they discuss productivity. In fact, you could argue that there was less variability amongst the general public in definitions of productivity than you would find amongst the professional world of economists — a point that was not lost on the public. When asked to construct a tool kit to deal with productivity issues, the public was not really persuaded by the arguments that the productivity issue could be solved with any kind of unitary magic bullet or single approach; for example, just tax cuts or just skill investment or just technology. They really thought if this problem had flummoxed the country, the economy, and all those smart economists for this long, we were probably going to need a more complex tool kit, which, at the least, involved a simultaneous application of a number of different types of tools.

When asked to rate productivity as a priority, it fared reasonably well. When rated as a value with other terms such as freedom and healthy population and ethics, for example, it rated, not at the very top, but still quite high in the upper 25% of all values — much higher, for example, than terms like prosperity or competitiveness. It rated much higher than things that were at the bottom of the long list of values we tested which included wealth redistribution, which has fallen out of favour, and minimal government, which ironically has never been in favour and hasn't really come into favour throughout this period when people have been very angry at governments.

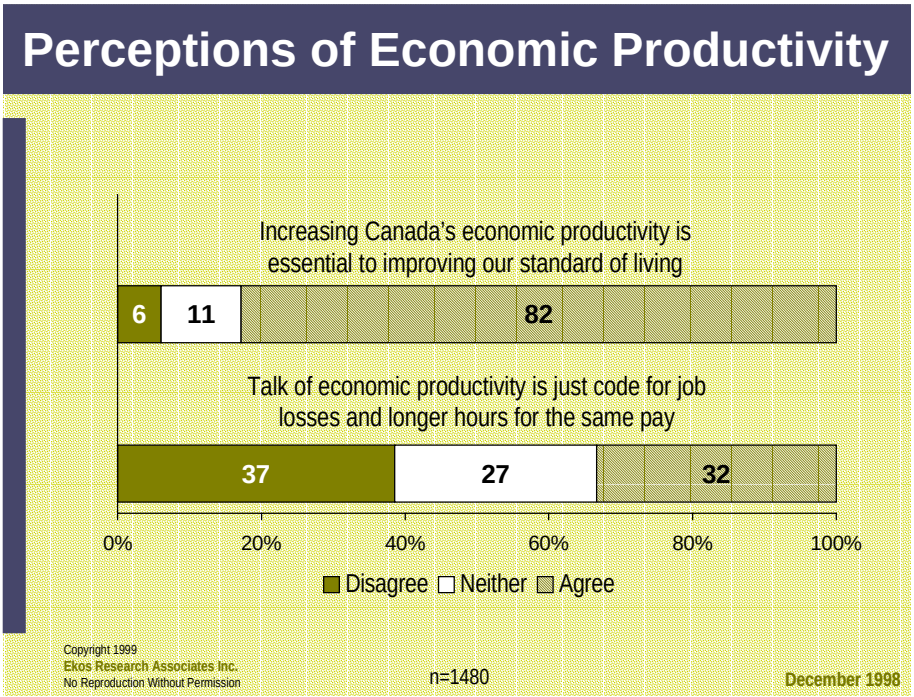
When we asked them to tell us whether productivity made them think of positive things or negative things, as with globalization, the lean was decisively positive.



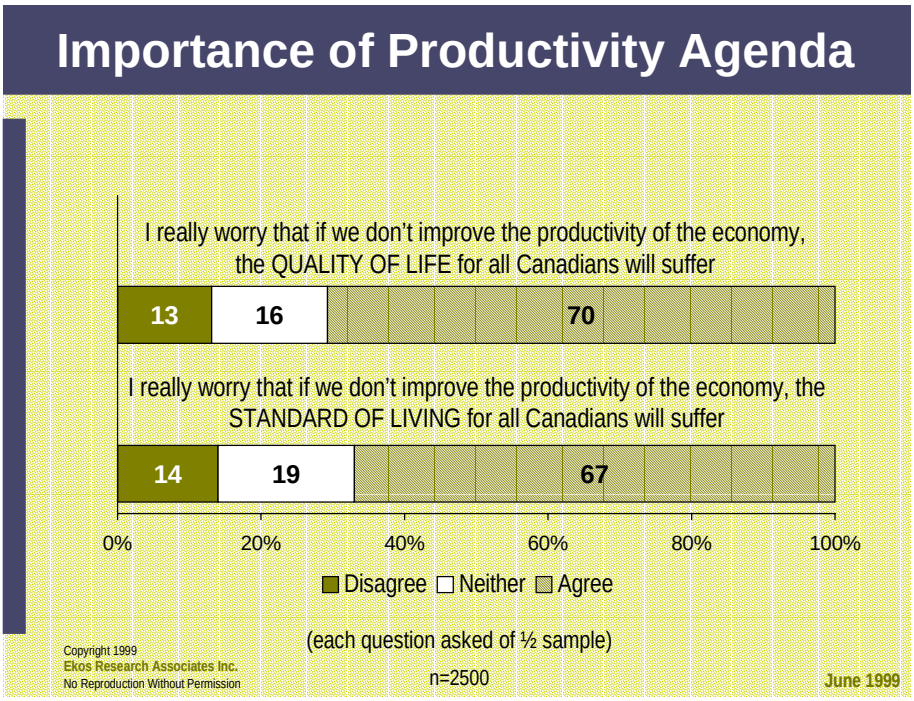
It wasn't a term that engendered fear. It was a term which engendered more of a connection to a sense of, of hard work, effort, results and security. When asked whether people thought that there were growing levels of polarization and they were clearly aware that there was a growing perhaps entrenched group of losers that were a part of the collateral damage of this new knowledge-based economy and globalization. It is interesting to note that when thinking about an agenda to improve productivity, more people when given a choice between, the following two statements seems more plausible to you; "improving productivity will improve efficiency in the economy and lead to job losses as fewer people are needed to do the work required" *versus* "improving productivity will stimulate the economy and create more jobs for Canadians" by a margin of 73 %to 24%, Canadians opted for the second choice.



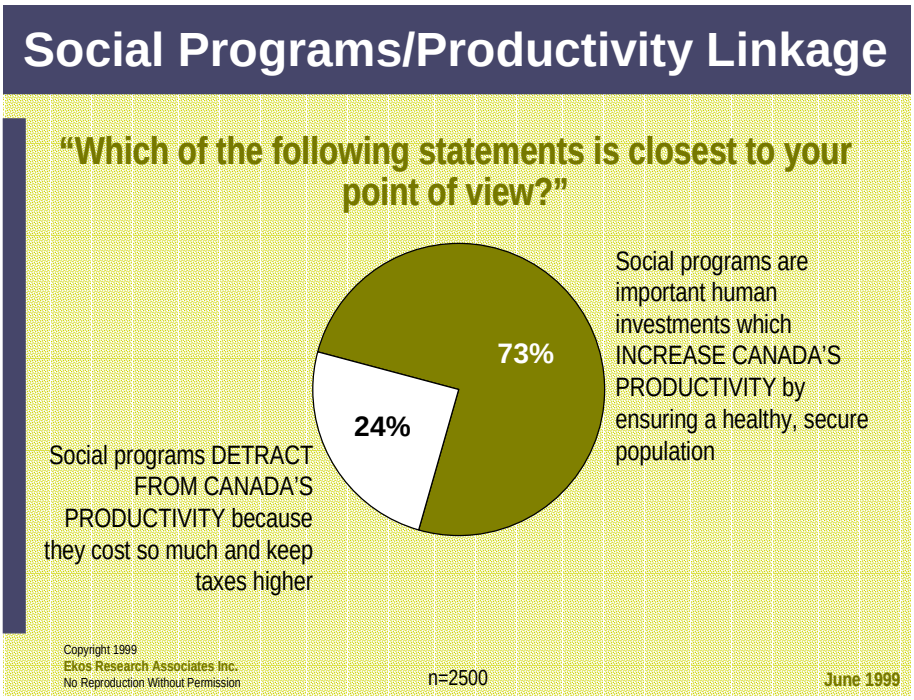
So, although there is a group out there that sees improving productivity as a destroyer of jobs, a focus on productivity is one of the few areas that people think can actually create more overall winners; not a zero-sum game, but an improvement in the **overall** number of jobs. In fact we find by a margin of 82% to 6%, Canadians agree that increasing economic productivity is essential to improving both our standard of living and our quality of life.



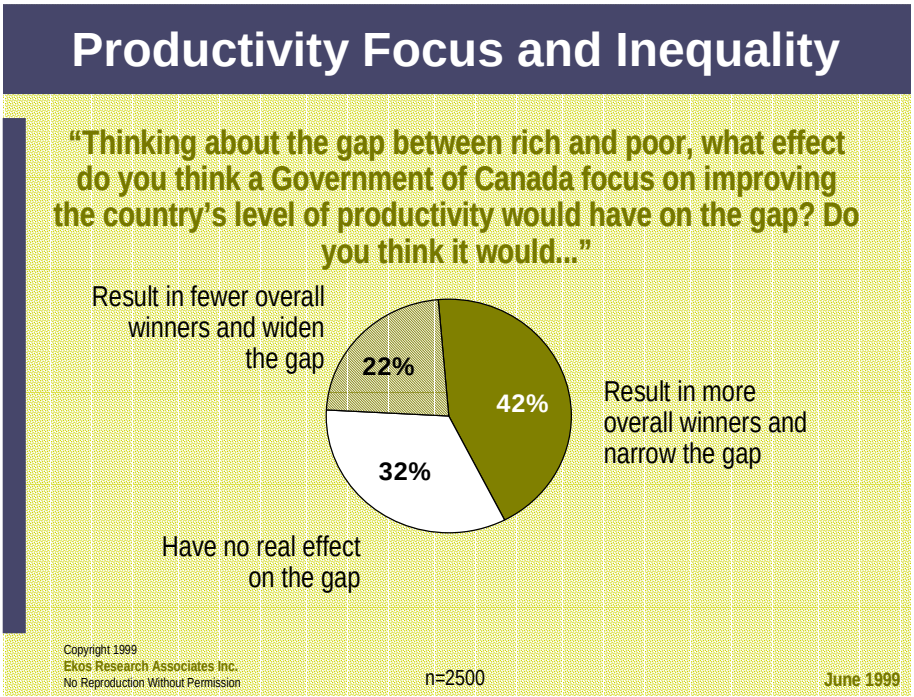
Even testing some of the more cynical propositions, many of which Canadians are quite willing to agree to these days, such as “talk of economic productivity is just code for job losses, and longer hour for the same pay”, only 32% of Canadians agreed with that proposition. What emerges from this is a sense that productivity is a legitimate area of concern, one which, while not without problems, is seen in more positive than negative terms. Indeed, by a margin of 70% to 13%, people tell us that they are really worried that if we don’t improve the productivity of the economy ultimately the quality of life of Canadians will suffer.



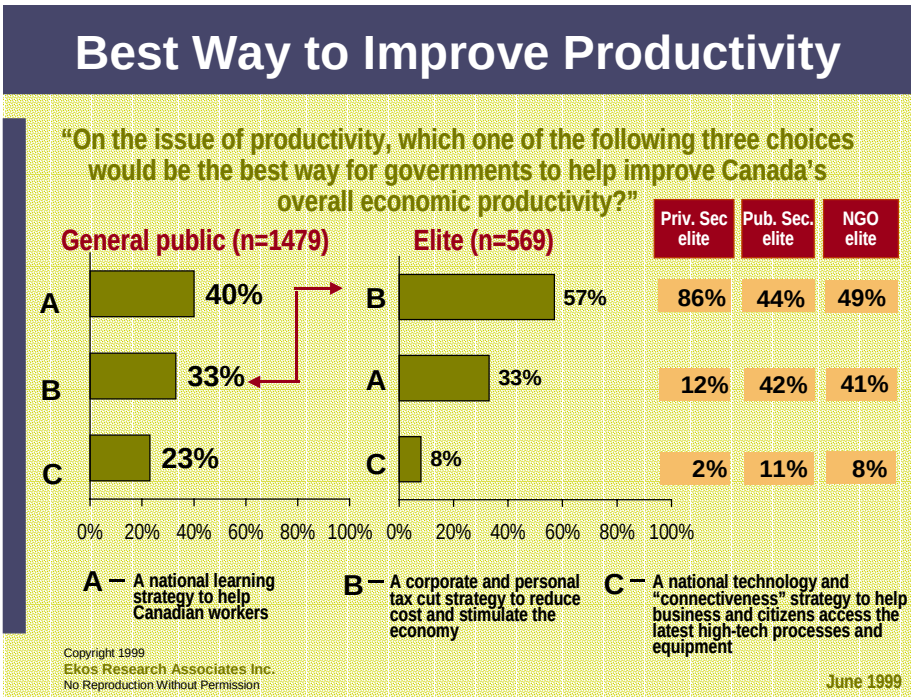
Furthermore, when asked to pick between choices, for example, of whether “social programs detract from Canada’s productivity because they cost so much and keep taxes higher” or “social programs are important forms of investment which increase Canada’s productivity by ensuring a healthy, secure population”, again, by a margin of 75 to 25, we end up with Canadians agreeing with the pro-productivity proposition. Thinking about the gap between rich and poor, which Canadians tell us is a big problem, it is again instructive to note that productivity improvements is one area people believe will generate more improvements in overall job creation rather than destroying more jobs than it creates.



When we start analyzing this a little more carefully and submitting it to much more detailed types of statistical analysis, we find a number of different types of groups out there in Canadian society responding to what we might characterize as a Bay Street model of productivity and a Main Street model of productivity. I will sketch out a little bit what those two different models look like and how they resonate with different segments in Canadian society.



I am now going to discuss two last slides, which although you can't see them, I know you would really like. They speak volumes about why Canadians may have a different understanding about productivity and how to treat it than you might think when we read some of our newspapers each morning.



In our *Rethinking Government* project, we ask the very same questions, not just of samples of the general public, but also of the senior decision-making elite in Canada each year. These elite are drawn from CEO's of the largest companies in Canada, the Deputy Minister Cadre in senior governments, from elected officials, and for the first time in 1999, from the largest non-government organizations.

When we strip it all away and ask the public which of the following three choices would be the best way for governments to help improve Canada's overall economic productivity, while recognizing that they resist unitary approaches, it is still interesting to note that given the choices between a national learning strategy to help Canadian workers, a corporate and personal tax cut strategy to reduce cost and stimulate the economy or a national technology and connectedness strategy to help citizens in business apply the latest high tech processes and equipment that each of these choices were chosen by at least a minimum of 23% of Canadians from the general public, even in forced choice questions. The first public choice is a national learning strategy with 40% support. The second choice, at 33%, is for a corporate tax and personal income tax strategy. This is interesting because tax relief does move up as a priority in the context of a longer term productivity agenda. It becomes more popular and more resonant when seen as a way of dealing with issues such as the incentive system in the economy, but also the brain drain issue, which is seen as an issue, not as serious as some of the media is reporting, but still seen as a net disadvantage. Finally about 1 in 4 Canadians, not an insignificant portion, select the technology connectiveness option.

Now, in comparison, when we look at the choices of the elites, it is striking to note that we do not get the same pattern at all. The first choice, by a fairly decisive margin of about 60%, is a tax cut strategy, about 33% choose the learning strategy and only about 8% choose the technology and connected strategy. I'm sure that last number is something that we might not have been expected, and certainly small comfort to the folks from Industry Canada here who would suspect that that innovation would be a more resonant topic with our country's leaders. Even more instructively, when we break the choices down into private sector and public sector elites, we see even more striking differences.

Eighty-six per cent of Canada's private sector elites, our captains of industry, say that it is tax cuts that we need to deal with the productivity agenda. Barely 2% think it is technology and connectedness and only 12% think it is a national learning strategy. Going back to the fairly evenly balanced approach of the general public, with an accent first on lifelong learning skills and knowledge, and comparing it to this overwhelming elite focus on a tax cut strategy, you get a sense for what is a pretty breathtaking gap between the understanding of how productivity should be dealt with from the perspective of the boardrooms of Canada compared to the perspective of the family rooms of Canada.

I would like to conclude with a summary of what we are seeing in terms of public attitudes to the economy in general and to some of the more specific topics we've talked about. We see a high and strengthening confidence that the country and the economy are going to be doing better in the future. This is a really important shift, which is linked to a whole range of other phenomenon. There is also a growing consensus that we have moved to a more divided society, although, perhaps with a degree of resignation. There is also a sense that quality of life and standard of living have improved not declined over the past decade and that they will do demonstrably better over the next decade. Canadians also see economic accomplishments as their personal accomplishments and economic failures as largely authored by governments.

There are dramatic differences for different groups out there, the most striking being generational effects — with young people feeling much more optimistic. Those people in the pre-retirement cohort are feeling substantially gloomier. "Freedom 55" is now looking like more like "Freedom 95" as they add up their savings and look at the prospects of retirement against their meager saving accounts. We also see significant divides across social class with those who feel more comfortable and poised to benefit from the new global economy, feeling much more confident.

There is also a growing appetite for a bold new vision, but one which is perhaps more practical in nature and which links the economy and social issues together in an explicit and interdependent fashion. Canadians are not intimidated by the "P" word. The general ability of the public to say something about productivity, or even recognize the term is much higher than expected. They see productivity as linked to rising confidence and, for some, responding to a desire to return to nation building. Concern with quality of life should not preclude concern with productivity. In fact, for most Canadians, a strong economy and strong productivity are seen as preconditions for a strong quality of life. A collective effort to deal with these linkages can presents a resonant national challenge which I think could indeed constitute an appropriate new vision (properly framed).

Productivity provides a plausible bridge linking the economic and social worlds for Canadians.

There are some divisions underlying this consensus, particularly along the lines of economic security, but the majority of Canadians are on-side.

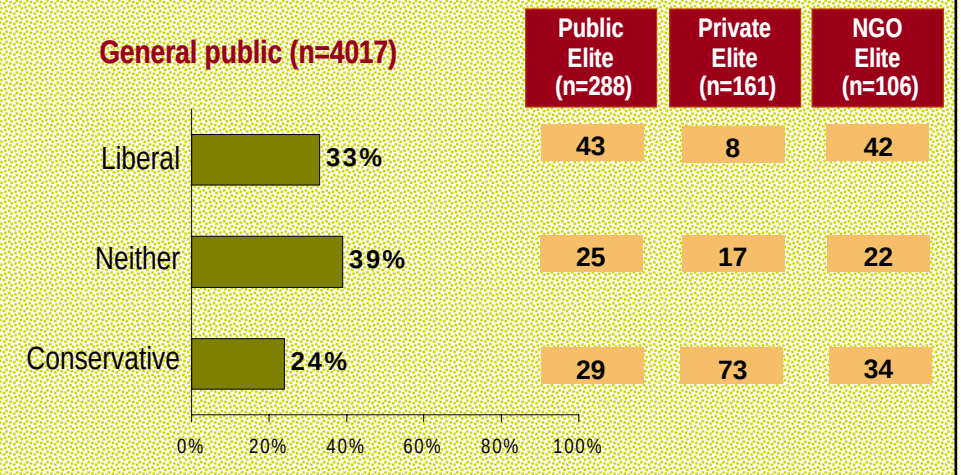
There is a major gap in the resonance of this agenda framed as being to deal with standard of living *versus* quality of life. In fact, they fall the opposite ends of a continuum. People want to understand productivity as something that involves having a healthy economy, which involves human investment, which is ultimately done for the purpose of having strong quality of life. Productivity *for* standard of living, might be characterized as a Bay Street model linked simply to a focus on tax cuts and minimal government. It does have a constituency, about 1 in 4 Canadians who, not surprisingly, tend to be male, affluent, and economically secure. The Bay Street model, however, doesn't resonate with most Canadians who, while preferring a productivity agenda, want more of a Main Street productivity agenda and primarily done for the purposes of achieving a higher quality of life.

The best public framing for a productivity agenda would be as a means for achieving the highest quality of life, which is linked to the top preferred goal for Canada. There is a growing desire to explicitly link and coordinate social/economic policy, and not to see them as competitive, but rather as complementary agendas and to seek a more balanced approach. Canadians think that the focus of government has leaned more to economic concerns and they want more of a balanced approach linking the social and economic agendas. This might respond to what we see as the desire for an approach that constitutes something analogous to what's emerged as the "third way" approach seen in Britain and some of the approaches that Clinton has been in delivering in the American context. For a variety of reasons, we believe Canadians are now receptive to a unique branding of this sort of new vision which works within the unique Canadian values context.

In moving forward, the public feels that there are some clear winners and losers among variable strategies. Some things are seen as more important ingredients than others. For example, the clear winners were human capital, tax reform and innovation. The clear losers, relatively speaking, were corporate tax cuts, minimal government and the use of old passive redistribution tools for dealing with inequality.

Political Ideology

"Thinking about your overall political persuasion, would you say you are more of a small L liberal or a small C conservative?"



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June 1999

D.

Conclusions

Broad Landscape: Rising Optimism and Declining Insecurity (a)

- **Thinking ahead, high (and strengthening) optimism for personal financial security twinned with belief that country will be doing better**
  - ✓ But consensus that Canada is moving toward a more divided society of haves and have nots (perhaps with a degree of resignation)
- **Sense that quality of life and standard of living have improved and will get better still**
- **Canadians see economic improvements as personal accomplishments, but economic deterioration is government authored**
- **Dramatic age and education effect, with optimism for personal future highest among the young and the better educated**
  - ✓ Optimism linked to higher receptivity for productivity-quality of life agenda

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Broad Landscape: Rising Optimism and Declining Insecurity (b)

- **Stubborn persistence of cultural insecurity**
- **Findings from recent Ekos studies show emerging appetite for "bold new vision" and waning enthusiasm for "steady as she goes"; also see preference for practical, "human outcomes" vision**

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Public Climate on Productivity: Decidedly Positive Imagery (a)

- **Canadians not afraid/intimidated by the "P" word**
  - ✓ Linked to rising confidence, nation-building and quality of life
  - ✓ View of productivity agenda as alienating is not evident
  - ✓ Collective effort/challenges of productivity resonant
- **Research confirms earlier research showing that productivity as both a priority and a value connects with Canadians**
- **Ontario positive, Quebec less enthusiastic (values context?)**
- **Divisions underlying the consensus – essentially the vulnerable and insecure less on side**
- **Moderate awareness of productivity debate (although majority unaware)**

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Public Climate on Productivity: Decidedly Positive Imagery (b)

- **General public fluency of productivity much higher than expected**
  - ✓ Ability to define term
  - ✓ Awareness of higher incomes in US
  - ✓ Productivity deficit with US, Japan
  - ✓ Decline in Canadians' incomes registered (but interestingly, not standard of living)
- **Awareness and priority work in opposite direction**
  - ✓ Recall and awareness highest among men (45-65) but also those who are pessimistic about their future financial situation
  - ✓ Support for productivity agenda highest among women and those who are optimistic about future personal financial situation

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Public Climate on Productivity: Decidedly Positive Imagery (c)

- **Women express strong support for linked productivity agenda**
- **Individual Canadians/workers have the sense that they are not the problem:**
  - ✓ Willing to participate in the solution, or to work for improvement, but not willing to accept responsibility
  - ✓ But, eroding values and work ethic seen as a factor

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Standard of Living *versus* Quality of Life: Priority is People Over Money

- **Major gap between resonance of standard of living and quality of life**
  - ✓ This goes to the essence of understanding conflicting views about what Canadians think of productivity
  - ✓ Productivity for standard of living = no (Bay Street)
  - ✓ Productivity for quality of life = yes (Main Street)

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Moving Beyond the Dualism of Either Social or Economic Agenda: *from Reaganomics to "Humanomics"* (a)

- **Two competing models: Main Street vs. Bay Street**
  - ✓ Main Street model closest to the mark
- **Best quality of life in the world top preferred goal for Canada**
  - ✓ Highest standard of living sits at the opposite end of list
  - ✓ Income does not equal standard of living, nor does standard of living equal quality of life
  - ✓ Healthy population linked to quality of life
- **Desire to explicitly link social and economic policy — not competitive but complementary agendas**

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Moving Beyond the Dualism of Either Social or Economic Agenda: *from Reaganomics to "Humanomics"* (b)

- **There is a lean to seeing government focus as economic; more would favour a balanced or social leaning agenda**
- **In-depth Rethinking Government analysis shows productivity as a bridge between economic and social realms, loading with human investment priorities and economic values**
- **In practical terms, this bridge gives government the opportunity to speak directly, frankly, and credibly to constituencies aligned broadly across ideological lines**
- **May be an agenda that fits the Giddens' "Third Way" thesis (What we have called a shift from Reganomics to Humanomics)**

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What to Do? How Canadians Arrange the Productivity Tool Kit (a)

- **Clear mandate for government to coordinate (not direct) a national project: best approach is partnership**
- **Canadians favour a mosaic strategy (no simple, silver bullet)**
  - ✓ Several key sectors
  - ✓ Multiple institutions
  - ✓ Multiple tools

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What to Do? How Canadians Arrange the Productivity Tool Kit (b)

- **But, some tools and strategies are more resonant than others:**
  - ✓ Clear winners:
    - ➢ human capital
    - ➢ taxes
    - ➢ innovation
  - ✓ Clear losers:
    - ➢ corporate tax cuts
    - ➢ minimal government
    - ➢ old passive redistributive tools

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What to Do? How Canadians Arrange the Productivity Tool Kit (c)

- **Understanding tax cuts**
  - ✓ Tax cuts have consistently registered behind top human investment priorities: support declining over time ('94-'99), support highly linked to economic affluence
  - ✓ Tax cuts more resonant as one component of longer-term productivity/quality of life agenda (brain drain linkage)
  - ✓ Bottom line: government currently moving on right track and at the right pace; but general and a targeted tax relief approach is one part of the productivity solution

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Perceived Impacts and Consequences of a Quality of Life-Productivity Agenda

- **Mostly positive consequences for diverse range of actors, including individual Canadians**
- **Increased productivity registers as an enabler and leveler, not disabler and divider**
  - ✓ Productivity agenda would create more winners than losers
- **Belief that productivity focus will result in more overall "winners" helps with resignation towards polarization**

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Framing the Agenda (a)

- **Linked productivity-quality of life agenda fits as practical vision: not a "moon shot" but not shooting fish in a barrel either (a practical equilibrium of vision and relevance)**
- **Quality of life provides hook/context for focus on broad and narrow elements of productivity: top goals are human well being (i.e., health and quality of life)**
- **Can organize a very broad range of disparate priorities and cluster them under a unified agenda framing:**
  - ✓ Kids
  - ✓ Health
  - ✓ Environment
  - ✓ Tax
  - ✓ Skills /education
  - ✓ Innovation/S&T
  - ✓ Roads
  - ✓ Identity/values
  - ✓ Debt

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Framing the Agenda (b)

- **Productivity not registered as a crisis issue: alarmist framing not resonant, not recommended**
  - ✓ Better to establish a sense of orderly progress towards a common goal
- **Core Emphasis:**
  - ✓ Productivity for people first, not productivity for money (but, money is OK!)
  - ✓ In partnership, not in isolation
- **Clear policy and communications challenges for government in building agenda around quality of life — productivity theme**

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Sources

- This presentation is based primarily on the quantitative findings of a productivity study conducted for various federal departments and has been supplemented with some of our other recent studies, including the ongoing public opinion project *Rethinking Government*, the CIO Communications Surveys, and the International Trade and Globalization Study.
- This presentation is also drawn from a recent article by Frank Graves, "*Rethinking Government* as if People Mattered: From Reaganomics to 'Humanomics'" in Leslie A. Pal, ed., *How Ottawa Spends 1999-2000: Shape Shifting: Canadian Governance Toward the 21st Century*. Toronto: Oxford University Press, 1999.

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CSLS-Industry Canada Conference on Canada in the 21st Century:
A Time for Vision

September 17 - 18, 1999 Château Laurier Hotel, Ottawa, Ontario

Centre for the
Study of Living Standards
Centre d'étude des
niveaux de vie

Determinants of Canadian Productivity Growth: Issues and Prospects

Richard G. Harris
Simon Fraser University and CIAR

Session 4 “Productivity and Living Standard Scenarios for the New Millenium”
September 17 2:45 PM - 4:30 PM

Determinants of Canadian Productivity Growth: Issues and Prospects

by

Richard G. Harris

Simon Fraser University

and

Canadian Institute for Advanced Research

September 1999

Paper prepared for presentation at the CSLS-Industry Canada conference Canada in the 21st Century: A Time for Vision. Ottawa, September 17, 1999.

Preliminary only: Comments welcome. All correspondence should be sent to author at rharrris@sfu.ca. I am grateful the members of the Economic Growth and Policy Program of the CIAR for discussions on these matters over the last few years. All views expressed are mine alone.

1. Overview

The theme of this conference is the future of the Canadian economy. This paper is about one particular aspect of that vision—the future for productivity growth in Canada. Given the high profile of the productivity debate in the last year, what was once a relatively arcane subject to most people is now daily grist for the editorial and business pages of our newspapers. Talk of a productivity crisis and various counterpoints to this argument have become commonplace. In this paper I will try to step back somewhat from the current debate and take a broader look at what economists know, or think they know, about productivity growth, and how this knowledge might shape our views about the future for economic growth in Canada. Obviously one cannot know with any great certainty what the future will bring. Nevertheless we can say with somewhat more precision what are likely to be important potential developments, either positive or negative for productivity growth and thus living standards in Canada. The paper will first review the theory and empirical evidence and then go on to a forward looking perspective on productivity growth in Canada in the coming decades. Finally I will offer some opinion as to how productivity considerations should enter in the formulation of economic policy.

The organization of the paper is as follows. Section 2 will discuss some of the basic theory and measurement issues, with references to the recent Canadian and international debates on productivity. Two themes will be covered. First, link between productivity and living standards. Here we draw out the links between other determinants of living standards such as labour force participation and terms of trade changes, with an emphasis on productivity growth as the most important long term permanent determinant of living standards. Second a discussion of the relationship between theory and measurement in light of the widespread use of the concept of multifactor productivity, and lastly a review of the on-going measurement debate as to whether and how well economists can actually measure outputs and inputs. Section 3 of the paper turns to a discussion of the empirical literature on the 'determinants' (or

correlates) or drivers of productivity growth including investment, education and training, innovation, diffusion, and the broader context in which productivity growth is set. Section 4 of the paper will deal with the prospects for future productivity growth in Canada over the next couple of decades. This section will be largely speculative in nature drawing on what we know from economic history and the recent contributions of the endogenous or 'new' growth literature. These will include a discussion of a number of important external and domestic developments in the Canadian and Global economies. Section 5 will conclude with a discussion of how traditional economic policies should account for the potential productivity effect of the policy.

2: Productivity Growth: Why do we Care?

Productivity is roughly speaking a measure of how effectively the economies resources are translated into the *production* of goods and services. Over long periods of time productivity is the single most important determinant of a nation's living standard. We make a distinction between the level of productivity in the economy at a point in time, and the changes in the level of productivity or productivity growth rate. It is common to discuss both of these without making clear which concept is being used Productivity *levels* are related to the standard of living in a country, and productivity *growth rates* are the major determinant of the rate of increase in living standards over time

How is productivity connected to living standards? To make the connection of living standards we need to make the links between the production side of the economy and the way in which production determines income. In most western economies income is generated in factor markets; it is the value of the services of the labour and earnings of assets that occur as a consequence of supplying these factor services to the producers of goods and services (either private or public sector). The wages and profits that result reflect a combination of the (a) value of the particular goods and services produced, and (b) the productivity of the factor inputs in producing those goods and services. Incomes from a *given* supply of labour and capital can rise because either a) the value of the good produced rises or b) because the productivity of those factors has risen. Higher

productivity means that more goods and services can be derived from the same factor inputs.

The distinction between the effect of prices on factor income and the productivity effect is often confused. Productivity growth in the sense that more is produced with less can have important price effects in the market as the supply of the goods produced increases; these supply effects can in turn affect incomes and real purchasing power. Productivity improvements often result in lower prices which benefit consumers, but which may or may not raise the incomes of those producing the goods in question. In an economy such as Canada's which participates heavily in international trade this means that what we produce is generally not the same as what we consume. Hence if what we produce goes down in price and what we consume goes up in price then living standards will fall holding productivity, as conventionally measured, constant.

The distinction between consumption and production also creates some problems in making the connection between living standards and incomes. An economy in which income is high but much of that income goes into investment will be generating a lower level of consumption that would otherwise be the case. I will not take up these issues here except to note that when looking at long term economic growth it is possible that productivity can vary as a direct consequence of the decision to consume versus invest. Often the decision to be 'more productive' involves a choice to defer consumption to the future. To that extent becoming more productive can be coincident with a reduction in real living standards as measured by what we consume. Clearly the best kind of productivity growth is the kind that does not require a sacrifice of current consumption.

The study of productivity growth tends to be compartmentalized into three different sub-disciplines each with their own perspective One most familiar to non-economists is associated with the writings of economic historians such as Nathan Rosenberg. It takes a broad system or economy approach to productivity in which markets and institutions play a key role and depicted in the following schematic.

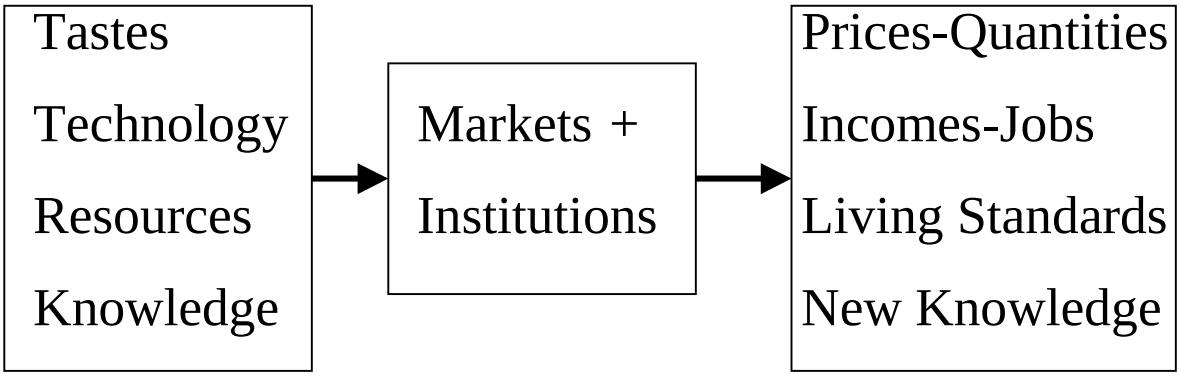

Figure 1.

Explanations ranging from the role of institutions such as role of the rule of law, public health, communications and transport innovations, industrial innovation and the role interest group politics and rent-seeking, cultural differences and numerous others are offered. These wide ranging accounts are undoubtedly both valid and important and find some counterparts in the empirical evidence discussed below. A second group of scholars uses what might be called the macroeconomic growth perspective, and is reflected in the writings of people such as Robert Solow and Paul Romer. There is a reliance in this approach on more formal modeling, quantitative analysis, and often medium run perspective—that is they tend to think in terms of decades rather than centuries. Also much of this literature is not concerned with the question of what causes the transition from pre-industrial to industrial economies. This approach tends to employ traditional way on supply and demand explanations for economic growth relevant to a modern mixed economy with substantial public and private sectors. Factors that enter the analysis include

A. Supply Side growth factors

1.Primary inputs(Labour, Resources)

2. Re-producible capital goods(physical and human capital)

3. Technology/Management/Knowledge Base

4. Allocative Efficiency of Markets/External Spillovers

5. International Comparative Advantage

6. The Terms of Trade

7. Public policy

B. Demand Side Factors

1. External Market Access
2. Global Business Cycle
3. Domestic Macroeconomic Policy

'Productivity' emerges from the supply and demand side integration in a number of different ways, but generally speaking we can think of productivity—i.e. the efficiency with which inputs are transformed into useful outputs—as a summary statistic of the performance of the entire system. Public policy implications almost always follow from an analysis with this perspective.

A third group of scholars are primarily focused the measurement side of the debate represented by people such as Erwin Diewert of U.B.C. and Zvi Griliches of Harvard. They are concerned with the way in which inputs and outputs are measured, how they might be mis-measured, and various ways in which productivity statistics can be constructed and compared both over time and between countries, industries , and firms. Generally speaking the measurement school of productivity is primarily if not exclusively empirical and uses a framework based on the concept of the neoclassical production function. They tend not to focus on theorizing as to the determinants of productivity growth, nor is their research concerned with either system wide, general equilibrium or large-scale institutional explanations for productivity change. Measurement is however extremely important and we turn now to some discussion of the way in which productivity statistics are constructed and used in the debate.

Measuring Productivity

Productivity statistics are index numbers of the resources used in the economy's production activities relative to the output of those activities. We usually define this as a simple ratio:

$$\text{Productivity} = \frac{\textbf{Quantity of Output}}{\textbf{Quantity of Input}}$$

This definition is made operational by statisticians in a number of ways. At both the level of the individual firm and the economy the most common productivity measure is average labour productivity. Thus if X is a measure of output and LAB is a measure of labour input, then *average labour productivity* is given by

Average Labour Productivity(ALP)=X/LAB.

At the level of the individual country the by far the most common measure statistic used in doing economic growth calculations or international comparisons is *Real GDP per capita*, which is the economy analogue to the ALP concept Let Y denote real GDP (we get to the issue of measuring this variable later) and Pop the population. Then real GDP per capita is defined as

$$r = \frac{Y}{Pop}$$

As a productivity measure this variable does not a make lot of sense because a) what fraction of the population the economy allocates to production can be quite different than simply counting the population, and b) there are a lot of factor inputs other than 'people' that go into production. It many cases it is used as a measure of living standards although an increase. It is useful to note how productivity and other factors affect this widely used statistic.

Productivity and Real GDP per capita indexes.

1. Labour force participation. A common correction is to adjust the population by the number of people who are **employed.** Let e be the employment population ratio L/Pop , where L is the labour force then GDP per worker is often reported or

$$r_w = \frac{Y}{L} = \frac{Y}{ePop}.$$

Note that holding r constant, GDP per worker will change with changes in the number of employed, or for a given labour force, with the labour force participation rate. Higher labour force participation may or may not be a good thing from the point of view of ultimate social well-being.

2. A further refinement is to correct for the number of hours worked. This has become more common with large shifts to part time work and substantial international differences in average hours of work. Let H be total hours worked and h average hours per person employed. Then we define GDP/Hour as

$$r_H = \frac{Y}{H} = \frac{Y}{hL}$$

This index is very close to a measure of average labour productivity at the economy wide level, and thus receives a lot of attention. Note GDP per capita can go up if people work longer hours, but strictly speaking this does not correspond to an increase in 'productivity' as measured by r_H. Both the hours correction and the labour force participation correction bedevil productivity comparisons done across countries and over long periods of time. The absence of good comparable data for example often forces one to rely on the more commonly used r variable than a true productivity index. The history of economic growth is one in which hours of work have been reduced and this is generally regarded as a good thing. Many international comparisons fail to make this correction. Hours of work for example are much longer in the US than in Germany, and thus comparisons of GDP per capita between Germany and the US make the US appear to have higher 'real incomes,' while a productivity comparison shows Germany to be very close and by some measures better off than the U.S. On the other hand economic performance of a nation is often judged in terms of the ability to generate employment either in terms of job numbers or hours of work. As we shall see the connection between productivity and employment is quite complex, and both productivity and employment are endogenous to the economic system. A crucial issue is whether there is a long term trade-off between employment and productivity or alternatively whether higher productivity is necessary for greater employment.

Getting Sophisticated: Multi-Factor Productivity

It has long been recognized that the notion of inputs must go beyond a simple labour input although how this is done remains one of the most contentious areas in economics, and relates to the problem how to treat investment and technology. Suppose now there are two factor inputs--hours of work H, and a single index of the capital goods used in production, K. The purpose is to define an index that can measure how much

output growth is *not accounted for* by changes in H and K. This index is called multifactor productivity growth . Let F(H,K) be an index of resources used in production--it is critical that this index be time invariant (or geographic invariant if we are doing comparisons across space). The level of Multifactor Productivity is defined as the index A given by the ratio

$$A \equiv \frac{Y}{F(H,K)}$$

Many economists think of changes in A as being the 'true' or correct measure of productivity change. This view derives from the traditional neoclassical theory of production which takes technology as exogenous at a point in time, and all markets are assumed to be competitive. In this case F is identified as the time invariant portion of a firm's production function. This leads to the famous Solow growth accounting equation (which actually was developed by Tinbergen in the 1930's) which gives an equation for the *growth rate of MFP,(GMFP).*

$$GMFP \equiv \frac{\Delta A}{A} = \frac{\Delta Y}{Y} - \alpha \frac{\Delta H}{H} - (1-\alpha)\frac{\Delta K}{K}$$

where α is the cost share of labour in total costs, or at the national level the share of wages in total national income. This equation is one of the most famous in economics and is often referred to as the 'Solow Residual calculation': In words

> *The growth rate of MFP equals the growth rate of output less a weighted sum of the growth rates of capital and labour inputs, where the weights on each factor input correspond to their shares in the cost of producing the output Y.*

MFP statistics are now routinely reported by statistical agencies including Statistics Canada. Long run average MFP annual growth rates vary from 0 to the 2 percent range historically. The interpretation of these numbers however remain controversial. It is essential to remember that as a simple matter of measurement, GMFP is defined as a residual--i.e. it is that output growth that cannot be accounted for by input growth.[1]

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[1] A standard source on growth accounting for the OECD countries is Maddison(1995) who also discusses the history of the 'residual' calculation of productivity growth.

What's Good About MFP growth rates?

One important motivation of looking at MFP rather than simple growth rates in labour productivity is the essential role of capital accumulation in the economy. Let G(x) denote the annual growth rate of any variable x. The average growth rate of labour productivity under the' normal assumptions' is given by

$$G(r_H) = G(A) + \alpha\, G(K/H).$$

Thus changes in real output per hour can increase either because MFP growth has occurred or because capital per hour worked has increased. It is important to note that these normal assumptions include an absence of spillovers, or equivalently the perfect correspondence between market prices and social costs.

In practical measurement terms accumulation will tend to be more important in explaining average labour productivity growth the greater the share of 'capital' α. For years this share was identified with profits share in national income at the aggregate level--approximately1/3 for most advanced economies. Recently this conventional wisdom has been called into question by those who argue that inclusion of human capital which is also subject to long term accumulation brings this number close to 2/3.[2] The debate is more than academic. With very high shares of 'capital' in national income changes in investment rates can have sustained and long term effects on growth rates of productivity even in the absence of technological change. This is in sharp contrast to economies with low capital shares; in these economies the law of diminishing marginal productivity quickly limits the growth effects of additional investment. Higher investment can lead to higher income levels but not to permanently higher growth rates.

If the capital share is quite high low productivity growth may be due to either low rates of MFP growth, or may be due to the fact that investment (in a comprehensive sense) is too low. There has been a vigorous debate for example in this tradition on the role of public capital infrastructure in productivity growth, and the possibility that low productivity growth has been due to low rates of investment in public infrastructure, such as road, bridges, sewers, etc.

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[2] This debate is reviewed by Temple(1999).

In many countries and in certain periods of industrial development the 'capital deepening effect' has been thought to be very important. A good example is the recent controversy on East Asia. Alywn Young's[3] work challenged the view that Asian growth rates represented substantial technological upgrading--he did this by showing that much of the high growth rates were obtained due to increases in capital per worker associated with high investment rates. Going back to our discussion of investment versus consumption, if high labour productivity comes about through capital deepening effects this is not necessarily even welfare improving since investment can only occur at the expense of consumption.[4]

MFP and Technological Change: Are they the same thing?

There are many who take the view that MFP is not a useful measure of technological change because new technology is inherently embedded in new goods and thus one cannot identify technological change independent of the measurement of these goods either as inputs say in the case of a computer, or as outputs say in the case of a new drug. There is an older literature which tries to correct within an exogenous technological change framework for the 'vintage effect'; if new technology is embodied in new capital goods then higher rates of investment will tend to be associated with higher rates of observed productivity change. Correcting MFP calculations for vintages effects is a complicated business. A recent effort on Canadian data is an Industry Canada study by Gera Gu, and. Lee(1997). Some recent efforts at using quality change in computers and other electrical/electronic capital goods lend some credence to the view these corrections are very important at the aggregate level. Greenwood and Hercovitz(1998) for example argue that much of the infamous productivity slowdown is in fact a 'measurement problem' on the input side and that much of the post -1974 technological

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[3] See Young(1996).

[4] Obviously one has to qualify this comment in an open economy. If investment is financed by foreigners then the debt burden of that finance represents a reduction in future consumption with similar negative consequences for welfare.

slowdown as measured by slow MFP growth can be explained by inappropriate measures of the change in capital, or K.

A lot of work has been done on extending the same type of arguments to human resource inputs in the form of what economists call 'human capital'. Economic growth in virtually all countries has been characterized by substantial increases in the levels of educational attainment and in resources devoted to education and training of workers. It is thus argued that H should be replaced by an index of labour services $S=\theta H$, where θ is some index of the average quality of the skills applied to hours worked. The important point is that education and training policies involve investments in human capital which are durable and thus lasting. That is θ increases slowly and as a consequence of conscious policy and investment decisions. When these corrections are made what happens to MFP growth? Not surprisingly growth attributable to 'pure' MFP declines due to the skill upgrading which has occurred in the labour force. But can one seriously take the view that skill upgrading is not real productivity change? This leads us to the next topic.

The Measurement Debate

In this subject measurement is everything. Much of the disagreement on the 'facts' follows simply measuring both output and factor inputs is becoming increasingly difficult, both conceptually and in practice.[5] In the face of this disagreement debate needs to be constrained by the indisputable facts. The measurement problems on the output side pertain both to comparisons across time and across space. In services there are well known problems in areas such as retailing where margins have been the conventional output measures. Yet we know that increased competition has led precisely to a reduction in these margins, yet in any reasonable sense 'output' in retailing has not declined. Increased quality and variety of goods has been a major source of economic growth yet we know these are generally not accounted for in output statistics. International comparisons are fraught with difficulty even in traded goods industries. Baily and Gersbach (1996) report how product mix differences between plants across

[5] See Griliches(1997) and the set of papers on service sector output measurement in the special issue of the Canadian Journal of Economics (1999).

countries can severely distort price deflators used in fairly narrow industrial classifications. Just how important is all this? To put it in context we have the Nordhaus(1996) argument that with appropriate quality adjustments to the CPI for new goods, real wages over the last century would have increased 40 to 190 times rather than the reported 13-18 fold increase. Others argue that with respect to the productivity slowdown only a small fraction can be explained by measurement --around 0.2 percentage points.

The general issue of economic growth based on quality change rather than quantity change poses some serious problems for growth economists and policy makers. Not the least of these is simply that the traditional concept of the price level as a nominal measuring stick becomes increasingly difficult to defend. The 1986 BLS adjustments to computer prices is a good example. Suddenly the official statistical view was that computer prices had been declining at 15 percent per year, rather than the previously reported flat numbers. This led to serious revisions in a wide range of other statistics and changed the magnitude of the estimated productivity slowdown. As we shift to a knowledge based economy it is reasonable to expect that a much larger fraction of economic growth will be quality growth rather than quantity growth. After all just how many cars or computers or heart bypasses do you really need? As economic growth is increasingly quality based concepts such as potential output will be increasingly difficult to define and quantify. Policy makers will be faced with a much wider range of estimates of 'real output growth' both in the past and in the future.

Ignoring for the moment how new goods come into being, we know that much of the process of economic growth is associated with the introduction of new goods and statistical procedures to correct for these changes are very imperfect, and in many cases not carried out at all. The debate on CPI revisions in the US have focused on these issues extensively. [6] If GDP is mis-measured and there are good reasons to believe it is then MFP will be low. This problem is thought to be particularly severe in service industries but my own view is that manufacturing has many of the same problems as the boundaries

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[6] See Griliches(1992) and Boskin Commission (1996) on the U.S. CPI. My comments in this section draw on Harris(1998).

between manufacturing and services blur. Griliches(1997) notes that the unmeasured sector (services) now accounts for most of what appears in the national accounts and is the same sector which has the lowest MFP growth. He does not think this is a coincidence.

On the input side there are analogous problems, particularly with respect to human and physical capital. The difficulties here relate directly to the debate as to whether MFP is a useful measure of technological change. There a host of critics of MFP, including Richard Lipsey1966), who take the view that since so much of what we think of as technological change involves the transformation of both the nature of the outputs and the inputs such that measuring it by a residual calculation as done in MFP accounting is meaningless.[7] Common reasoning certainly would seem to support this view, but the counter argument is that economics by definition is full of index number problems and technological change is just one more of these. Measured MFP growth must occur if real living standards are to rise, and furthermore most of the available evidence points to a strong correlation between MFP and real income measures. This alone suggests the concept should be taken seriously.

Policy: Does it matter how we measure productivity?

The productivity measurement literature reflects a substantial tension between those who view productivity growth as the outcome of rational maximizing investment decisions by firms and individuals, versus those who view productivity change as resulting primarily from endogenous changes in technology, which in turn are a consequence of the growth of knowledge. The former group are identified closely with the Jorgenson school of TFP measurement. Generally their approach is to adjust factor input for quality change which has the effect of reducing the residual. For example if the labour input is disaggregated into skilled and unskilled then as skill upgrading occurs this

[7] Later in the paper we discuss the concept of general purpose technologies. or GPT's, a good example being computers. Work by Helpman and others in Helpman(1998) has shown that system wide technological change initiated by the introduction of new GPT's can lead to initial declines in measured MFP.

shows up as increase in the skilled input and a decrease in the unskilled. Since the skilled earn higher wages, weighting factor input growth rates by cost shares has the effect of increasing the measured rate of aggregate input growth and thus reducing the residual MFP number.

The 'non-endogenous' growth school can (somewhat crudely) be associated with the view that non-intervention is the appropriate policy stance since by definition all margins have been optimized against and there are no 'externalities' or spillovers which have not been internalized. The endogenous technological change school take the view observed changes in MFP reflect a host of factors including technological change. Quality change itself is an aspect of technological change. Moreover markets for new technology are viewed as unreliable and characterized by both imperfect information and appropriability problems, all leading to a number of market failures which can potentially be corrected via appropriate policy. In this sense then the endogenous growth approach is *potentially* supportive of interventionist policies which can affect productivity growth, subject to the usual caveats about the limits of government intervention. MFP statistics are viewed as useful by the endogenous growth school but are cautious as to correcting for quality changes, since much of what they would think of as technological change is no longer counted as such.

3. Productivity Drivers and Levers

In the last section we considered how productivity has been measured and how the measurement debate sets part of the context in which productivity 'policies' are discussed. There is a long empirical and theoretical tradition which seeks to explain what determines productivity in a causal sense. Empirically this has involved both cross section and time series analysis of industries and countries. Having measured productivity in some manner other factors are brought in which are thought to explain, or *cause* productivity growth. The basic statistical model of such a study has the form of a regression analysis where productivity is on the left hand side and various 'determinants' X are on the right hand side. Thus

(1) $\Delta A = \beta \bullet X + \gamma Z$

X is a set of factors such as investment or innovation and Z is a set of policy variables, say taxation. In (1) the parameters β are thought of as productivity multipliers or 'spillover parameters'. Policy variables may have a direct effect on productivity or an indirect effect through their influence on X. Note that the change in productivity on the left hand side is itself a constructed variable and therefore how one measures productivity will influence the outcome of the study in important ways. One of the most influential group of studies in this vein derive from what is known as the cross-sectional growth regression literature and are reviewed by Temple(1999). What is studied here is not productivity directly, but rates of growth of real GDP per capita for a large number of countries in the post war period. Subject to the caveats discussed earlier as the connection between these two variables most researchers feel that at least over long time periods the two are highly correlated. The cross-country growth evidence therefore is viewed as highly pertinent of what we know about the determinants of productivity growth.[8] The availability of this evidence has profoundly changed the way economists think about economic growth and the results have been widely supportive of the endogenous growth perspective. While growth in GDP per capita is not the same as MFP for example, there are a number of studies which show that they are very closely related. The outcome of these studies, and a host of other country specific studies has led to what I would call a consensus view on the three main correlates of national productivity growth—let's call then the Big 3. They are respectively investment in machinery and equipment, human capital development, and openness to trade and investment. In the literally hundreds of studies that have been done these three variables show up as robustly and highly correlated with productivity growth or growth in per capita GDP. Consider each of these in turn.

[8] There are some caveats to this when discussing developing countries. In those instances productivity and GDP per capita growth rates can diverge because of large changes in labour force participation rates as countries climb the development ladder.

Productivity Drivers: the Big 3

A. Investment in Machinery and Equipment

Productivity growth is strong and highly correlated with investment in machinery and equipment measured as a share of GDP. Countries with high rates of investment in M&E as a share of GDP have high growth rates on average after controlling for obvious factors such as the level of income at the beginning of the period. This latter effect corrects for what is known as conditional convergence or 'catch-up'—other things equal a poor country can be expected to grow faster than a rich country.[9] This strong correlation holds up over both long historical periods, and more recent evidence in both developed and developing countries. The correlation is subject to multiple interpretations. The conventional view is that M&E investment carries with it new technology and new ideas which diffuse through the economy slowly ultimately contributing to further growth. De Long and Summers(1991) calculate that that social returns to M&E investment exceed private returns by a substantial margin. Estimates put social returns in the range of 16 to 18 percent while private returns are usually in the 6 percent range suggesting substantial spillovers (see Masden(1998 for a review) Causality however remains a contentious issue. Some scholars point to the difficulty in showing that investment causes growth and some claim to find the opposite. A related literature on vintage effects has lent further weight to the importance of investment in economic growth. Greenwood and Hercowitz(1997). note that the fact that the relative price of equipment has fallen steadily at the rate of approximately 4 percent a year over the last two decades is strongly suggestive that recent technological change is embodied in new machinery, or what they term *investment specific technological change*. They calculate, using a more appropriate

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[9] There is a large literature on 'convergence' as an explanation of growth rates. The basic idea is that convergence of income levels might be expected if there are common factors driving economic growth such as technology and similar economic policies. Evidence for the hypothesis is mixed at the national level which suggests that there is ample room for other, country specific, explanations of economic growth and productivity. On the other hand there is some evidence that within nations convergence is important in explaining different regional growth rates. In the Canadian case Coulombe(1996) covers this issue and reviews the evidence.

accounting framework than is used in conventional growth accounting, that 63 percent of US output growth per worker has been due to investment specific technological advance. Taken together this evidence is strongly supportive of the role of investment as a proximate cause of productivity growth. If one could establish reverse causality this would significantly weaken the case for economic policies targeted at investment.[10] The case for investment led economic growth has been an enduring theme of the endogenous growth literature.

B. Education, Training and Human Capital

The endogenous growth literature has placed a considerable amount of importance on the role of Human capital formation in the growth process and these variables find considerable support in various growth and productivity studies. Human capital appears as an engine of growth in two ways. One, it serves to facilitate knowledge spillovers which raises the productivity of all factors. Or in more conventional language being more skilled makes it more likely you will transmit what you know to others, who then will do the same and so on. Two, higher skills enter directly into the production of new technology(product and process innovation), and are necessary to facilitate the adoption of new technology. In other words a computer without software is not much use, nor is it much use if the workers don't know how to run it. At the aggregate level empirical work by Barro and Lee(1995) on various proxies of Human capital and growth comes to the conclusion that it figures prominently in explaining the growth performance in the broad cross section of national economies from 1970 to 1990. Unfortunately much of this work may not have a great deal of bearing on Canadian TFP performance as the proxies use for Human capital are sufficiently crude as to leave Canada indistinguishable from a number of other advanced countries. Furthermore much of the evidence from the cross-country growth regressions are no doubt driven by the developing country experience. Slightly more interesting is the work on MFP growth by Benahib and Spiegel(1994). They interestingly reject the conventional assumption that posits that the level of output depends on the stock of Human Capital as one would expect in a conventional production function framework, but find support for the endogenous growth hypothesis

[10] See Bloomstron et. al. (1996).

that the rate of change of TFP depends on the stock of Human Capital. Human Capital therefore increases the rate at which knowledge grows and is utilized. Furthermore they find strong support that this form of growth interacts positively with the openness variable. These results are clearly very favorable to countries such as Canada--those with a high degree of openness and a high level of Human capital.

Once one goes beyond the macro results things get rather murky. As is well known the literature on training has suggested these programs don't seem to accomplish much. Learning -by-Doing (LBD) has received increase support in a number of recent studies[11], and therefore suggests that firm specific experience of individuals matters a lot. LBD interacts with demography because of the job experience of youth. In terms of the Canada-U.S. comparisons human capital both helps and hinders in resolving the puzzle. As noted by Murphy, Riddell and Romer(1997) in looking at Canada versus the USA Canada has had substantially faster growth in human capital in the 1980's as measured by educational outcomes in the two countries. The faster relative growth rate in Canadian human capital under the Benahib-Spiegel endogenous growth framework should have led to faster growth in conventionally measured Canadian TFP than in the USA.[12]

C. Openness to Trade and Investment

A wide range of evidence points to the importance for productivity growth of openness to trade and investment. This shows up in careful case study evidence as the Ben-David(1993) study of European income convergence and in cross-country evidence; there is a long list of studies here but Sachs and Warner(1995) has been one of the more influential. The evidence now seems overwhelming although for many years there was considerable doubt as to the potential causal links between trade and growth. While the correlation is strong between openness and productivity growth there are a wide range of potential reasons for this link. Among the more important arguments suggesting why the link is so strong are the following:

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[11] See Argottte and Epple(1990) and Bank and Gort(1993).

[12] The evidence on Canada-US productivity growth differences remains controversial. What data we have suggests Canada has done slightly better in terms of growth rates, particularly when you exclude computer equipment manufacturing from the U.S. data.

- Low trade barriers facilitates better use of resources via traditional comparative advantage arguments
- For small countries openness allows the realization of scale economies which are necessary in modern manufacturing and not feasible if reliance is placed on the domestic market alone[13]
- International trade facilitates diffusion, learning and the transmission of idea and technology from abroad. There is substantial recent evidence on the importance of international spillovers in facilitating productivity growth. This is true both internationally[Coe Helpman(1996) and in the Canadian case Bernstein(1994)]
- Similar effects are fostered through Foreign Direct Investment (FDI). Inward FDI in addition to providing capital, provides technology, skill upgrading, and market access (perhaps indirectly) and sometimes in those industries where global concentration is high (e.g. commercial aircraft--we sell parts). Outward FDI helps in generating market access(e.g. in the US) , and securing durable links of Canadian firms with international networks which provide high wage jobs for Canadians, and in securing technology links in foreign countries.
- Openness implies a greater share of economic activity in exporting and there is some evidence that exporting firms tend to have higher productivity growth than do domestic or import competing firms. [Bernard and Jensen(1999), Rao and Ahmad, Industry Canada, 1997)]

[13] Theories supporting this view are sometimes referred to as 'extent of the market' theories. There are an alternative set of theories based on learning by doing in which smaller and less advanced countries are disadvantaged by globalization and freer trade by forcing them into specialization in less advanced products where LBD is not prevalent. Recent evidence by Ades and Glaeser(1999) strongly support extent of the market theories which suggest that external demand is an important limiting factor on growth, and openness can substitute for a large domestic market.

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The Broader Context of Productivity Growth

While there is overwhelming empirical support for the Big 3 as proximate productivity drivers there is no lack of alternative hypotheses to what determines productivity growth, especially as we move from the proximate determinants to the indirect linkages. The economics literature and business press are virtually awash in explanations as to what drives productivity growth. This should not be a surprise since the basic question—the source of the Wealth of Nations—remains one of the most contentious and frequently debated issues of the day. In order to draw some boundaries around the debate let me mention some of the explanations that have had some relevance in the recent Canadian context.

- Innovation (both Product and Process)
- Diffusion of Technology(National and International)
- Spatial Agglomeration (Silicon valley)
- External Economies of Scale at Industry Level
- Government Consumption (negative)
- Management Practices
- Public Infrastructure (positive)
- Income Inequality (negative)
- High Taxes (negative)
- Small firms (negative)
- Labour market flexibility(positive)
- Exchange Rate Stability(positive)
- Low Inflation(positive)

One can find studies which suggest the link of one of more of these variables to productivity or growth in GDP per capita, and in many cases there is some supportive evidence of correlation. There are of course a number of problems: (1) Causality is not the same as correlation and most of these variables are in fact both endogenous; (2) in many instances the time period examined is limited or the sample size is small; (3) economic theory is usually ambiguous as to the predicted effect on productivity . On almost all of these the evidence remains controversial. Moreover the lags between the

initial application of any lever and ultimate productivity effects are very long and highly uncertain due to inherent uncertainty in the transmission process. Finally the feedback effects running between and from these various factors are potentially enormous, complicating the ability of any study to identify the causal pathways. Nevertheless some of these are likely to be more important than others in the productivity debates of the next century. In the interest of adding to this debate I want to focus my remarks on four factors which are likely to figure prominently in future productivity debates in Canada.

A. Innovation and Technology Diffusion

Most of the endogenous growth literature identified knowledge spillovers as the ultimate engine of growth. As Paul Romer has emphasized ideas are not subject to the law of diminishing returns. As knowledge accumulates this knowledge is potentially available for all to use at very low cost, and can lead to a self-reinforcing endogenous growth process. However ideas in the form of useful technology are created by firms and governments in a highly imperfect process. There is a long tradition in Canadian industrial policy with concerns about the weakness of the innovative process within Canada. These concerns are shared in virtually every smaller open industrialized economy that I am aware of, and come naturally when a) most of your markets for new products are external, b) a large share of the world's knowledge is generated outside your own borders, and c) foreign owned multinationals have a large presence in the domestic economy. I will not review the large Canadian policy literature on this issue except to note that recent productivity numbers suggest Canada does quite well at process innovation but tends to lag in product innovation.[14] International diffusion of technology either via spillovers or via explicit technology adoption figure prominently in any likely explanation of productivity change within Canada. On the technology adoption front the evidence for Canada is mixed. Baldwin and Sabourin(1998) find that the major disadvantage Canadian plants face in technological adoption relative to the U.S. is the smaller market size, with some additional worries about labour market inflexibility. Beyond that barriers to technological adoption in the two countries appear to be similar.

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[14] Dan Trefler(1999) has provided some evidence to this effect.

. Innovations results in the most part from deliberate and costly attempts to develop new technologies or products. There are two important debates here. a) What are the private and social returns to innovation? and b) to what extent is the innovation process subject to market failures or 'spillovers'? Productivity and innovation are uniquely related in a number of ways. Some measures of MFP attempt to internalize the inputs to innovation by measuring resources devoted to R&D as inputs and isolating the MFP changes after costing out R&D inputs. Within this framework some of the returns to innovation as ultimately captured by the innovator, just as in the case of any other form of investment. Critics argue that the static production function framework fails to capture the inherently risky and non-appropriable nature of knowledge creation.

Going beyond this approach in a lot of recent empirical work the effect of R&D expenditures on productivity is measured as the changes in private sector MFP attributable explainable the 'spillovers' from collective R&D, both domestic and foreign, but not captured by the R&D inputs directly Coe and Helpman (1993) set off a new line of research when they linked the strength of international R&D spillovers on national MFP growth to trade patterns. The international non-appropriable transfer of knowledge in economies more open to international trade and investment has been one hypothesis suggested by numerous scholars. The Coe-Helpman research distinguished between domestic R&D, global R&D and the role of trade. For Canada their results indicate that global R&D is more important than domestic R&D and that this variable interacts with trade, measured by the import share in facilitating knowledge transfers. To give an example, Bayoumi, Coe and Helpman(1996) estimate the cumulative effect of permanently increasing the share of GDP devoted to R&D by 1/2 of a percent in selected countries and looking at the macroeconomic effects over a 75 year period. In the case of the U.S. this would amount to about a 25 percent increase in R&D spending. Their simulations show this would have a 9 percent increase on US potential output and a 6.8 percent increase on Canadian output. Jeff Bernstein looking at Canada-U.S. spillovers comes to similar conclusions. The results suggest that Canada is a major beneficiary of U.S. innovation spillovers, although the dynamics of this process are not yet identified.

In contrast to the spillovers approach many economists view R&D and the innovations it leads to as fully 'bought and paid for'. Thus the market is assumed to

correctly price innovation inputs and outputs with no identifiable market failure. The policy implications of the two alternative approaches to innovation are very important and have played a long-standing role within the Canadian debate about R&D policy. Economists still argue at great length as to how innovation shows up in the economy.[15] There are a number of potential channels--lower prices, higher factor returns, greater output growth, or higher profits. With some caveats in a closed economy where production must equal consumption the exact channel will not matter at the aggregate level, but it matters a great deal in an open economy to the ultimate impact on living standards.

Many people, myself included, put substantial weight on the Schumpeterian view that innovation occurs in imperfectly competitive industries, and that over medium term horizons the rents from innovation are an important driving force for entrepreneurs. Furthermore this process is characterized by substantial risk to the individual innovator. Schumpeter argued that a successful innovation, causes 'creative destruction' which not only results in new goods with high economic value, but actually destroy value in old goods or industries through obsolescence. If this is an accurate description of how technological change occurs then some interesting implications follow. First, policies which affect private sector innovation, and in particular policies toward new firms and entrepreneurs, become potentially important 'productivity levers'. Second measured ex post productivity growth in Schumpeterian industries can be biased downward due to the inappropriate measurement of inputs by counting obsolesced resources. Third, one has to be careful drawing a close link between high rates of innovation and socially optimal policies. It is quite possible that private markets can actually overinvest in innovation relative to the socially correct level due to the 'destruction effect' of innovation. The cost benefit calculation is further complicated by the fact that innovation rents which result from holding price above marginal cost do not constitute a national efficiency loss if the majority of the consumers are foreigners. The consumer loss in other countries constitutes a gain to producers and workers in the country which has a temporary

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[15] It is interesting that in almost two decades the arguments remain more or less the same. My MacDonald Commission study, Harris(1984), goes over much of the same territory from the perspective of the early 1980's.

monopoly due to a Schumpeterian innovation success. Microsoft's monopoly may not benefit American consumers but it has certainly benefited Microsoft employees and shareholders.

B. Scale, Urbanization and Agglomeration

There are a number of economic theories which emphasize the (Marshallian) observation that greater scale of an activity achieved through the agglomeration of like activities in a particular region (Silicon valley) or city the higher are productivity levels is that activity or sector. Most of these theories emphasize the mobility of firms across space, but others focus on mobility of people as well. The exact source of these productivity gains the case remains a subject of considerable controversy. Dynamic knowledge spillovers, ease of communication, facilitation of learning and so forth. Much of the literature is focused on the apparent correlation between economic growth and the growth of cities. Localization economies and informational externalities are thought to be important reasons for the agglomeration of economic activity within cities. The recent literature contains a number of interesting facts that bear directly on the growth process in Canada. Some of the more interesting ones are as follows.[16]

1. There is growing consensus of strong economies due to agglomeration at least in manufacturing. Agglomeration can be either at the city level or the regional level. [Ellison and Glaeser(1997)]

2. From 1900 to 1950 average metropolitan area populations tripled and the number of metro areas doubled in the U.S. Despite growth in individual city sizes in every decade the number of cities increased --urbanized population rose from 40 to 60 percent. Note at same time large increase in average human capital as evidenced by school completion rates. [Black and Henderson(1998)]

3. Cities are either economically specialized into financial, business services or manufacturing with significant differences in education levels associated with these city types or are diversified. Diversified cities.tend to be larger.

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[16] A useful survey of the recent work on cities, growth and agglomeration is and Duranto and Puga(1999).

4. There is evidence that city growth rates are strongly related to growth rates in human capital within cities. [Black and Henderson(1999)]
5. Diversity within cities and local competition tends to foster urban employment growth while specialization appears to reduce growth (thus diversity may be important for attracting new and growing sectors).
6. Diversity also tends to promote innovation. Feldman and Audretsch(1999) find on data set involving US product innovations in 1982 that 96 percent were made in metropolitan areas which account for only 30 percent of the US population.
7. Specialized cities have some advantages--stronger localization economies within the sector of specialization and thus the ability to attract new plants firms entering that type of activity but they also have disadvantages --less innovation and greater exposure to risk as the specific sectors/technologies rise and fall.

Most of these facts derive from U.S. and European studies but they carry implications for Canada. Canada is also highly urbanized with only four major cities that might be thought of as diversified. Given the importance of city growth to the overall growth process, it seems odd that most accounts of Canadian productivity performance make little mention of the role of cities. Some of this analysis has been extended to regions and in there is course a long Canadian concern with regional inequalities and its effect on growth [Coulombe(1996]. Thinking about how city growth contributes to overall growth in Canada needs further research.

C. General Purpose Technologies

A new paradigm of historical technological change is that much of what we observe is associated with large scale shifts in the entire technological system. The introduction of steam and railways in the last century, electrification early in this century and later Fordism or mass production methods. The concept of a General Purpose Technology is a major innovation which as widespread uses within the economy and who introduction in turn leads to wholesale transformation of production and distribution systems with attendant innovation. This topic has been explored intensively at the Canadian Institute for Advanced Research and the recent volume edited by Elhanan

Helpman(1998) covers the topic in detail The introduction of GPT's are characterized by long lags between the date of introduction and ultimate productivity gains. There is also considerable initial uncertainty as to the ultimate effect of a new GPT. Growth based on a new GPT is to be contrasted with technological innovation which is thought to be continuous and incremental in nature. The IT revolution based on computerization and low cost electronic networks surely constitute a classic GPT. From the measurement perspective a GPT is a nightmare. The basic problem is that the long lags which occur between the original appearance of the innovation and it's ultimate usefulness in the economy due to a host of problems. People need to learn about the technology, there are extensive networks and facilitating infrastructure that need to be created, and many uses of the technology only become apparent long after it has first appeared. Furthermore the economy goes through a substantial adjustment period in which the old technology is slowly discarded. Measured MFP will almost certainly tend to fall during this period both because output growth slows initially, and because inputs are actually made obsolescent by the shift, but are still measured. Economic growth is thus characterized by waves of slow to negative measured growth, perhaps lasting as long as two decades, followed by increasingly rapid growth in productivity. The productivity slowdown of the 70's and 80's might be attributed to the emergence of this new GPT and the recent pickup in productivity is likewise explainable by the payoff to this technology finally becoming evident in the data.

The GPT concept parallels closely the 'new economy' debate which will be picked up in the next section. If a lot of productivity change is due to a maturing GPT a number of issues follow. First, in order to justify policy interventions one needs to know the precise nature of the manner in which the GPT is likely to affect future economic development, and in particular the best form of the facilitating innovation and infrastructure. As governments do not have perfect foresight this is not easy to do. Nevertheless governments can help facilitate coordinate market expectations as to the likely course that a GPT will take, and secondly provide the appropriate public infrastructure that is often necessary for a GPT to reach its full potential.

D. Productivity Dynamics and Microeconomic Heterogeneity

Measured productivity growth of almost any economic aggregate, be it an industry a region or a country reflects two things going on at the microeconomic level of the many individual sectors/activities/firms which make up the aggregate. The aggregate rate of productivity growth can reflect either a pattern or relatively uniform productivity change within the respective micro units, or alternatively it can reflect a reallocation of resources across micro units with substantial heterogeneity in both levels and rates of productivity growth. There is a growing body of evidence that the growth process is fundamentally driven by the *reallocation of resources from low productivity growth activities to high productivity growth activities, rather than limits on the availability of new technology***.**

The principal data behind this observation is the incredible heterogeneity which microeconomic productivity statistics reveal and has shown up in a large number of studies in recent years. Looking across firms within an industry, or across industries within a country, or at industries across countries, we observe remarkable heterogeneity measured productivity levels and growth rates. It is quite common to find plant productivity levels which differ by a factor of two to three in a narrowly defined industry and time period. Furthermore there is a remarkable persistence in the lack of convergence of productivity levels within industries. Important studies which have contributed to this view include Baily et. al(1992), Baldwin(1996), and Dwyer(1995), and new ones have been appearing with increasing frequency. At the national level this appears to have shown up in a reversal of convergence trends in productivity levels in mnaufacturing across countries beginning about the middle 1980's [Bernard and Jones(1996)]. In this case heterogeneity has been extended to the international level.

An important research question is why this heterogeneity persists. One explanation is simply that the data reflect vintage effects—older firms tend to use older technology and thus are less productive or further from best practice. Other explanations hinge on the observation that productivity can be dependent upon firm specific assets, such as location or the skills of management which are not replicable. It turns out that the

latter story seems to the more important one at least in some studies.[17] Productivity growth appears to be an aggregation phenomena. New plants tend to have significant and relatively permanent productivity level. Output growth within an industry occurs due to entry, exit and output growth or contraction at the level of the individual plant. Output growth and contraction appears to play a dominant role in explaining productivity growth. Productivity growth is observed as more productive plants expand and less productive plants contract.

There are a number of implications that can be drawn from the widespread evidence on extensive heterogeneity at the micro level in productivity levels. One, the resource allocation process is far from perfect in that similar resources have differential returns (rewards) in different activities. Observed economic growth is due in substantial part to the shift -allocation of resources from low value use to high value uses. The productivity effect any policy will thus depend in part on the way in which it either retards or promotes the re-allocation of resources from low to high value uses. Second, the potential economic gains to these re-allocations are likely to be larger during periods of rapid technological progress. This occurs since rapid technological progress has also been shown to be associated with greater dispersion in observed micro productivity levels. The greater the dispersion the larger the benefit in moving resources from low productivity plants to high productivity plants.

E. Macro factors :Unemployment, Aggregate Demand and the Exchange Rate

Most of the debate as to changes in productivity are motivated by either secular changes in measure growth rates, or to persistent differences in living standards which go beyond a time period associated with a business cycle. Nevertheless there is a long tradition in economics of identification of weak aggregate demand as being a potential cause of productivity change. As is well known and argued forcefully by Pierre Fortin(1994)(1996) output growth in Canada in the 1990's has been unusually weak. Fortin attributes this weakness to macroeconomic factors on the aggregate demand side. If there is causation running from aggregate demand to long term productivity growth this has the potential to be an important factor in both explaining and resolving some of

[17] Dwyer(1995) finds this to be particularly true in a study of U.S. textile plants.

the productivity problems in Canada. Virtually all economists would accept the proposition there are medium term links between productivity and output growth, however there is substantial disagreement as to whether long term productivity trends can be affected by economic stabilization policy--either fiscal or monetary.

In the literature there are three separate potential linkages running from aggregate demand to productivity growth.

1. Some theories suggest that weak aggregate demand reduces output growth for a given labour force. Low output growth tends reduce productivity growth directly via negative dynamic learning-by-doing effects or the existence of dynamic scale economies. Firms which are not expanding are not learning and this reduces productivity. This is sometimes referred to as the 'Verdoorn effect.'

2. Other theories suggest that that temporary reduction in aggregate demand have long term negative effects on unemployment . Over a period of a few years a high rate of unemployment can induce hysteretic negative productivity effects on the labour force through de-skilling --i.e. being out of work for long periods causes a loss of skill which in turn leads to lower future productivity.

3. Finally there is what might be termed 'heterodox view' associated with the Austrian school that recessions are good thing. The 'cleansing recession' hypothesis is that cyclical downturns facilitate the obsolescence of old technology and moving resources to new more highly productive uses. In essence recessions are manifestations of 'creative destruction'.

If one takes the Keynesian view that economies will tend not to revert naturally to long run full employment equilibrium then the first two theories both would suggest that sustained periods of weak output growth can reduce productivity over the longer run. Furthermore supply side oriented policies which may otherwise enhance productivity are doomed to failure unless aggregate demand is sufficiently buoyant. It is interesting that the Europe-US comparisons have not been brought up more often in the Canadian productivity debate. Europe has high unemployment and high productivity growth

relative to the US, although Europe also had a productivity slowdown. The standard explanation for this difference is that rigid labour markets in Europe have induced firms to substitute capital for labour leading to both job losses, but increased productivity. This is sometimes characterized as the 'OECD hypothesis' and has received a lot of attention by Canadian labour economists, most recently by Craig Riddell(1999). However this same evidence casts doubt on whether weak output growth or high unemployment necessarily has long term effects on productivity given the strong European productivity record. However the recent pick-up in both output growth and productivity growth in the US is likely to re-new this debate.

A related macroeconomic productivity link is the exchange rate. Recently there has been considerable debate as to whether the trend depreciation in the Canadian dollar could have contributed to the low levels of productivity observed in Canadian manufacturing relative to the U.S. This hypothesis is discussed at length by Tom Courchene and myself [Courchene and Harris(1999)] and is an important part of the debate as to the costs and benefits of a North American Monetary Union. A number of commentators have pointed out that short terms measures of cost competitiveness between Canada and the U.S. have been favorable to Canada largely due to the lower Canadian dollar. Canadian productivity levels in manufacturing are still below those of the U.S.(see Sharpe(1999)—this conference) Of the various arguments that would suggest a causation running from the exchange rate to productivity the simplest is simply that domestic firms faced with a depreciating currency simply could avoid making necessary productivity improvements in order to remain internationally competitive. A more complicated argument involves the simultaneous interaction between a depreciating currency during a period of rapid product innovation in the United States. A cheap dollar has the effect of encouraging Canadian firms to expand in areas where cost competitiveness was most valuable, and to avoid making investments in product based R&D, the cost of which had risen due to the use of new technology and skilled labour inputs priced in US dollars. Both these explanations await further research. The more conventional macroeconomic theory is that lower trend productivity growth in tradable manufacturing sectors relative to ones trading partners *causes* a depreciating real exchange rate rather than having the exchange rate depreciation cause lower productivity

growth. But it also the case true that the evidence on the traditional linkage is quite weak.[18]

4. Productivity Growth in the 21st Century

Assessing the historical record on productivity is an area subject to considerable dispute. It is obvious but no less important to note that productivity trends in Canada are likely to mirror considerably those in the Global economy. The recent pickup in productivity numbers particularly in the U.S. has raised expectations considerably that these trends will start to emerge elsewhere. One should be cautious however as to extrapolation of recent trends either through time or across countries. Over the economic cycle there is enormous volatility in measured labour productivity growth. Business cycles vary in length from 5 to 36 quarters in the post war period—the current one is of course particularly long. In recoveries productivity growth varies between zero and plus six percent with weak persistence. Looking across countries there are two striking feature of the data. First large variation across countries of growth rates, and secondly over longer periods remarkably little long term persistence in growth rates between periods. In the 125 country Summer-Hestons data set growth rates in the last 25 years have ranged from over 5 percent to negative. In terms of persistence the correlation between 1962-72 growth rates and 1975-83 growth rates is only 0.16.[19] The implication of this is that individual country experience probably should not be extrapolated either to other countries or into the future with any great degree of certainty. The good news however is that a poor growth performance in the past is not a sentence for life. Good policy and good luck are always possible.

Despite the problems inherent in 'productivity speculation', the theme of the conference is the vision for the 21st century. What might turn out to be the important trends that impact on Canadian productivity growth in the next few decades. My remarks will focus on three key developments

- demography

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[18] This is referred to as the Balassa- Samuelson hypothesis in the literature.

- globalization and North American economic integration
- the 'New economy' debate.

The Demographic Challenge

It is clear that one of the most important significant future developments with strong productivity implications is the future demographic trends in Canada, and indeed in most western industrial countries. Most experts agree on the following:[20]

- over the next four decades the median age of the labour force will increase from about 35 to 45, whereas only 30 years ago the median age was 25
- the share of the population over 65 will more than double by 2030
- after 2011 there will be substantial slowing in labor force growth, holding immigration trends constant; the rate of growth in the labour force will be well below that of the population with a leveling off in the increase in female participation rates and the entry of smaller youth cohorts

If recent productivity trends persist these developments are problematic to say the least -for both public policy and economic growth. Most forecasters note that since the government tends to spend about $3 on the elderly for every 1$ spend on the youth there will be a dramtic rise in the expenditure dependency ratio-i.e. spending on dependents as share of GDP. The only hope for an offset to this would be a dramatic increase in labour productivity growth--most estimate that if labour productivity growth were to move into the 2 percent range current expenditure programs could be maintained without substantial increases in budget deficits.[21] What is the likelihood of such a trend increase in productivity growth? While perhaps not impossible as we shall see. However the aging population carries with it another implication. As workers age, particularly after the mid 40's existing studies by labour economists show that the productivity of older workers tends to decline. The major evidence for this is found in cohort-wage studies. The substantial increase in the median age of the labour force therefore should also be

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[19] reported in Easterly et. al. (1993)

[20] Denton and Spencer(1998) provide a very useful review of demographic projections for Canada and their implications for output growth.

[21] A variety of projections is provided in Session II of Courchene and Wilson(1998).

associated with a decrease in the average productivity level of the labour force. Simply put a labour force full of 55 years olds will produce a lot less than a labour force full of 40-45 year olds. Therefore we are in a double bind; not only are expenditures to increased dependency likely to rise, but the average productivity of those who will be working is likely to decline.

Are there any outs to this otherwise rather pessimistic scenario? Well there are at least four possible developments that might at least reduce the tension.

1. Machine-muscle substitution: The history of technological change has been a series of innovations which have substituted machine movements for muscles. Robots on the floors of manufacturing plants are only one example. Since loss of muscle strength and agility is a major feature of the aging process, additional innovation which results in the substitution of machines for muscles is likely to continue to be an important feature of future technological change. Example abound and are found increasingly in service industries as well as manufacturing. Automatic food serving vendors, better baggage handling technology, and so forth.

2. Machine-neuron complementarity: The modern Luddite worries that smart machines will eliminate the need for human intelligence--the substitution of chips for neurons. While in some cases there is of course 1 to 1 replacement of people for a machine (the ATM for example) much of modern technology built around the computer is to aid human intelligence--that is, it is complementary to human intelligence. Additional innovation with respect to this type of technology is likely to aid an aging labour force retain it's productivity. Two areas come to mind which are of particular importance with respect to aging. Technology to facilitate memory intensive tasks, and technology to facilitate learning new technology. In much the same way that rising wages induced machine-muscle innovation in the industrial era we can reasonably expect that a similar as the labour force ages there will be strong economic incentives to develop neuron-machine complementary innovations.

3. Medical innovation. One area where there appears to be virtually no slowing in new innovation is in medical science. Many of these developments relate directly to lengthening the ability of aging human bodies to continue to function effectively beyond

what would be associated with the normal retirement period. Hip replacements, laser eye surgery, etc. etc.

The other side of the demographic productivity trap is the assumption that older workers will continue to retire at the same age, thus reducing output and growth, or even worse that the trend toward earlier retirement will accelerate. There are some reasons this trend may reversed.[as argued for example in the recent Economist , September 4, pp. 65-68.] Not the least are a number of policy changes that could reduce the average retirement age(see OECD "Maintaining Prosperity in an Ageing Society") The productive effects of these could be to actually increase average productivity levels in the labour force, relative to the alternatives, if the skills and experience of workers that are now retiring could be leveraged into a few more years of useful work. This is undoubtedly one of the major challenges Canada will face early in the next century.

Globalization Arguments

Globalization has been an inexorable trend that has been with us for a very log time, but appears to have accelerated in the 1980's. There are a number of important productivity implications of globalization for Canada both on the positive and negative side. There are three aspects of globalization that warrant attention with regard to Canadian productivity prospects. The potential slowdown in the growth of world trade and foreign investment, the agglomeration trends within an integrated North American market, and the emergence of a global market for the very highly skilled.

A Potential Slowdown in the Growth of the Global Economy

Chad Jones of Stanford University wrote a paper last year with the provocative title "The Coming Productivity Slowdown".[22] The thesis of the paper was actually quite simple. He argued that some of the most robust findings of the modern empirical growth literature is the close correlation between growth rates of human capital formation and openness to trade and investment. In the case of human capital he notes that in 1940 less than 1 in 20 in the l labour force had completed high school. By 1990 80 percent had completed high school and more than 20 percent had some form of higher education.

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[22] See Jones(1998).

Over the same period the U.S. had opened up substantially to trade and international investment with close to a tripling of the openness ratios. Finally, In the U.S. the number of scientists and engineers engaged in R&D increased from 0.25 percent of the labour force in 1050 to 0.75 percent of the labour force in 1990. He then argues that all of these trends are now slowing but the rapid increase in these variables over the last four decades has been responsible for much of the high growth observed in the same period.

The case that all these trends might slow significantly is clearly speculative. World trade has been growing steadily at about 8 percent per year well above world GDP growth. How long can this go on? It is not difficult to take the view that the growth in international trade witnessed in the last two decades is bound to slow for a number of reasons. Not the least is the simple observation that as the share of services in the economy gets very large, trade in goods becomes less significant. Thus growth trade volumes expressed as a percent of GDP will eventually level off. Jones argues that U.S. growth has been driven in large part by an increase in trade, and as that growth levels off so will productivity growth. Investment in innovation seems also to slowing down as witnessed by the number of scientists and engineers who are doing R&D. Finally the rapid increase in U.S. rates of participation in higher education is another trend that also appears to have slowed. He then argues that if ones takes the estimates from the empirical growth literature seriously the implications for future U.S. productivity growth are dismal to put it mildly. Using a fairly standard growth model he calculates that *the rate of growth in U.S. per capita GDP will fall to 1/4 of its average post war level.*

Is any of this to be taken seriously? While the paper was meant to be provocative what he points out is certainly worth contemplating. First, the trends that he discusses which are evident in most countries have certainly been good for growth, and admittedly it seems difficult to believe these trends can persist indefinitely. Canada has benefited enormously from increased openness since the FTA/NAFTA with international exports growing from about 25 percent of GDP to in excess of 40 percent. If that was positive for growth then as that export growth slows so will productivity growth, even if the level effects remain. Moreover if growth in the US. slows given the large extent to which Canada relies on technology spillovers from the US any potential slowdown there will have strong negative implications for Canadian economic growth as the Helpman-

Coe/Bernstein spillover results suggest. On a more positive note however it may be that growth in openness of the Canadian economy is far from over. Other small open economies in Europe such as Belgium, the Netherlands and Austria have much higher openness ratios than does Canada—in some cases close to 100 percent. If their experience is indicative of where Canada is headed we may enjoy a productivity growth dividend for a number of decades as the economy evolves in that direction. This presumes of course that things 'work out' in our neighbour to the south. If Jones is really correct and the US heads into a protracted productivity slowdown things are worse than we imagine.

North American Integration and Regional Agglomeration

In Europe the emerging literature on trade and geography has renewed worries about regional growth poles, and center-periphery asymmetric development within the EU as firms become increasingly mobile within a more fully integrated economic area. All of these same issues are beginning to emerge as an integrated North American economy emerges. Will some or all of Canada's regions become regional backwaters as the forces of agglomeration push high value added activity into U.S. based growth poles? On theoretical grounds all of this is possible of course. One has to genuinely worry that agglomeration is such a powerful force it may relegate Canada to as a collection of location of highly specialized but less innovative and high value added activity. The importance of cities for example suggests that Canada has to have a sufficient number of highly diversified and human capital intensive cities if it is to maintain high rates of productivity growth. As Courchene and Telmer(1998) argue, if Canada is integrating North-South it may well be that in the next century growth prospects will be region specific with the growth of each Canadian region mirroring that of the respective region to the South. National economic policy might counteract such tendencies but given the close links between these regions it is hard to imagine how national policy could reverse a Canadian regions decline if the adjacent US region were to go into a protracted growth slump.

These regional worries have international analogues—agglomeration effects which appear to be biased against small countries-- small countries will be de-

industrialized, will have no world class cities, and no major Silicon valleys etc. By this set of arguments 'smallness' in itself guarantees low productivity levels. Fortunately I think these arguments are limited and the negative effects can be avoided by appropriate integration or exploitation of global markets.[23] Examples abound of small countries that have very high levels of productivity and income--Switzerland, Finland, Singapore, the Netherlands etc etc.. Furthermore there is virtually no evidence that growth is related to country size. On the available case study and econometric evidence therefor there appears to be no a priori justification for the idea that Canada will be 'hollowed' out by a more integrated North American market.

Nevertheless it is very important that we understand how the factors which lead to agglomeration—localization economies, learning by doing, and knowledge spillovers work in detail so that appropriate strategic and compensating policies can be put in place. One simple example. If low corporate tax rates are a necessary condition for a small country to attract to FDI in larger economic area due to the presence of agglomeration effects then there being competitive on tax rates internationally for mobile economic activity will be a necessary condition for economic growth.[24]

The Global Market for Human Capital

As more economic activity is based on human capital advantages the skill mix of the labour force becomes an important long term determinant of an economy's industrial structure, and changes in the level of investment in human capital will tend to have greater impact on economic growth than it may have had in the past. Many 'high tech' activities are inherently footloose (unlike agriculture or resource industries)--thus people are the only 'sticky factor'. The people that 'make or break' a firm however are the very highly skilled employees and managers; globalization has raised substantially the real wages of those who have acquired critical skills. The skills shortage in the IT sector is a good example. As noted previously Canada has a strong record on human capital

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[23] A recent paper by Ades and Glaeser(1999) has growth evidence which is strongly supportive of this view. Their results suggest that even a low income region can attain high growth rate by sufficient access to an external market which overcomes the inherent limitations of small regional markets.

[24] This I take as the central message of the Mintz Committee on business tax reform.

formation, but that may not be enough. The fear of many is that the labour market for these people has become truly global raising the prospect of a new class of worker—the global 'gold collar' worker who can work in any country and has little national allegiance one typically ascribed to the labour force in the past.

An emerging global market for highly skilled will affect Canadian productivity growth in obvious ways. First these workers are necessary for the transfer of best practice international technology, to facilitate learning new technologies and to foster Canadian based innovation. Second human capital is complementary to a lot of physical capital--hence in the competition for new investment globally, the ability to attract and keep highly skilled human capital will be a necessary condition for growth. An opposing view is that the global market for human capital is relatively insignificant—after all the bulk of most workers never leave their home region never mind their country and rates of international migration are still relatively mild.[25] As the media debate on the 'brain drain' indicates both sides can point to supporting evidence, and so the arguments will go on for some time. If the global 'gold collar' labour market proponents are correct, and this trend accelerates, it will impact on all countries in a wide range of ways. The potential productivity implications are however enormous and at this point unquantifiable. A neoclassical optimist would argue that it does not matter—mobility of workers, skilled or unskilled, is a good thing. Increased mobility raises world income, and with the rapid diffusion of ideas the geographic location of a particular 'brain' is of little consequence. I would like to believe this, but the evidence on agglomeration in growth patterns suggests it is too sanguine a view. There may be thresholds on skilled labour supply below which the viability of an industry in a particular region becomes tenuous.

The 'New Economy'

Promises of a new 'golden age' of high but possibly unmeasured productivity growth fills the pages of newspapers daily, and has gathered considerable recent support by such notables as Alan Greenspan. The recent evidence is certainly impressive in the case of the U.S. economy. Average labour productivity grew at an annualized rate of 2.15 percent from 1995 through the first quarter of 1999, after growing at just over 1

[25] John Helliwell's(1999) recent study makes this point using Canadian-US data.

percent from 1972 to 1995. Does this herald the return to the golden age of productivity growth witnessed in the 1950 to 1970 period in which productivity grew at a rate in excess of 2.5percent? If so the impact would be remarkable both on the real incomes of workers and the ability of government to fund program spending. There are doubters however and their arguments are impressive. Robert Gordon of Northwestern notes that entire pickup is predicated on one remarkable fact—the significant drop in computer prices over the last few years.[26] Growth in computer manufacturing proceeded at an astounding rate of 42 percent over the 1995Q4-1999Q1 period. This one sector managed to raised the aggregate growth rate even though computer manufacturing accounts for just 1.2 percent of total output in America. Productivity growth for non-computer manufacturing (durable and non durable) actually declined in 1995-99 relative to 1972-1995. Gordon therefore argues the New Economy simply isn't a statistical reality and furthermore the much talked about productivity slowdown is still very much with us. As he describes it the computer revolution thus far has only been productivity enhancing to the extent that it has resulted in more efficient production of computers. The broader based benefits of computers and related IT are still not in the data.

It is not clear where all this leads. The Gordon position is countered in two ways. First there are the traditional Griliches concerns with unmeasured output gains in the service sectors. True enough, but these adjustments if made appropriately would go back a long ways and provide no evidence that there has been a recent pickup in productivity growth. On the other hand there is some recent work using stock market data to infer productivity gains which is much more optimistic. Greenwood and Jovanovic(1999) suggests the 'New Economy' is real and use as evidence the stock market values of technology intensive companies, most of whom are firms that did not even exist prior to 1972. But is the stock market valuation of technology companies to be believed? Certainly in fully rational perfect foresight stock market we would expect stock prices to reflect future income growth in earnings, which in turn reflect productivity growth. However 'bubble theorists' are not impressed, and until productivity shows up in conventional statistics will remain unconvinced. Of course if computers and IT

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[26] See Gordon(1999)

technology are a genuine GPT in the Lipsey-Helpman sense then perhaps we will simply have to wait given the lags inherent in the evolution of a new GPT. If the 'New Economy' turns out not to have arrived then the next century will bring more what we have had in the past, although worries about Canada falling behind the U.S. are likely to be less compelling.

At this point however there is no reason to discount completely the optimists. The anecdotal evidence is certainly impressive, and the implications for Canadian productivity growth of the 'New Economy' hypothesis are obviously considerable. If true then the current period is one in which the U.S. can be characterized as 'forging ahead' yet again[27]--if history repeats itself Canada should start to benefit from 'catch-up' effects and with appropriate facilitating policies can encourage a similar structural shift in the economy. Major policy issues will emerge as to what these policies might be --e.g. Internet infrastructure subsidies, more resources devoted to providing IT training, favorable tax treatment of IT intensive sectors etc.?

There is the broader question as to whether the Internet and related technology will turn out to be the most important of these new technologies due to its impact on reducing the cost of distance in economic interactions. Canada is a country which has been shaped by geography. As the population becomes increasingly urbanized it can be described as an economy with a few major cities in which most GDP is produced with vast distances in between. The Internet could change that in the next century in ways that are hard to imagine.[28] For example growth in medium sized cities has been hampered by the inability of these cities to break the benefits that agglomeration confer via localization economies on the incumbent large cities. Closely related electronic networks may substitute for physical proximity, and spillovers may be conferred via virtual linkages rather than physical linkages. Optimistically this might encourage growth of firms in a number of medium sized Canadian cities which are attractive living locations. In a sense this a zero sum activity since this activity would have to be attracted from the larger cities, but it could be productivity improving in two ways. First, many of these spillovers

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[27] The historical record on leading and lagging in growth is detailed in Abramovitz(1986).

[28] Some of these issues are discussed in Globerman and Harris(1998).

might be international in scope. Firms in smaller size cities could benefit from participation in virtually linked North American networks. The Internet allows firms to manage customers and suppliers in ways that hitherto were not feasible. Secondly, at some point large cities become inefficient as congestion rises. Transferring activity to less congested smaller cities would be efficiency enhancing overall. Thirdly, virtual economic integration within Canada could be expected to pickup. While Canada has a tradition of a relatively integrated common market, the fact is that interprovincial trade has fallen—interprovincial trade is now less than 20 percent of GDP whereas only a decade ago it was over 25 percent of GDP.[29] Full integration of the Canadian common market has been hindered for decades by the cost of distance. As the Internet reduces distance costs there is now the possibility of achieving the larger potential of the virtually integrated Canadian common market which comes with greater scale economies and the dynamic effects of increased competition.

5. Conclusion: The Policy Framework:

Developing economic policies which can increase the chances that Canada will improve its productivity record are at the top of both the private and public agendas these days. There remains considerable disagreement as to exactly how this is to be achieved. Part of this disagreement is genuinely ideological in nature, but a lot emanates from the ambiguity in the statistical and historical productivity records. Broadly speaking we have some agreement as to how productivity should be measured, but recognize the problems inherent in these efforts. Second there is a broad consensus that productivity growth declined in the mid 1970's but still disagreement as to why? Looking at the broader record we recognize that trade, investment and human capital formation are the broadest drivers of productivity growth, within an overall framework in which knowledge creation creates the opportunities for growth. Within these parameters there remains considerable debate as to what levers should be pulled that might lead to higher productivity growth.

A good example of this tension is policy toward innovation. Here we have a tension between those who view innovative activity leading mostly importantly to

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[29] See Grady and MacMillan(1998).

knowledge spillovers which are non-appropriable, versus those who view innovation as the outcome of a Schumpeterian competition with imperfect product and factor markets. The 'spillovers' school of thought is equated with market failure and it's corollary government intervention. If you are of this persuasion you seek confirmation of your views that knowledge creation is non-appropriable and governments can effectively identify the point of social-private discrepancy with limited parameter uncertainty. Alternatively, if productivity growth is due to innovations by risk-taking firms and entrepreneurs seeking temporary monopoly rents, successful innovation results in ex post monopoly and destruction of rents on competing product/process. Good policy in this case is focused on fostering the development of new entrepreneurs, ensuring that a temporary monopoly does not permanent, and facilitating those who lose in the process of creative destruction find new jobs. Between these perspectives however there are a wide range of alternatives corresponding to a range of alternative models or theories as to how the innovation process works. There is genuine unresolvable uncertainty as to which view of the world is appropriate.

The debate on 'Productivity levers' is subject at almost every turn to this type of 'model' or what we call *Knightian uncertainty*. This is uncertainty which cannot be expressed in terms of a simple statistical odds, but refers to the unresolvable fact that the true causal economic pathways from policy to outcomes are unknown and maybe unknowable within the time frame that is relevant to policymakers. Does encouraging investment in pulp mills, bridges or computer programmers lead to higher future growth? Is it done by lowering taxes or increasing subsidies? A useful question but what is the answer. Given Knightian of uncertainty as to past causal linkages from policy to productivity, and in addition the considerable uncertainty with respect to the developments of the next century how can we think about policy choice? Here are some suggestions for the prudent Canadian policy maker.

a) Be Cautious: stick to policies which are known to be on balance favourable towards promoting the 'Big 3', and worry about policies which claim to address another problem but may cost the economy in terms of increased investment, trade or human capital formation.

b) Pay attention to new evidence: In the presence of severe model uncertainty you may wish to be display increased sensitivity to new and unusual information-remember anecdotes are preliminary data. I think a good example of this type of issue is the current 'Brain Drain' debate. The traditional evidence and theory suggests that the flows of skilled works relative to the stocks are insignificant and suggest there is little to worry about. But recent losses of the 'very highly skilled ' have sending out alarm bells in the business community. It may be that the business community has an incompletely articulated model of the importance of highly skilled labour that the older theories do not represent, but may be more relevant to the success of Canadian firms, and thus the Canadian economy.

c) Be a global realist. Policies directed at productivity must be viewed in light of a realistic view on the international allocation of mobile and footloose resources and Canada's relative position in the Global economy. Without an economic environment which is competitive for new mobile investment and highly skilled people all other productivity levers may be irrelevant.

Bibliography

Abramovitz, M. (1986). "Catching up, forging ahead and falling behind", *Journal of Economic History*, 46, 385-406

Ades, A. and E. L. Glaeser (1999) "Evidence on Growth, Increasing Returns and the Extent of the Market" Quarterly Journal of Economics, Vol. CXIV(3), 1025-1046.

Argotte, Linda and D. Epple(1990) "Learning Curves in Manufacturing" Science, 247(February), 920-924.

Bahk, Byong-Hyong, and Michael Gort(1993) "Decomposing Learning by Doing in New Plants", Journal of Political Economy 101(4):561-583.

Baily, M.N. and H. Gersbach(1996) "Efficiency in Manufacturing and the Need for Global Competition" Brookings Papers: Microeconomics 1996, 307-358.

Baily, Martin N., Charles Hulten and David Campbell (1992) "Productivity Dynamics in Manufacturing Plants" Brooking Papers: Microeconomics, pages 187-267.

Baldwin, John R. and David Sabourin (1998) "Technology Adoption: A Comparison Between Canada and the United States", No. 119, Micro-Economic Analysis Division, Statistics Canada, Ottawa.

Baldwin, J. (1996) "Productivity Growth, Plant Turnover and Restructuring in the Canadian Manufacturing Sector" in D.G. Mayes(ed.) *Sources of Productivity Growth* (Cambridge University Press)

Barro, R. J. and Jong-Wha Lee, (1994), "Sources of economic growth*", Carnegie Rochester Conference Series on Public Policy*.

Bayoumi, T., D. Coe, and E. Helpman (1996) "R&D Spillovers and Global Growth" Working Paper No. 79, Canadian Institute for Advanced Research, Program in Economic Growth and Policy.

Bayoumi, T., D. Coe, and E. Helpman (1996) "R&D Spillovers and Global Growth" Working Paper No. 79, Canadian Institute for Advanced Research, Program in Economic Growth and Policy.

Ben-David, D. (1993) "Equalizing Exchange: Trade Liberalization and Income Convergence" Quarterly Journal of Economics: 108(3):653-79.

Benhabib, J. and M.M. Speigal, 1994, The role of human capital in economic development, evidence from aggregate cross-country data, Journal of Monetary Economics 34, 143-147.

Bernard, A. B and C. I Jones (1996) Comparing Apples to Oranges: Productiviyt Convergence and Measurement Across Industries and Countries" American Economic Review, December 1996.

Bernard, A.S. and J. B. Jensen (1999) Exporting and Productivity, Working Paper No. 7135, National Bureau of Economic Research, Cambridge Massachusetts.

Bernstein, Jeffrey I. (1994)" International R&D Spillovers Between Industries in Canada and the United States", Working Paper No. 3, Industry Canada, Microeconomic Analysis, September (available at http://strategis.ic.gc.ca/sc_ecnmy/engdoc/homepage.html0

Black, Duncan and Vernon Henderson (1999) " A Theory of Urban Growth", Journal of Political Economy, Vol. 107 No. 2. pp 252-284.

Black, Duncan and Vernon Henderson (1999) " Urban Growth", Working Paper No. 6008, National Bureau of Economic Research, Cambridge Massachusetts

Blomstrom, Magnus, Robert E. Lipsey and Mario Zejan (1996) "Is Fixed Investment the Key to Economic Growth" Quarterly Journal of Economics: 111:269-276.

Boskin, M.J. chairman, E.R. Dulberger, Z. Griliches, R.J. Gordon and D. Jorgenson (1996) *Towards A More Accurate Measure of the Cost of Living*, Final Report to the Senate Finance Committee from the Advisory Commission to Study the Consumer Price Index.

Coe, T. and E. Helpman (1995) "International R&D Spillovers" European Economic Review, vol. 39 pp. 859-887.

Coulombe, Serge (1997)"Regional Disparities in Canada: Characterization, Trends and Lessons for Economic Policy",, Working Paper No. 18, Industry Canada, Microeconomic Analysis Branch.(available at http://strategis.ic.gc.ca/sc_ecnmy/engdoc/homepage.html)

Courchene, Thomas J. and Thomas A. Wilson (eds.)(1998) *Fiscal Targets and Economic Growth* (Kingston: John Deutsch Institute, Queen's University).

Courchene, Thomas J. and Colin R. Telmer (1998) *From Heartland to North American Region State: The Social, Fiscal and Federal Evolution of Ontario* (Toronto: Faculty of Management, University of Toronto).

Courchene, Thomas J. and Richard G. Harris (1999) "From Fixing to Monetary Union: Options for North American Currency Integration", C.D. Howe Institute *Commentary No. 127* (Toronto: C.D. Howe Institute).

DeLong, J.B. (1991) "Equipment Investment and Economic Growth" Quarterly Journal of Economics: 106:445-502.

Denton, Frank T. and Byron G. Spencer (1998) "Demographic 'Trends, Labour Force Participation, and Long-Term Growth" in Thomas J. Courchene and Thomas A. Wilson (eds.), *Fiscal Targets and Economic Growth* (Kingston: John Deutsch Institute, Queen's University), 21-57

Duranto, D. and Diego Puga (1999) Diversity and Specialisation in Cities: Where, Why and When does it Matter? Working Paper No. UT-ECIPA-DPUGA-99-02, Economics Department, University of Toronto.

Dwyer, Douglas D. (1995) "Technology Locks, Creative Destruction and Non-Convergence in Productivity Levels" Center for Economic Studies paper 95-6, Bureau of the Census, Washington, D.C.

E. Helpman (ed.) *General Purpose Technologies* (M.I.T. Press, 1998)

Easterly, W., M. Kremer, L. Pritchett, and L. Summers (1993) "Good policy or good luck? Country growth performance and temporary shocks" Journal of Monetary Economics 32:459-483.

Ellison, Glenn and Edward Glaeser (1997) "Geographic concenetration in US manufacturing industries: A dartboard approach" Journal of Political Economy 105(5):889-927.

Feldman, Maryann P. and David B. Audretsch (1999) "Innovation in Cities: Science-based diversity, specialization and localized competition" European Economic Review 43(2): 409-429.

Fortin, Pierre (1994) "Slow Growth, Unemployment and Debt: What Happened? What Can Be Done?" in Thomas J. Courchene (ed.) *Stabilization, Growth and Distribution: Linkages in the Knowledge Era*, Bell Papers on Economic and Public Policy (Kingston: The John Deutsch Institute, Queen's University), 67-108.

Fortin, Pierre (1996) "The Great Canadian Slump", *Canadian Journal of Economics* XXIX (November), 761-787.

Gera, S., W. Gu, and F. C. Lee (1997) "Capital-Embodied Technical Change and the Productivity Slowdown in Canada" mimeo, Micro-economic Policy Analysis Branch, Industry Canada, Ottawa.

Grady, Patrick and Kathleen Macmillan (1998) "Why is Interprovincial Trade Down and International Trade Up", *Canadian Business Economics*, Vol. 6, No. 4, 26-35.

Greenwood, J and B. Jovanovic (1999) "The IT Revolution and the Stock Market" Working Paper No. 6931, National Bureau of Economic Research, Cambridge Massachusetts.

Greenwood, J, Z. Hercovitz and P. Krusell (1997) "Long Run Implications of Investment-Specific Technological Change" American Economic Review 87(3):342-362.

Griliches, Z. (1992) *Output Measurement in the Service Sector* National Bureau of Economic Research, (University of Chicago Press, Chicago).

Harris, R. G. (1996) "Evidence and Debate on Economic Integration and Economic Growth" in P. Howitt (ed.) *The Implications of knowledge-based growth for micro-economic policies* (Calgary University Press, Calgary).

Harris, R.G. (1985*) Trade, Industrial Policy and International Competition*, volume 13 of Royal Commission on the Economic Union and Development Prospects for Canada, University of Toronto Press, 1985.

Harris, Richard G. (1993) *Trade, Money and Wealth in the Canadian Economy*, 1993 Benefactors' Lecture (Toronto: C.D. Howe Institute).

Harris, Richard G. (1998) "Long Term Productivity Issues" in Thomas J. Courchene and Thomas A. Wilson (eds.), *Fiscal Targets and Economic Growth* (Kingston: John Deutsch Institute, Queen's University), 67-90.

Helliwell, J. (1999) "Checking the Brain Drain: Evidence and Implications" mimeo, University of British Columbia.

Jones, C. 1998 "The Coming Slowdown in Economic Growth" Working Paper No. 6284, National Bureau of Economic Research, Cambridge Massachusetts.

Lipsey, R. G. (1996) *Economic Growth, Technological Change, and Canadian Economic Policy*, 1996 C. D. Howe Benefactors Lecture, C.D. Howe Institute, Toronto.

Maddison, A. (1995) *Monitoring the world economy, 1820-1992* / by.Development Centre of the Organisation for Economic Co-operation and Development ; Washington,D.C.

Masden, J.B(1998) "A Century of Economic Growth: the Social Returns to Investmetn in Eequipment and Structrures" University of Western Australia, mimeo.

Nordhaus, W. (1996) "Do Real Output and Wage Measures Capture Reality/The History of Light Suggests Not," in T. Breshnahan and R. J. Gordon (eds.) *The Economics of New Goods*, National Bureau of Economic Research (University of Chicago: Chicago).

Nordhaus, W. (1996) "Do Real Output and Wage Measures Capture Reality/The History of Light Suggests Not," in T. Breshnahan and R. J. Gordon (eds.) *The Economics of New Goods*, National Bureau of Economic Research (University of Chicago: Chicago).

Rao, S. and A. Ahmad (1997) "Canadian Small and Medium-Sized Enterprises: Opportunities and Challenges in the Asia Pacific Region" in R. G. Harris (ed.) - *The Asia Pacific Region in the Global Economy: A Canadian Perspective*) Industry Canada Research Series, Vol. VII, (University of Calgary Press, Calgary).

Riddell, C. (1999) "Canadian Labour Market Performance in International Perspective", Presidential Address Canadian Economics Association, forthcoming Canadian Journal of Economics.

Robert J. Gordon (1999) "Has the "New Economy" Rendered the Productivity Slowdown Obsolete?", Northwestern University and NBER (Revised Version, June 14, 1999) available on the web at http://faculty-web.at.nwu.edu/economics/gordon

Sachs, J. D and A. Warner (1995)"Economic Reform and the Process of Global Integration" Brookings Papers on Economic Activity pp. 1-118.

Temple, J. (1999) "The New Growth Evidence" Journal of Economic Literature, XXXVII(1) 112-156.

Presentation by Andrew Sharpe at the CSLS-Industry Canada Conference on Canada in the 21st Century on the Contribution of Productivity to Economic Well-being

The title of my presentation is The Contribution of Productivity to Economic Well-being in Canada. I want to lay out a framework for analyzing the impact of productivity growth on society. Now it's well known that productivity is the key driver of living standards, as measured by income per capita in the long run. But what I want to do is broaden the focus of the debate from productivity and income to productivity and economic well-being. And I will argue that productivity can be just as important for determining the economic well-being of Canadians as it can be for determining the income of Canadians.

My presentation is divided into 3 parts. First I just want to give very briefly some basic data on productivity trends, which I'm sure many of you are familiar with. Then I'm going to go into what is economic well being and I'll develop a framework using some research that the Centre for the Study of Living Standards has done in this area. And finally the main part of the presentation. I will look at the relationship between productivity and economic well being.

The first table represents basic data from Statistics Canada on productivity by industry over the last 40 years in Canada. The most important stylized fact in this table is that in the period up to 1973 productivity grew around 4% a year. With a 4% annual productivity growth, living standards can double every 18 years, using the rule of 72. However, after 1973 productivity growth fell off to about 1.2% per year. This is output per hour in the business sector, which is the best measure of productivity we have in terms of labour productivity. Now at, and at the rate of 1.2% per year it takes around 56 years for living standards to double. So we went from a period where we were doubling our living standards every generation to whether, to a period when it took 2 ½-3 generations.

Now the key point is that since 1973 over cyclically neutral periods there hasn't been much variation in productivity growth. It's been pretty well the same around, around 1%. Now of course the key question is what's going to happen in the future. Robert Gordon will be talking tonight about whether the new economy has finally revived productivity growth. We know from recent data in the United States that there seems to be a turnaround in productivity, but this development has not yet affected Canada. That is an absolutely crucial question for the welfare of Canadians. If we can return to a world of 2% productivity growth instead of 1% everything changes in terms of what we can do with society. And I want to show today how that can happen.

Another point from the table is that it has been the service sector that in general has had lower rates of productivity growth than the goods sector, although within services there are certain areas like communications that have done quite well.

Turning to the next slide, again very basic data on what's been happening to productivity at the total economy level and in manufacturing in Canada relative to the United States. GDP per person employed is a much more important measure of productivity than manufacturing output per worker because it's productivity at the aggregate level that determines living standards. The slide shows that we have not really declined relative to the United States. But the key issue is though we're still way below the United States in terms of GDP per employed worker, around 80%. That's the problem. We haven't been growing at a slower pace. It's just that we have a lower level of productivity. If we could achieve U.S. productivity levels through catch up we'd be much better off.

In manufacturing, however, we have declined in terms of relative productivity levels. We've gone down quite dramatically and we appear to be here around 70% of the U.S. level in terms of output per worker in manufacturing. And this is a mystery, especially with free trade. We thought that was going to improve. I don't have anything to say on this at this time, but we will have something in several months. In January, in this hotel, the Centre for the Study of Living Standards will be holding a conference on the factors behind the Canada/United States manufacturing productivity gap. So at that time we'll hopefully be able to shed light on this issue of declining manufacturing productivity relative to the United States.

Let me return to the second part of my presentation on what constitutes economic well-being. Of course, there's no consensus in the literature on what constitutes economic well being. We do not have an official national measure of economic well-being. It's not like national income. There are different approaches to defining and measuring economic well-being.

The Centre for the Study of Living Standards has developed recently an index of economic well-being It is based on conceptual work that Lars Osberg did in the 1980s for the McDonald Commission. Lars Osberg and I have used this work to develop and estimate an index of economic well-being for Canada. We've also estimated the index for the United States and are currently developing estimates for a number of OECD countries. The index is available on our website if you're interested in the details, which I will not get into today.

The index incorporates four key components of economic well-being. The first is consumption flows, the second stocks of wealth, the third inequality, and the fourth component economic security. The components in turn are based on many sub-components, as the overhear shows. For example, within the consumption flows we include private consumption, public services and unpaid labour as part of consumption. For stocks of wealth, we include physical capital, research and development stocks, human capital stocks, net foreign indebtedness and depletion of the environment. For the inequality component, we include the poverty rate, which we define in relative terms as one half median income, and an overall measure of income distribution. For economic security, we have four sub-components covering the financial risk associated with unemployment (determined by the unemployment rate and, and EI coverage and benefits), the risk of poverty in old age, the financial of illness, and the risk of poverty for single parents.

A key aspect of the index is the weighting scheme that is applied to the four basic components. The weights we current use in the index, reflecting the values of the authors, are the following: consumption (0.4), wealth (0.1) and income inequality and economic security (0.25 each). The results are sensitive to the weights, although whatever weighing scheme one uses one finds a decline, in absolute terms even, in economic well- being in the 1990s.

Now let us turn to the relationship between productivity and economic well-being. I want to relate productivity to the different components of our index and how increases in productivity result in improvement of economic well-being for Canadians. So let's go through the different components. If we had higher productivity, we would have higher incomes and that would lead to greater private consumption. Also higher incomes lead to higher tax revenues and that in turn can lead to greater public consumption of health and education services. So there's a direct link between higher productivity and higher consumption flows for Canadians.

Turning to the stocks of, of wealth, again there are a number of direct linkages between productivity and economic well-being and also a number of indirect linkages. Higher productivity of course leads to higher national income, which leads to higher profits. Profits are a key determinate of investment, which results in higher levels of capital stock. In addition, profits can lead to increased research and development and that can build up the stock of research and development. Higher productivity and incomes have two effects on human capital. First, if people have additional income they may use that to personally accumulate human capital through their own expenditure. Second, higher productivity and incomes lead to higher tax revenues, giving the government more

means to invest in human capital through investments in the education system.

In terms of natural resources, one might think that there is no link between productivity and natural resources stocks, or even a negative link. With higher productivity and incomes, we'll consume more and consequently run down our stock of natural resources. And certainly that can happen. But the stock of natural resources is linked to the price of natural resources. And we all know if the price goes up, there's likely to be more exploration, which leads to greater stocks of natural resources. In addition, productivity gains in the natural resource sector can increase the stock of resources by lowering production costs and making previously non-economically viable reserves economically viable. So productivity growth can actually have a positive effect on the overall sustainability of our environment by reducing the cost of extraction and therefore increasing the economic supply of natural resources. Productivity growth can have a positive effect on the environment. If we are richer, we're more willing to trade off some income for pollution controls or we're willing to pay for cleaning up pollution.

There are feedback mechanisms between productivity gains and wealth stocks. We can create virtuous circles or spirals where higher productivity leads to more investment and stocks of wealth, which in turn leads to higher productivity, which in turn leads to more investment. So again it's very possible to create and sustain an upward virtuous spiral linking productivity and wealth stocks.

Let us turn to the link between productivity and income inequality. One issue is how one measures poverty or inequality. If one uses an absolute concept of poverty, then increased incomes through productivity gains will put fewer people below the poverty line. So there's a direct link between productivity and poverty both through the market income people earn and through increased government transfers for people who are unable to participate in market activities.

When one uses a relative definition of poverty, such as those with less than one half median income, there's possibly less of a link because productivity and poverty. If everyone has the same percentage increase in income, there would be no change in the relative distribution of income and hence in the poverty rate. But one could argue that if Canadians were richer, there might be more political will to help the people at the bottom of the income scale through redistribution policies.

Let us turn now to the final component of economic well-being, that is economic security. In terms of the financial risk arising from

unemployment, many people in the past have believed that productivity gains would lead to higher unemployment. I was very pleased that Frank Graves showed today that three quarters of Canadians do not think that productivity gains are synonymous with job losses and that in the long run productivity actually can have a positive effect on unemployment, or at least not have a negative effect on unemployment. It's aggregate demand and demographic structures that in the long run determine employment levels, not productivity. In addition, with greater productivity, incomes and tax revenues, we can choose to have a more generous social welfare system, including greater EI coverage and benefits. Higher levels of economic well-being would result from this greater generosity because the financial risks associated with unemployment would be reduced.

In terms of the financial risks associated with sickness, greater productivity gains and higher income again result in a greater possibility of both private and public expenditure on health and reduces the financial risk of sickness.

In terms of single parent poverty, the impact of productivity depends somewhat on whether one adopts a relative or absolute approach to poverty. But even with a relative poverty approach productivity gains can result in reductions in the rate of poverty for single parents through more generosity of transfers and through providing more services to single parents so they can become self-reliant.

In terms of poverty in old age, again there is the same relationship, with greater productivity, income, and tax revenues resulting in greater means to assist the elderly poor..

Finally, there can be positive feedback mechanisms between economic security, and poverty and productivity. If people feel that more secure, they may be willing to make more investments in human capital. They will become more productive and have a better attitude towards life. So there are positive feedback mechanisms running from productivity to economic security and then from economic security back to productivity.

To conclude, productivity is an important legitimate issue for all Canadians to be interested in. The productivity issue spans the political spectrum. People on the left think it's important, people in the middle think it's important, people on the right think it's important. So it really in that sense is a rallying cry for all Canadians. Even though interests of certain groups diverge in many areas, the interest of all Canadians come together on the productivity issue. The goal of this presentation has been to show the positive link between productivity and economic well-being. What really is difficult is to show what determines productivity growth. That is a much greater challenge than identifying the linkages between

productivity and economic well-being. What policy levers do we need to employ to go from a 1% productivity world to a 2% productivity world? If we can do that, then we're going to see not just increases in income, but also increases in all facets of our economic well-being.

Converging on the Canada-US Productivity Paradox

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1 Introduction

The growth of labor productivity (GLP) and the growth of total factor productivity (GTFP) are two widely used candidates to measure improvement in living standards. The use of the two productivity concepts to compare the relative evolution in Canada and the US produces divergent results. From the TFP growth point of view, Canada has outperformed the US since the early 1980s, whereas from a labor productivity (LP) growth point of view, the US economy has outperformed its northern neighbor. This is the Canada-US productivity paradox.

In this paper, we make use of the underlying theoretical framework for the calculation of TFP growth to establish a theoretical relationship regarding the relative evolution of TFP growth and LP growth. In the dynamic relationship between the two productivity measures, the neo-classical concept of convergence plays a key role. We will show that in the US, the relative evolution of GLP and GTFP is consistent with its underlying theoretical framework. In Canada however, using the last estimates of TFP growth released by Statistics Canada, the evolution of GTFP is inconsistent with the evolution of GLP and the underlying neo-classical growth accounting framework since the early 1980s. The analysis suggests that Statistics Canada is systematically overestimating TFP growth for the period starting in 1980. This statistical problem is likely to follow from a systematic underestimation of the growth of the capital stock in Canada.

We conclude by arguing that it is preferable to focus on labor productivity concept rather than on the TFP one to compare the relative evolution of productivity between Canada and the US. Labor productivity is much more straightforward to measure than TFP and is then a more reliable concept, given the inconsistency of TFP measurement in Canada. From a policy point of view, the analysis suggests that, contrary to the TFP growth measure released by Statistics Canada, the US economy has outperformed systematically the Canadian economy since the early 1980s in terms of productivity growth. If nothing changes in the future, there is no reason to think that this trend will be reversed. Furthermore, the analysis suggests that Statistics Canada should thoroughly revise its growth accounting methodology for the estimation of TFP growth.

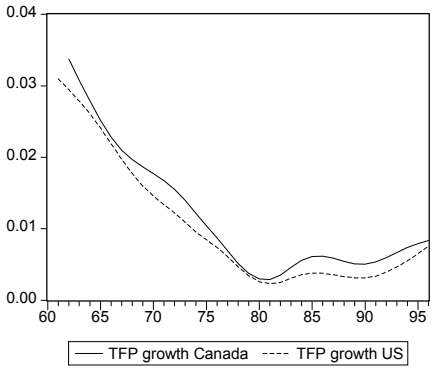
II The Productivity Paradox

We use the latest (September 1999) estimates of GLP and TFP growth produced in Canada by Statistics Canada and in the US by XXXXXXXXXXXX We are using yearly data computed for the period 1961-1996. Instead of focusing on sub-period for comparing the relative evolution of GLP and GTFP in Canada and the US, we use a

time series approach to eliminate the problem of the arbitrary dates for the period of comparison. Both GLP and GTFP series are affected by important stochastic shocks. In order to focus on the medium and the long-run relationships, the analysis concentrates on the trend estimates of both GLP and GTFP. We use the Hodrick-Prescott Filter's (HP filter) with a smoothing parameter of 100 to estimate the trend from actual GLP and GTFP growth data. GLP and GTFP were initially computed from the indexes series of LP and TFP using the logarithmic growth rate (GLP(1)=log(LP(1)/LP(0)).

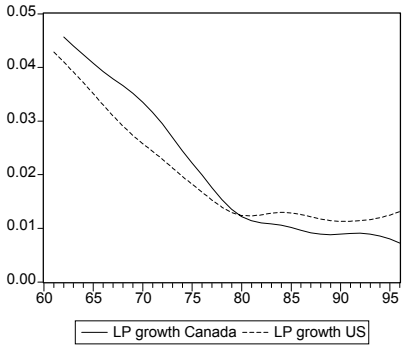
The productivity paradox is illustrated in Figures 1 and 2 with comparison of the trend growth rates of TFP (Figure 1) and LP (Figure 2) in both Canada and the US.

Figure 1: Trend in TFP Growth, Canada and the US



The gradual showdown in TFP growth from the 1960s and the 1970s to the 1980s is strikingly illustrated in Figure 1 in both countries. What is more interesting however for the point of view of this comment is the level relationship between the TFP growth trend in the two countries. The TFP growth trend is always higher in Canada than in the US. Since 1908, Canada has continued to outperform the US with a mean TFP growth rate (for the original growth rate data) of 0.47% in Canada against 0.29% in the US. According to this estimated of productivity growth, Canada does not have a (relative) productivity problem comparing with the US.

Figure 2: Trend in Labor Productivity Growth, Canada and the US



The picture changes if we look at the trend in labor productivity growth in Figure 2. The showdown in productivity growth in both countries emerges again as a striking fact but the Canadian economy outperforms the US economy only during the period prior to 1980. After that, the US economy systematically outperforms the Canadian economy with a mean growth rate (for the original growth data) of 1,23% against only 0.95% in Canada.

Which picture of productivity growth should we believe? In order to answer this question, we set up in the following section a framework to evaluate the internal consistency of the relative evolution of TFP growth and LP growth in an economy.

III Convergence, TFP Growth, and Labor Productivity Growth

In the long run, or in steady state, neo-classical growth theory could account for growing standards of living only if technology is allowed to grow over time (Solow, 1956). This well-known result follows from the law of decreasing returns to capital accumulation. The contribution of capital accumulation to economic growth is limited to

the convergence process toward steady-state. From this framework, it is possible to derive a formal relationship between the two concepts of productivity growth: LP growth and TFP growth. The theoretical analysis is legitimate since growth accountings are usually based on neo-classical growth assumptions: constant return to scale, and decreasing return to reproducible capital.

To fix the ideas, consider the following concave neo-classical production function with constant return to scale:

$$Y(t) = F(K(t), A(t)L(t)).$$

In this notation, output *(Y)* is a function (*F*) of the capital stock *K*, labor (*L),* labor-augmenting technological progress *A* (growing at the exogenous rate *g*), and time (*t*). Following Romer (1996, p. 26), it could be demonstrated that the growth-accounting framework compatible with this general neo-classical production framework is:

$$GLP(t) = \alpha(t)(Gk(t)) + GTFP(t). \quad (1)$$

Here, α(t) is the elasticity of output with respect to capital and *Gk(t)* is the (percentage) change in the Capital /labor ratio *K(t)/L(t)*. The parameter α(t) is measured by the share of profits in national income. In Canada, as in many countries, the share of profits (used by Statistics Canada for the measure of TFP growth) oscillates around a relatively constant trend. Between 1961 and 1996, it oscillates between a maximum of 0.39 and a minimum of 0.31 with a mean value of 0.36. For the computing of TFP growth in Canada, the growth of labor productivity is measure in hour terms. The growth of total factor productivity (*GTFP)* is measured residually from this accounting framework after having estimated the growth in the capital stock.

The convergence concept allows to decompose the evolution of the Capital / Labor ratio into a transitory and a permanent components. The following identity illustrates this point:

$$Gk(t) \equiv (Gk(t) - g) + g. \quad (2)$$

Here, the growth rate of technological progress *g* is the long run or steady state growth rate of the *k(t)*. Then (*Gk(t)-g*) is the transitory contribution of the convergence process to the growth of the capital labor ratio. When *k* is below its steady-state level, *Gk(t)* exceeds g and the capital labor ratio (and labor productivity) is growing at a faster rate than technological progress.

Using equations (1) and (2), we could establish the following relationship between *GLP*, *GTFP*, and the convergence contribution to the growth of labor productivity *CONV* defined as α(t)(*Gk(t)-g)*:

$$GLP(t) - GTFP(t) = CONV(t) + \alpha(t)g. \quad (3)$$

With α(t) relatively constant as it is in Canada and a constant positive growth of technological progress, the difference between the growth of labor productivity and TFP growth is equal to a positive constant α*g* and to a transitory component that could be positive or negative whether the economy converges from below or from above its long-run steady state. The vast literature on convergence suggests that in post WWII period, developed countries are converging from below to their long-run steady state. In this case, the *CONV(t)* factor is positive and gradually fading out as the economy

approaches its long-run equilibrium.

On steady state, recall that the *CONV* factor equals zero and that *g* equals *GLP*. Consequently, the long-run relationship between labor productivity growth and TFP growth is simply:

$$GLP = \frac{GTFP}{1-\alpha} \quad (4)$$

Figure 3: Convergence and the Theoretical Path for GLP-GTFP
(from an initial situation below steady-state)

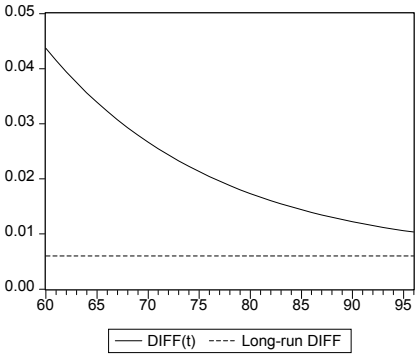
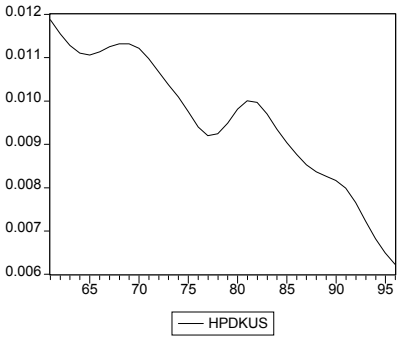


Figure 3 illustrates the theoretical evolution of the difference between the growth of labor productivity and the TFP (*GLP(t)-GTFP(t)*) from an initial situation where the economy converges to its steady state from below.

Initially, the growth of labor productivity exceeds TFP growth by a large amount since the Capital / Labor ratio is growing rapidly in the convergence process. TFP growth accounting assimilates a larger par of the growth in labor productivity in this case to the growth of the capital input. However, as the economy approaches its steady state, the difference between the two productivity indexes approaches its long-run value.

Figure 4: Trend in the Difference Between GLP and GTFP in the US

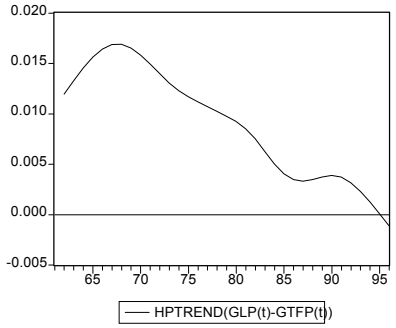


IV What the Data Show

We have used again the HP filter with a smoothing parameter of 100 to estimate the trend in the difference between GLP and GTFP in both countries. The idea of the exercise is to verify if the evolution of GLP and GTFP is consistent with the theoretical framework.

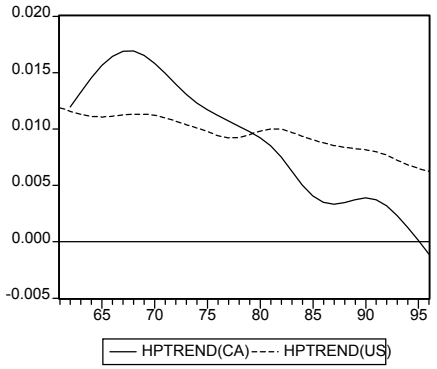
The trend in the difference between the growth of labor productivity and the growth of TFP in the US is illustrated in Figure 4. The difference between the two productivity indexes shows a clear tendency to decline since the early 1960s indicating that the US economy is converging from below to its long-run steady state growth path. By the end of the period, the difference between the two productivity indexes is 0.6%. If the growth rate technological progress is 1.2% and the α parameter is around 1/3, the long-run difference between GLP and GTFP should be around 0.4%. Base on this back of the envelope calculation, the US economy appears to be still below, but very close to, its long-run steady state by the end of the period.

Figure 5: Trend in the Difference Between GLP and GTFP in Canada



The trend in the difference between LP growth and TFP growth in Canada is illustrated in Figure 5. As it is the case for the US, the difference shows a clear tendency to decrease since the 1960s. This indicates that Canada is converging to its long-run steady state growth path from below. However, a striking point emerges from a close analysis of the graph. By the end of the period, the trend in the difference fells to zero and is even negative. This uncharacteristic fall in the difference between GLP and GTFP is not due to the detrending procedure chose. Between 1983 and 1996, the raw data indicate that TFP growth has exceeded LP growth in eight out of 14 years! Remember that TFP growth should be a fraction in the neighborhood of 2/3 of LP growth. On average, since 1983, the difference between GLP and GTFP in Canada is virtually zero (0.09%).

Figure 6: Trend in the Difference between GLP and GTFP in Canada and the US



In Figure 6, we put the two trends in the difference between the productivity indexes for Canada and the US. Compare with the US, the difference in the productivity indexes converged much faster. We can compute the implicit convergence speed at the macroeconomic level from the evolution of the difference between the two productivity indexes. Assuming that the long-run difference is 0.4, the US economy takes 30 years half of the gap between this level and its initial difference between the two indexes. That implies a convergence rate of roughly 2.3% per year. This number is quite compatible with the numerous recent studies following Barro and Sala-i-Martin (1995) which, for various sets of countries and regions within developed countries, including US States, have found a convergence rate around 2%. With the same calculation, we found that the convergence speed in Canada since 1968 is around 7%. This number appears much too high. While the difference between the two productivity indexes appears to be converging at an expected rate toward a realistic long-run equilibrium in the US, in Canada, the difference between the two indexes is rather sinking below the water line! How could the facts be explained?

V From a Productivity Paradox to a Statistical Puzzle?

Compared with LP growth, TFP growth in Canada appears to present a pathological behavior. This point is illustrated in another way in Figure 7 and 8 where the HP trends of LG and TFP growth are depicted for each separated countries. In the US, TFP growth remains during all the sample a fraction of LP growth. This is the normal behavior. In Canada however, since the early 1980s, TFP growth is upward sloping while LP growth is relatively constant. The gap between the two lines disappears gradually as the analysis of the preceding section has shown.

Figure 7: Trend in LP and TFP Growth, US

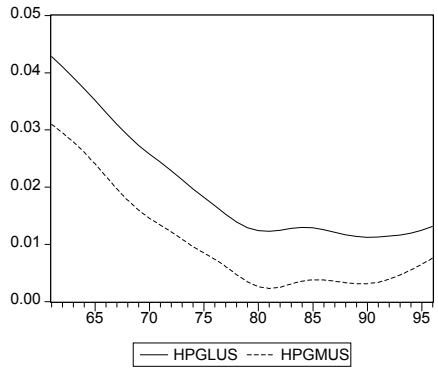
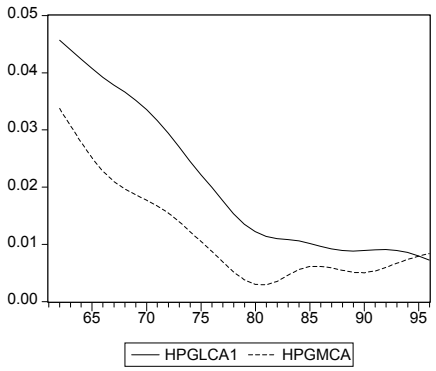


Figure 8: Trend in LP and TFP Growth, Canada



Given the relative constancy of the profit share in Canada, the relative behavior of the two productivity indexes could not be explained by the neo-classical growth model, the underlying theoretical framework used in growth accounting for estimating TFP growth. On theoretical ground, it is possible to have a TFP growth measure exceeding LP growth during a transition to a steady-state from above. In this case, the Capital / Labor ratio would be growing temporarily at a smaller rate than in the long run. However, in this case, LP growth would be decreasing which is not the case in Canada as illustrated in Figure 8.

Our analysis suggests that Statistics Canada might encounter problems in estimating TFP growth in Canada. Compared with LP growth, TFP growth in Canada appears to be systematically overestimated. We think the problem has to deal with the estimation of TFP growth rather than with the estimation of LP growth since, from a statistical point of view, LP growth is a more straightforward measure of productivity than TFP growth. TFP growth is derived residually from statistical measures of LP growth, the profit share, and the growth of the capital stock. In Canada, the LP growth measure used for the estimation of TFP growth is based on a Fisher index in order to account partially for the change in the quality of the labor force. The 'official' measure of LP growth, the one we have used in this analysis, is based on a Laspeyres index. We have done the same analysis with the Fisher's measure of LP and reached the same conclusion. TFP growth appears to be overestimated. Since the problem is not related to the change in the composition of the labor force, it has to be related to the measure of the capital stock.

A look at equation 1 indicates that TFP growth would be overestimated if the growth of the capital stock is underestimated.

VI Conclusion

The usefulness of the convergence concept.

Given the inconsistency in the relationship between LP growth and TFP growth measures in Canada, it is better to look at LP growth in Canada, especially if we want to compare with the US. LP growth is a more straightforward measure of productivity.

Accounting for the change in labor quality does not change the results of the analysis. (US versus Canada)

Consequently, we have a productivity problem in Canada and the Productivity Paradox is likely to be only a statistical pitfall.

Statistics Canada should revise its measure of the growth in the capital stock in order to produce an estimate of TFP growth consistent with LP growth.

Sustaining a Quality Environment for Canadians

by
R. Quentin Grafton
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Presented at
CSLS-Industry Canada Conference on Canada in the 21st. Century: A Time for Vision
Ch>teau Laurier Hotel, Ottawa,
September 17, 1999.

Challenges for the 21st. Century

- To translate the concept of sustainable development into a consistent set of policies for Canadians.
- To address the environmental challenges of the global commons (climate change, transnational pollution)
- To help prevent and mitigate severe declines in environmental quality in some of the world's poorest countries.

Policy Problems

Canadians face a number of public policy challenges to promoting sustainable development:

- Federal-Provincial conflicts and jurisdictional disputes. The federal government has constitutional obligation to promote “Peace, Order and Good Government” but the provinces have jurisdiction over civil & property rights and authority over provincial Crown land.

- Inconsistency in policy and a lack of adequate funding have prevented environmental ministries (provincial and federal) from becoming as effective as they could be.

- Too great a focus on regulations as a means to achieve environmental objectives.

Promoting Sustainable Development in Canada

1. Canadians lack basic information on the state of their environment & natural resources.

- Major focus of Federal Government should be to provide data bases of environmental quality, resource use and pollution.
- Environmental audits by province & territories should be performed at least once every 3 years.

2. Environmental regulations should primarily be a provincial responsibility:

- The Federal Government should provide goals and national standards and information and assistance in developing environmental inventories and achieving objectives.
- Provincial implementation increases flexibility and reduces costs of pollution control while national standards help avoid policies that result in “lowest common denominator”.

3. Change the emphasis in public policy from “regulations” to “incentives”:

- Encourage use of market-based instruments (pollution permits, charges) ;
- Public disclosure of polluters (individuals, businesses, communities & govts) should be a priority;
- Encourage private conservation through use of covenants;
- Provide legal funds to uphold common law rights.

Promoting Global Sustainable Development

Due to its geography and location, Canada is likely to be affected a great deal by:

- atmospheric changes (the higher latitudes are most affected by ozone depletion and by global warming);
- transboundary pollution (pollutants accumulate in the polar regions, eastern Canada is vulnerable to acid rain) and
- ecological disruptions (Canadians are more dependent on natural resources for their incomes than most other OECD countries, polar regions are less resilient than other ecological zones).

These factors, and the concern of Canadians for others and future generations, require that Canada be an active participant in international environmental treaties and agreements.

- The success of the Montreal Protocol (and subsequent revisions) emphasises the potential benefits of a multinational approach to global environmental problems.

- Future peace & prosperity of many countries is dependent on their citizens continued access to benefits provided by the environment. Canada should play a much more active role in supporting the UN Global Environmental Facility.

- Canada should provide a greater leadership role in supporting and promoting environmental assessment, green accounting and environmental monitoring. National environmental audits should be encouraged with the assistance of the UN.

- Through its participation in FTA, APEC, WTO, OECD and other organisations, Canada should help establish funds to document environmental quality and prevent practices that impose costs on other countries. Incentives to encourage desired objectives and penalties for non-compliance should be implemented.

Vision for the Future

1. Much has been achieved since Environment Canada was created in 1971. Despite failures, significant improvements have occurred in:

- the disposal of hazardous wastes,
- the water quality of the Great Lakes region and
- the reduction of some air pollutants.

These successes have arisen, in part, because of effective environmental policies.

2. Sustaining a quality environment in the 21st. century will require:

- detailed **information** about the state of our environment;
- the right **incentives** for individuals and businesses to consider the costs they impose on others; and
- **international co-operation** (with incentives and penalties) to address the problems of the global commons.

Q. Grafton Thank you Jerry. It has a mind of its own. OK, the topic we're going to address right now is sustaining a quality environment for Canadians. What I'm going to try and do is focus somewhat on what Brian Coupland did in his very nice overview of the Canadian environmental situation today and into the future. Unfortunately Brian couldn't be with us today so I wish him all the best.

And so I'll go onto the second slide. What I've done is I've taken from Brian's book, paper and I've broken them down into 3 points. He actually has 2 points so I've split up one of them into, into, into 2. First of all he considers the challenges for the 21st century for Canada and sustainable development in Canada environment, the 3 points; to translate the concept of sustainable development into a consistent, and I'd like to underline consistent in boldface, set of policies for Canadians. Two, address the environmental challenges of the global columns, commons, as climate change issues, transnational pollution and many other issues that, that we face as being part of the, of the earth. And then third to help prevent and mitigate severe declines in environmental quality in some of the world's poorest countries. Those have repercussions for us in Canada, as well as for those countries which are suffering from those environmental problems. Going to the next slide.

So what are the policy problems? I, I hate, hesitate to talk about policy problems as an economist in a room of a lot of people who, who actually make policy, but I'll give you my perspective of it. I think Canada or Canadians face a number of public policy challenges with respect to sustainable development and the environment. I'm sort of putting them 2 together. Obviously the notions of sustainable development and environment are, are somewhat different. I think there are real problems in terms of our environmental policy in terms of federal and provincial jurisdictional conflicts. It, the federal government, has constitutional obligations for peace, order and good government and the provinces have considerable jurisdiction over civil property rights and the authority of course over provincial Crown land. And there have been conflicts and in fact there's multitude of regulations on the provincial and also on the federal level. This doesn't necessarily make for good policy. And that's certainly been a problem that Canada faces; not alone, there are other federated states which have these difficulties, but I say Canada probably has been unique in terms of its set of policies problems in terms of that. Go onto the, the next slide.

I review further the policy problems. Inconsistency in policy and a lack of adequate funding have prevented environmental ministries, and I mean that on the federal and provincial level, being as effective as they could be. I suppose we could all be more effective than we are, but I suppose what I'm saying and, and if you look at the funding for the environmental

ministries over the last 15 or 20 years you'll see there's actually been a decline in terms of a percentage of GDP that's being spent in terms of what's been going on in terms of environmental policy and policy making. There's also been shifts back and forth in terms of well, green is good for votes and then green is not so good for votes or something else. That's the nature I suppose of public decision making. And those sorts of shifts and changes and, that take place on the provincial and federal level I think have been unfortunate in terms of having a consistent set of policies and leading to goals that I think all of us would like to achieve. I think the third policy problem, and that's a very broad discussion issue that can't be addressed in 15 minutes, is that there's been too great a focus here in Canada, on the federal level and the provincial level, on regulations as a way to address environmental problems. Canada is not unique in having that set of difficulties. Many other countries have focused in on regulations and I'd like to suggest perhaps later on in my talk how we can perhaps move away from that approach to a different set of approaches which I think would be beneficial to all Canadians. So we can move onto the next slide.

And this is really the focus what Brian Copeland is talking about in his book. He's talking about 2, he's talking about what is the state of the environment in some sense in Canada and he's talking about how do we promote sustainable development. There must be at least 60 definitions or more of sustainable development and we can talk about them after my talk if you want to get into definitions. But what Brian and, and what I'm trying to address here is this idea of promoting sustainable development within Canada and this idea of promoting sustainable development outside of Canada. They're not necessarily unrelated. So how do we promote sustainable development in Canada? So I'm stepping out of my ivory tower and I'm talking about what can we do in terms of public policy. I think that this is the perfect venue to do that because of the audience we have here today. So let's have a look at it. So first, Canadians lack basic information on the state of the environment and natural resources. Despite the fact that Statistics Canada and Environment Canada in the last few years have done a very good job given the resources available to them in terms of getting a much better understanding of the state of our environment, there are huge gaps in our knowledge base, huge, huge gaps. And if we're going to deal with sustainable development, how to have sustainable development, how do we improve the quality of the environment, how can we do so unless we have measures, adequate measures to look at that over time? We don't, I'll tell you right now we don't have those measures on a consistent basis over time in the areas where we should have them. That needs to be rectified and rectified as soon as possible. That's where we're going to require resources, time and effort. So I personally think that the federal government, the major focus of the federal government in terms of environmental policy, should be in

terms of providing that basic information. Third, or second point in the, in the, in my first section, environmental audits. We have economic audits in all sorts of ways on a company basis we obviously have it in terms of public, public expenditures. We need to have it in terms of the environment. And we do have some sort of auditing, but what I'm talking about is auditing on a broad range in terms of various ways of looking at the environment, renewable and non-renewable resources, ways of measuring the environmental quality. Those sorts of things should be done on a regular basis. I'm not suggesting necessarily on an annual basis, but perhaps I think at least every 3 years. If we have that information we'll have a much better handle of where we're going, where we've come from, what can we do to improve the situation and is there a problem, what are the sorts of problems. At the moment I think we're flying blind. Go onto the next slide please.

Two. So this is again in the section of promoting sustainable development in Canada. Second point, environmental regulations should primarily be a provincial responsibility. Well, I would suggest to you that the conflicts that we've had in the past perhaps may be best resolved by assigning the responsibility, more or less exclusively to, to one jurisdiction. I suggest, although there may be an argument about this, that it may be best done by the provinces themselves. That doesn't mean that the federal government, Environment Canada and the related ministries, don't have a role to play, they most certainly do, but the actual undertaking of the policy, the micro-policies should be done I think on the provincial level. What should the federal government be doing? Well I think it should be trying to set national goals, national standards. If we talk about that in health care we can talk about that in terms of the environment. And the federal government should be involved in that actively, coordinating across the provinces. And I think there are resources required for certain provinces in terms of helping to come up with inventories of what's going on in the environment. The federal government can be very I think helpful in achieving those sorts of goals. And then the second point within that second section, I would suggest that the advantages that come from provincial implementation is flexibility. I mean I don't think necessarily what you're doing in British Columbia should necessarily be the same as what you're doing in Newfoundland. And that allows for some flexibility within the broad idea that we have national objectives or goals. That we don't necessarily head to them at the same, at the same rate. So we go to the third point with the idea of promoting sustainable development in Canada. The next overhead please.

And so this is a, a very broad topic. It's been a subject of my research and a lot of other people's research in terms of environmental economics. Change the emphasis in public policy from regulations to incentives. These are very broad rubrics of trying to put it all together. What do I

mean by that in terms of specifics? I think the first thing is to encourage the use of market based instruments, the use of pollution permits. Canada in fact has started to use macro-based instruments already. I think much greater use of that is required. Use of charges, that can also be considered to be a market based instrument as well. That is in comparison or contrast to a regulatory approach where you say thou shall not pollute X and that's a uniform standard that's applied across an industry or group, group of firms. I think what we're talking about here is trying to bring in flexibility in terms of the public policy with a federal/provincial basis, flexibility in actually how the policy is implemented.

Second point, public disclosure of polluters. There may be some cynicism in the audience about how effective this may be, but in fact it has been very effective in a number of cases and I can quote those cases to you if you wish in terms of some developing countries, poor countries in the world where there really aren't the resources to go ahead and regulate and audit in a sense that we would think of in Canada. So what some non-government organizations have done is they said, well let's take a particular industry, let's say pulp and paper in India or Indonesia, let's go through the list of polluters and let's come up with a grade 1 to 5, 5 is good, 1 is bad. And we attach these grades to the companies. And lo and behold! When these things are done companies start changing their policies because it's public disclosure. These are companies, public companies; sometimes they're private companies. Nevertheless it does seem to have an impact in terms of their behaviour. Those sorts of things I think would be useful. It's all part of this information database that I'm talking about that we need to develop within Canada. Two, encourage private conservation. That of course already is taking place in Ontario and other provinces, but I think it's something that would be I think be very useful to encourage in terms of private conservation. And then finally, legal funds to uphold common law rights. I'm not sure exactly how that would happen, but this is the idea of protecting property rights. The idea that nuisance, the idea that someone is polluting and effecting my property rights and that they need to be taken to court so that my common law rights are protected. There'certainly a tradition n Canada going back in history at least a century which can be very useful I think in terms of dealing with some pollution problems. And so that's the Canadian aspect of promoting sustainable development. The second aspect of what Brian, Brian Copeland was talking about was promoting sustainable development on a global basis and that's the next overhead.

I'd like to suggest to you that in Canada we really need to place a great deal of emphasis on promoting global sustainable development. It's not just in the interest of others; it's in our interest as well. So I'll list 3 reasons, I could perhaps list more, why we need to be concerned about the global commons and what's going on in other countries. First is

atmospheric changes. The higher latitudes are going to be most effected by ozone depletion. That's a fact. Now fortunately we've had improvements in terms of our levels of CFC production have come virtually to zero over the last few years. That's presumably going to lead to an improvement in terms of the stratospheric ozone layer, which will have positive aspects for us here in Canada. Also in terms of global warming, if global warming does take place, and there's certainly evidence to suggest that it is, then it's going to take place at a greater, faster rate in the higher latitudes than it will in the equatorial regions. Canada of course is in the higher latitudes so that's certainly a concern for us. Next, trans-boundary pollution. Well we know about that in terms of acid rain as do the Americans with sulfur oxide emissions, but also in terms of pollution accumulating in the polar regions. You're probably aware in the media about PCB buildup in polar bears that could lead to the sterility of male polar bears, the end of the species in the wild. Those sorts of issues related to the atmospheric circulation in terms of pollution getting built up in the polar regions. Obviously we are a polar nation so that's an issue for us particularly. And then a third point, ecological disruptions. In the polar regions the ecological zones are much less resilient than other ecological zones. Yes, I've, I've got about 5 minutes. And so where does this take us? Well, I think it takes us to the next overhead.

And the factors and the concern that Canadians have for others in future generations I think requires that Canada be an active participant in international environmental treaties and agreements. I want Canada to remain active so and perhaps be more active in ways that it hasn't been in the past. The point I make here, and people often make it, there's been a real success in terms of some environmental treaties. The one that comes to mind is the Montreal Protocol and the conventions that followed that in terms of CFC's. Fewer CFCs get emitted, it takes 15 years or so to get into the, the upper atmosphere. The chlorine atoms then break down the, the O_3 molecules, the ozone, which has an impact on UV ultraviolet radiation to the earth. Well what Montreal Protocol did and the subsequent conventions was to bring about almost a total moratorium on terms of production. And that's been highly effective and it's been done through an international agreement. Now it's going to be much, much, much more difficult to deal with climate change issues, so called global warming, because of the expense involved in trying to deal with reductions in the CO_2 emissions and there are other factors as well, which we could perhaps discuss afterwards. But I would like to also go on that apart from these global issues in terms of the importance of the treaties, I think that there are other things that can be done. The United Nations has a global environmental facility, the account I think rests with the World Bank. That account I think is totally inadequate. And what it should be doing and is trying to do is trying to address issues in terms of the

environment in the poor countries of the earth. And I think we should make a much greater focus in on the global environmental facility in terms of improving the global environment. Go onto the next slide.

Now Statistics Canada has actually been one of the world's leaders in terms of green accounting. I would like to suggest that we could use that expertise elsewhere and we could talk about national environment audits. Those sorts of things I think should be encouraged under the auspices of the United Nations. Canada could benefit in terms of selling its services, but certainly the world could benefit in terms of dealing and addressing some of those environmental issues. The final point in that overhead, through our participation FTA and now NAFTA, APEC, WTO, OECD and other multi-lateral organizations I think Canada should help document environmental quality and prevent practices that impose costs on other countries. I think one of the points that should be made here is that there needs to be incentives to ensure desired objectives and hopefully there can be some penalties for non-compliance as well. So where does this take us? Well it takes me to just a few minutes left.

A vision for the future, that's what this conference is supposed to be about, the 21st century which is just around the corner. What are, what are my visions and what are Brian Copeland's visions in terms of the visions of the future? Well, I think a lot has been achieved. There's been some considerable success since 1971 when Environment Canada was first established. You can point to the disposable of hazardous waste, water quality in the Great Lakes region has improved dramatically, reduction of some air pollutants in terms of total particulate matter. And that's been a considerable improvement in the last almost 3 decades. Now why have these successes risen? Well they haven't risen by some invisible hand. They've arisen because of policy, effective policy. So there may be changes in the economy which may lead to improvements in the environmental quality, but the things I'm talking about here I think have been fundamentally brought about by policy changes. And that's what I think we're talking about here in terms of the 21st century. What are the policy changes we can enact today that will lead to a better quality of environment and better well being for all of us? And so I go onto the next slide.

And so I put it into 3 points. I've put them in boldface, the three I's. So you're left with something after all the 15 minutes of fast talk. So what are they? Well, detailed Information about the state of the environment. I can't stress that enough. We don't have enough information. We need to get it. You don't know where you're heading unless you know where you are and that's the problem we face here in Canada and in other countries. We need the right Incentives. It's not just the strong arm of government telling us what we should or should not be doing. I think we need to back

off in some ways and provide the right incentives, encourage the property rights, the common law rights that have protected us in the past. Rights, I should point out, that have been overridden by some provincial governments in the past, against the interest of the overall welfare of Canadians. And then the third aspect of course is International cooperation. It needs to be done. We're not going to do it alone in terms of bringing about an improvement in the global commons as well as addressing the environmental quality issues in some of the world's poorest countries. Thank you.

APPLAUSE

Sustainable Development & the Knowledge Economy: Public Policy and Product Innovation

D. Smith

My title is Perspectives on Future Environmental Policy. Concerns about environmental issues aren't confined to environmentalists, academic economists and policy makers, particularly in terms of future issues. Only one thing in this area is certain and that is prediction is difficult, particularly if you're predicting the future. It's well known that Marxists once predicted the inevitable collapse of Capitalism. Like many of Marx's predictions commentators have noted that this one has been late in coming true. And supposedly an admirer of Marx once said, proof of Marx's farsightedness is that none of his predictions have come true yet. Well, if it isn't clear yet where I'm going with this it is that proper humility is required whenever we get into the predicting business and we are supposed to be looking through an entire century.

Possibly more to the point there is a website that is titled Famous Bad Predictions. In 1873 for example the British Surgeon General said that the abdomen, the chest and the brain will forever be shut from the intrusion of the wise and humane surgeon. In 1899 the U.S. Commissioner of Patents said everything that can be invented has been invented. Possibly the best one is from 1981, Bill Gates said that 640K ought to be enough for anybody. Well know MIT economist, Paul Krugman, contributed a piece to the New York Times magazine in which he was hypothetically looking back on what had happened to the U.S. economy from the perspective of the year 2100. Environmental and resource issues play an important role in his interesting assessment and if you haven't looked at it and you're interested in this kind of thing Krugman's website is certainly one of the best going for economists. Well our own topic of sustaining a quality environment for Canadians is only slightly less daunting.

In terms of what I want to look at in the time that I have available I want to talk a little bit about trends and second at targets. There continues to be substantial imprecision under the general heading of environmental targets or how to integrate economic and environmental considerations. I will already predict that this imprecision will continue well into the 2000's. As well, I want to look at 3 specific issues. I want to look at costing issues related to environmental externalities. I want to talk just a little about resource prices and resource use. And I want to talk as well about reform of environmental regulation.

In terms of trends in environmental quality this issue probably should be easier than it is. It is regrettably true that you can pretty much find any trend you want in environmental quality depending on how you select your area. There often appears to be a reluctance to describe areas of environmental quality as improving. Certainly from listening to what my kids learn about the environment in school there often appears to be a dark lining in every silver cloud. Possibly there's good strategic logic here if people think that acknowledging gains will promote backsliding. However, I think it's important to

recognize gains because this may help us to understand why gains have occurred in some areas and not in others, why our policies have been better for some problems than for others. And this may allow us to pick up some of the laggards. Well, in terms of trends I think there is a set of environmental indicators that have improved in virtually all developed countries leading some analysts to refer to a U-shaped relationship between some measures of environmental quality and GDP. At low income levels GDP growth increases many pollutants, but at a level somewhere around $8.000 per capita this turns around with environmental quality and GDP increasing together. Among other things this reflects a positive income elasticity and there are obvious areas where this has happened. Sewers, sanitation systems together with air and water quality controls have led to many improvements and again, Brian Copeland's paper has some data in this area. If we look at air indicators like sulfur dioxide and nitrogen oxides and carbon monoxide we have had improvements, in some cases extremely striking improvements. There have been reductions in other air measures like total suspended particulates. Threshold problems for particulates are at least uncertain so that this will continue to be an important policy issue, particularly for people living in the Montreal-Windsor corridor where urban air pollution is a problem. Maybe a clearer area in terms of trends deals with ozone depleting substances. It is easier to know about success in this area because the Office of the Auditor General in fact did a detailed audit report on Environment Canada's ozone layer protection program and I would characterize the report as extremely positive. And this reflects worldwide efforts in which Canada has played an important part. The concentration of ozone in the stratosphere should reach a low point somewhere at the end of this year and then the impact of the Montreal Protocol on substances that deplete the ozone layer will mean a recovery of the ozone layer to pre-destruction levels over a 50 year time period. So things will get better, but not really quickly. These are long lived pollutants in the upper atmosphere and it will take time, but starting soon we will be moving in the right direction instead of the downward direction in terms of ozone concentration that we had been moving in. At the same time it's important to acknowledge how potentially serious this problem was. In assessing the benefits and costs of the Montreal Protocol controls on ozone depleters, there have been simulation results that I've worked on that show that even a 10 year delay (the Protocol came into effect in 1989)… a 10 year delay in those dates would have, almost certainly have led to irreversible ozone layer destruction and extraordinarily large costs. In terms of other issues, global warming is next or upon us already as an issue. And a question for the future, it would be certainly nice to know is this going to end up looking like the Montreal Protocol, more or less smelling like roses, at least eventually or will it drag like acid rain and a number of other problems have? If you're looking for an interesting perspective on global warming I would recommend the website of Resources for the Future (RFF), an environmental organization in the United States. RFF has a very sensible proposal to start controls almost immediately on greenhouse gases, but at levels dramatically less stringent than in the Kyoto Protocol, which doesn't start a control period until the time period between 2008 and 2012. The RFF proposal is for less stringent but immediate controls including a cap on abatement expenditures. And certainly to economists and policy makers a program like this would be worth its weight in gold in terms of generating information about abatement cost functions immediately.

The second area that I want to talk about today has to do with targets. Well this is an area that is sometimes contentious. The sustainable development literature has one perspective on this while the literature on environmental policy and competitiveness frequently has another. I would assert that an environmental policy initiative that passes an economic benefit cost test must also contribute both to sustainable development and national competitiveness if we are defining all of our variables correctly. The converse of that is a little different. An initiative that fails a cost benefit test would diminish national competitiveness if it were implemented, but it would not necessarily be unsustainable. That is sustainability by itself is not a great target since lots of non-optimal things can be sustained. Well many critics of the environmental perspective ask, well won't protecting the environment reduce GDP? Well, not necessarily, particularly if measurement improves. But it's the case that all economists know that GDP is not what we're trying to, to maximize that we're trying to maximize utility and the positive elements of GDP contribute to that. But maximizing utility that is our overall economic and related well being and maximizing GDP are separate problems. And with accounting this may be straightened out in the next hundred years as we measure things better, but it'll probably take a good chunk of that hundred years to get it sorted out. So the central point about GDP and productivity is a simple one. There are a number of economists who have argued that our basic productivity measures are flawed. If an environmental regulation passes a properly conducted benefit cost test it promotes economic welfare, even if it reduces the growth of measured productivity. And the reason for this is that input resources are being diverted from the production of output to the production of environmental quality. If it passes the benefit cost test, the gain in environmental quality makes us better off even if there is a reduction in output . Part of this is misuse by people who don't know better or should know better of the conventional studies that have been done in this area. It's reasonable in a study to look at the costs of promoting environmental quality in terms of reduced productivity, but the fact that you find a cost doesn't mean that any of the decisions relating to those costs were bad ones. What about future issues? Well, first of all prices and costs. Building on the work of Ronald Coase on externalities, economists see environmental policy issues in a property rights perspective. Common property or open access resources are the source of environmental externalities and increasingly we will incorporate external costs in the price of commodities. Krugman in his view from the year 2100 looks back on the increasing importance of environmental costs in the prices of many products. Brian Copeland in his survey article discusses the same thing. He refers to a double dividend in which welfare improving and revenue neutral environmental taxes replace distorting taxes in other dimensions. Krugman foresees an era in which environmental taxes and permits as well as related licenses are such a large revenue source that the income tax is abolished. His written prediction, (you can look it up on his website), is that this will occur in the year 2043. So you'll have to wait to see if getting rid of the income tax because of all the environmental revenues is a farsighted prediction or not. Although not widely recognized, economists are usually serious environmentalists. There are a number of reasons for this. Economists now learn about externalities in the first economics course that they take and markets are great, but externalities happen. This does not support all forms of regulation.

I've referred to the benefit cost test, but it often predisposes economists to the view that charges, permits and other incentive based mechanisms have the potential to improve outcomes in this area.

What about resource price pressures versus running out. There seems to be a debate about whether we should expect price spikes for some natural resources or whether we should have gradual price increases over time. Economists kind of expect the gradual price increases, going back to the path breaking work of Hotelling in this area. Unfortunately the Hotelling model doesn't fit the real world problem of resource use because the known stock that Hotelling assumes does not really exist. We're always drawing on some kind of unknown resource. Many resource specialists have lost lots of money betting on an increase in resource prices over time. This may well happen, but gradual price increases appear more likely than, than price spikes.

Regulatory reform is necessary in terms of moving to more incentive-based systems. Although local controls may often be effective, there should be a differentiation in terms of more global issues like the ozone layer. The Montreal Protocol dealing with the ozone layer and global warming are areas where most of the responsibility should continue to lie with Environment Canada. Local air, water and other problems can be dealt with at a provincial level.

It's hard to sum up something that has covered as many areas as this presentation has. I will say though that my fearless and self-interested closing prediction is that measuring benefits and costs of environmental improvement will be a growth industry over the next several decades. Thank you.

APPLAUSE

SUSTAINABLE DEVELOPMENT & THE KNOWLEDGE ECONOMY:

PUBLIC POLICY AND PRODUCT INNOVATION

PRESENTED TO

CSLC-IC CONFERENCE ON

CANADA IN THE 21ST CENTURY

SEPTEMBER 17, 1999

CHATEAU LAURIER

BY

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(CRUISE)

&

SCHOOL OF PUBLIC ADMINISTRATION

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OTTAWA

THANK YOU JERRY. I APPRECIATE THE OPPORTUNITY TO SHARE VIEWS WITH SUCH AN AUGUST ASSEMBLY OF INTELLECTUAL LEADERS AS YOU HAVE GATHERED ED FOR THIS COLLOQUIUM ON THE FUTURE.

IT IS INTERESTING TO NOTE THAT THE UNSIGNED PREFACE TO PROFESSOR COPELAND'S IC SPONSORED PAPER FOR THIS SESSION MAKES THE RATHER ASTONISHING OBSERVATION THAT HIS PAPER "CASTS A SPOTLIGHT ON AN IMPORTANT, ALBEIT SOMETIMES OVERLOOKED, ENVIRONMENTAL COMPONENT OF THE NATION'S ECONOMIC WEALTH." THIS IS ASTONISHING FOR TWO REASONS. 1) BECAUSE IT REVEALS OUR ANTHROPOCENTRIC BIAS, EVEN HUBRIS—AFTER ALL, THE ECONOMY IS A WHOLLY OWNED SUBSIDIARY OF THE ENVIRONMENT…. NOT THE OTHER WAY AROUND. WITHOUT THE RENEWABLE AND NON-RENEWABLE NATURAL RESOURCES OF THE ENVIRONMENT … WE WOULD NOT HAVE THE SOCIAL PHENOMENON KNOWN AS THE ECONOMY. WITHOUT THE "ENVIRONMENTAL SERVICES" OF THE ATMOSPHERE, WATER AND SOIL, WE WOULD HAVE NOT EVEN HAVE LIFE.

WHICH LEADS TO THE SECOND REASON THIS STATEMENT IS ASTONISHING … AND THAT IS THE FACT THAT THE STATEMENT IS LARGELY TRUE… THE ENVIRONMENT HAS IN THE PAST OFTEN BEEN OVERLOOKED WHEN CONSIDERING NATIONAL WEALTH, THE HEALTH OF SOCIETIES AND FUTURE PROSPECTS. FORTUNATELY, OVER THE LAST DECADE OR SO THIS PERCEPTION HAS CHANGED QUITE DRAMATICALLY AND NOW A GATHERING OF ECONOMISTS, SUCH AS THIS

ONE SPECULATING ON THE FUTURE, CANNOT OVERLOOK, AS THE INDUSTRY CANADA PREFACE CALLS IT, “THE ENVIRONMENTAL COMPONENT OF THE NATION’S ECONOMIC WEALTH”.

PROFESSOR COPELAND IS RIGHT WHEN HE CHARACTERIZES THE CANADIAN ENVIRONMENTAL POLICY EXPERIENCE AS BEING AS MUCH A SERIES OF FAILURES AS SUCCESSES. OFTEN THE EXPLANATION OF THE FAILURES LIES IN ECONOMIC POLICY ITSELF, AND PARTICULARLY IN THE INSTRUMENTS OF ECONOMIC POLICY. BUT IT ALSO INCLUDES FACTORS OF GOVERNANCE, POLITICAL WILL AND INTERGOVERNMENTAL AND INTERDEPARTMENTAL COORDINATION.

HE IS CONCERNED THAT AS THE WORLD PASSES THE 6 BILLION PEOPLE MARK, AS WE JUST DID, ON ITS WAY TO 10 BILLION BY MID 21ST CENTURY, AS INDUSTRIAL PRODUCTION GROWS AND CONSUMPTION INCREASES WORLDWIDE THE STRESSES PLACED ON THE MOTHER-COMPANY’S CARRYING CAPACITY BY THE SUBSIDIARY WILL BECOME SEVERE. HE IS ALSO RIGHT IN ARGUING THAT THE MOST SERIOUS STRESSES ARE GLOBAL AND WILL BE FELT IN THE DEVELOPING WORLD. THE 21ST CENTURY WILL SEE DEEPENING STRUGGLES IN THE DEVELOPING WORLD OVER ENVIRONMENTAL SERVICES (FRESH WATER, PRODUCTIVE SOILS, WOOD, AND THE FOOD AND MEDICINAL PRODUCTS OF BIODIVERSITY). BUT AS WE ALSO KNOW, BECAUSE WE CAN ALREADY SEE IT HAPPENING, THE FLOOD OF HUMAN REFUGEES THAT WILL FLOW FROM THESE STRUGGLES WILL IMPACT ON THE OECD WORLD AS WELL.

I COMMEND PROFESSOR COPELAND'S PAPER TO YOU AND IN PARTICULAR SUPPORT HIS ARGUMENT FOR THE NEED TO LAUNCH AN INTELLIGENT REVIEW OF THE TAX SYSTEM. WHILE IT HAS TRADITIONALLY HAS BEEN VIEWED AS AN ECONOMIC INSTRUMENT… THE TAX SYSTEM IS EVERY BIT AS MUCH AN ENVIRONMENTAL AND SOCIAL INSTRUMENT. THUS, IT IS A KEY INSTRUMENT OF SUSTAINABLE DEVELOPMENT. IT IS NOW TIME TO CONSIDER A WHOLESALE SHIFT IN OUR TAX SYSTEM AWAY FROM EMPLOYMENT AND INCOME TAXES TO EMISSION AND CONSUMPTION TAXES. WE HAVE THE OPPORTUNITY TO RAISE REQUIRED GOVERNMENT REVENUES, WHILE MAXIMIZING SOCIAL BENEFIT, MINIMIZING ENVIRONMENTAL DAMAGE AND REDUCING CURRENT DISTORTIONS AND DISINCENTIVES BY GETTING THE PRICE SIGNALS RIGHT.

PROFESSOR COPELAND IDENTIFIES TWO MAJOR CHALLENGES FOR THE IMMEDIATE FUTURE:

FIRST, TO TRANSLATE THE "CONCEPT OF SUSTAINABLE DEVELOPMENT INTO A CONSISTENT SET OF POLICIES THAT CAN ADDRESS THE NEED TO MOVE THE ECONOMY IN A DIRECTION CONSISTENT WITH ECOLOGICAL CONSTRAINTS". (III) THE SECOND IS TO ASSIST IN THE INTERNATIONAL RESPONSE TO THE 'LOOMING GLOBAL ENVIRONMENTAL CRISIS THAT CANADA, ON ITS OWN, CAN DO LITTLE ABOUT." (III)

IN MY REMAINING FEW MINUTES, I WILL FOCUS ON TWO ISSUES RELATED TO PROFESSOR COPELAND'S FIRST CHALLENGE – IMPLEMENTING SUSTAINABLE DEVELOPMENT. SPECIFICALLY, I WANT TO DRAW YOUR ATTENTION TO TWO FUNDAMENTAL 21ST CENTURY PUBLIC POLICY CHALLENGES RELATED TO IMPLEMENTING SUSTAINABLE DEVELOPMENT. PROFESSOR COPELAND HINTS AT …BUT DOES NOT DEVELOP THESE. IN FACT, HIS PAPER SHOWS A LACK OF APPRECIATION FOR RECENT DEVELOPMENTS IN BOTH AREAS – ONE OF WHICH CANADA IS A WORLD LEADER IN … THE OTHER OF WHICH CANADA IS A FOLLOWER.

THE FIRST IS RELATED TO GOVERNANCE AND POLICY DEVELOPMENT, THE OTHER TO INDUSTRIAL PRACTICE AND INNOVATION. THE TWO ARE RELATED AND BOTH ARE FUNDAMENTAL COMPONENTS OF THE KNOWLEDGE BASED ECONOMY. TOGETHER THEY ARE SHOWING HOW SUSTAINABLE DEVELOPMENT CAN BE PRAGMATICALLY APPLIED IN THE REAL WORLD ACTIONS OF GOVERNMENTS, FIRMS AND INTERNATIONAL ORGANIZATIONS.

1. <u>THE FIRST POLICY CHALLENGE IS TO DEEPEN AND EXTEND INSTITUTIONAL INNOVATIONS NOW UNDERWAY.</u>

RECENTLY THE FEDERAL GOVERNMENT COMMITTED ITSELF TO INSTITUTIONALIZING SUSTAINABLE DEVELOPMENT IN THE CORE POLICIES, OPERATIONS AND PROGRAMS OF FEDERAL DEPARTMENTS. THIS IS TO BE DONE

BY LEGALLY REQUIRING DEPARTMENTS TO CREATE AND IMPLEMENT SUSTAINABLE DEVELOPMENT STRATEGIES, THAT WILL BECOME FUNDAMENTAL PLANNING DOCUMENTS FOR THE MANDATE OF THE DEPARTMENT, SIMILAR TO AND INTEGRATED WITH DEPARTMENTAL BUSINESS PLANS. THE LIBERALS CREATED A NEW OFFICER OF PARLIAMENT, INDEPENDENT OF THE EXECUTIVE, TITLED THE COMMISSIONER OF ENVIRONMENT AND SUSTAINABLE DEVELOPMENT, TO OVERSEE AND ASSESS DEPARTMENT'S PERFORMANCE. THE FIRST GENERATION SUSTAINABLE DEVELOPMENT STRATEGIES WERE TABLED BY MINISTERS IN THE HOUSE OF COMMONS IN DECEMBER 1997. THE SECOND GENERATION IS DUE BY DECEMBER 2000.

THIS IS AN EXTREMELY IMPORTANT INSTITUTIONAL INNOVATION AND ONE IN WHICH CANADA IS A WORLD LEADER. THIS IS POTENTIALLY A PROFOUNDLY SIGNIFICANT 'COMMITMENT DEVICE' TO USE PROFESSOR COPELAND'S PHRASE, TO HELP "OVERCOME THE SHORT TERM RE-ELECTION HORIZONS [THAT] COMBINED WITH UNEVEN DISTRIBUTIONAL EFFECTS OF ENVIRONMENTAL PROBLEMS CAN EXPOSE GOVERNMENTS TO CONSIDERABLE PRESSURE TO DEAL WITH SHORT TERM INCOME AND EMPLOYMENT CONCERNS AT THE EXPENSE OF LONG RUN SUSTAINABILITY ISSUES." (III)

THIS IS STILL VERY EARLY DAYS IN THE IMPLEMENTATION OF SUSTAINABLE DEVELOPMENT IN THE POLICIES AND OPERATIONS OF THE FEDERAL GOVERNMENT. CHANGES IN SYSTEM THINKING HAVE SLOWLY BEGUN TO

EMERGE. AS DEPARTMENTS MOVE TOWARD THEIR SECOND SUSTAINABLE DEVELOPMENT STRATEGIES IN 2000, THEY ARE BEGINNING TO LINK THE STRATEGIES WITH OTHER FRAMEWORK DOCUMENTS SUCH AS DEPARTMENTAL BUSINESS PLANS AND PERFORMANCE REPORTS IN ORDER TO INTEGRATE DEPARTMENTAL FUNCTIONS, RESPONSIBILITIES AND OUTCOMES. THE ADOPTION OF 'ENVIRONMENTAL MANAGEMENT SYSTEMS' BY SOME DEPARTMENTS HAS HELPED IN THE 'GREENING OF OPERATIONS'. THIS ENCOURAGES DEPARTMENTS TO BE PRO-ACTIVE IN REDUCING ENERGY AND WATER CONSUMPTION; ENGAGE IN GREEN PROCUREMENT; ENHANCE VEHICLE FLEET MANAGEMENT; REDUCE NON-HAZARDOUS WASTE PRODUCTION; STRENGTHEN RECYCLING; AND IMPROVE HAZARDOUS WASTE MANAGEMENT. WHILE PERFORMANCE HAS VARIED AMONGST DEPARTMENTS, THE COMMISSIONER NOTED IN HIS SECOND REPORT THAT DEPARTMENTS WERE GENERALLY MORE ADVANCED IN GREENING THEIR OPERATIONS THAN IN INTEGRATING SUSTAINABLE DEVELOPMENT INTO POLICY AND PLANNING.

THERE ARE A NUMBER OF REASONS FOR THIS … AND THE COMMISSIONER HAS HIGHLIGHTED TWO FUNDAMENTAL WEAKNESSES OF THE FIRST GENERATION STRATEGIES. FIRST, ALMOST ALL THE DEPARTMENTS FAILED TO SET CLEAR TARGETS THAT COULD BE USED TO JUDGE WHETHER OR NOT THE STRATEGY IS BEING SUCCESSFULLY IMPLEMENTED. SECOND, MANY OF THE STRATEGIES WERE MORE A RESTATEMENT OF THE STATUS QUO THAN A COMMITMENT TO CHANGE. STILL, WE ARE DOING THIS IS CANADA AND THAT IS IMPORTANT. SENIOR

OFFICIALS IN DEPARTMENTS HAVE TO TAKE THIS COMMITMENT SERIOUSLY AND RETHINK THEIR MANDATE THROUGH THE SUSTAINABLE DEVELOPMENT LENS. EVEN WHEN THEY DO SO, HOWEVER…THIS SECTORAL APPROACH IS NOT ENOUGH.

BOTH THE COMMISSIONER AND THE FORMER CLERK OF THE PRIVY COUNCIL, JOCELYN BOURGON, HAVE CITED HORIZONTAL COORDINATION PROBLEMS AS A MAJOR CONSTRAINT ON THE EFFICIENT IMPLEMENTATION OF PUBLIC POLICY. THEREFORE, OVER THE NEXT 2-4 YEARS THE FEDERAL GOVERNMENT MUST DEVELOP A 'CHAPEAU' OR UMBRELLA SUSTAINABLE DEVELOPMENT STRATEGY FOR THE FEDERAL GOVERNMENT AS A WHOLE, TO ENSURE THE INTEGRATION OF THE DEPARTMENTAL STRATEGIES. THE DM COMMUNITY IS BEGINNING TO GRAPPLE WITH THIS SYSTEMIC ISSUE … AND THEY MUST CONTINUE TO DO THIS FORMATIVE WORK.

2. SUPPORTING INNOVATION IN THE PRIVATE SECTOR

THE SECOND AREA [AND HERE CANADA IS MORE OF A FOLLOWER, BUILDING ON INNOVATIVE DEVELOPMENTS IN THE EU AND THE US], HAS TO DO WITH INDUSTRIAL PRODUCTION PROCESSES AND MANAGEMENT SYSTEMS. THIS IS GENERALLY REFERRED TO AS SUSTAINABLE PRODUCTION AND IS THE BUSINESS RESPONSE TO IMPLEMENTING SUSTAINABLE DEVELOPMENT.

THERE HAS BEEN A SEA CHANGE IN THINKING IN THE ‘90S WITH RESPECT TO THE ENVIRONMENTAL AND SOCIAL ASPECTS OF INDUSTRIAL ACTIVITY AND LEADING COMPANIES HAVE EMBRACED ADVANCED ENVIRONMENTAL TOOLS AS A MEANS TO ACHIEVE COMPETITIVE ADVANTAGE. A RANGE OF NEW CONCEPTS HAS BEEN DEVELOPED TO CONCEPTUALIZE AND IMPLEMENT SUSTAINABLE MODES OF PRODUCTION. HENCE, THE WHOLE PRODUCTION PROCESS IS NOW BEING RE-EXAMINED THROUGH THE LENS OF CONCEPTS SUCH AS ECO-EFFICIENCY, PRODUCT STEWARDSHIP, INDUSTRIAL ECOLOGY, LIFE CYCLE ANALYSIS, ENVIRONMENTAL MANAGEMENT SYSTEMS, DESIGN FOR ENVIRONMENT, ECO-INDUSTRIAL PARKS, INTEGRATED PRODUCT POLICY, EXTENDED PRODUCER RESPONSIBILITY, AND SUPPLY CHAIN MANAGEMENT.

NUMEROUS CASE STUDIES HAVE SHOWN THAT LEADING COMPANIES HAVE TRANSLATED THE ENVIRONMENT FROM A MARGINALIZED MANAGEMENT CONCERN INTO A STRATEGIC ISSUE THAT RELATES DIRECTLY TO EFFICIENCY AND COMPETITIVENESS. FIRMS THAT HAVE MOVED BEYOND COMPLIANCE TO EMBED ENVIRONMENTAL AND SUSTAINABILITY ISSUES INTO THEIR CORE BUSINESS PRACTICES ACHIEVE A NUMBER OF BENEFITS, SUCH AS:

-REDUCTIONS IN OPERATING COSTS;
-PRODUCTION AND PROCESS IMPROVEMENTS;
-REDUCED LIABILITY AND RISKS;

-ENHANCED BRAND IMAGE;

-INCREASED EMPLOYEE MORALE;

-INCREASED OPPORTUNITY FOR INNOVATION;

-INCREASED OPPORTUNITY FOR REVENUE GENERATION – THROUGH NEW MARKETS AND PRICE PREMIUMS;

-BETTER SUPPLY CHAIN MANAGEMENT AND BETTER RELATIONSHIPS WITH CUSTOMERS.

SUCH COMPANIES, PRECISELY BECAUSE THEY HAVE THOUGHT SYSTEMATICALLY ABOUT THEIR OPERATIONS, ARE ALSO MORE EFFICIENT, MORE COMPETITIVE, MORE PROFITABLE, BETTER MANAGED, AND BETTER VALUE FOR SHAREHOLDERS.

AS YOU KNOW, THE WORLD'S POPULATION IS EXPANDING AND MANY PARTS OF THE WORLD ARE EXPERIENCING HIGH POLLUTION LEVELS AND ENERGY, WATER AND NATURAL RESOURCE CONSTRAINTS. AS A RESULT, A BOOMING INTERNATIONAL MARKET IS EMERGING FOR PRODUCTS AND SERVICES THAT USE LESS ENERGY AND MATERIAL RESOURCES, ARE NON-POLLUTING AND CAN BE EASILY RECYCLED OR REUSED

LET ME FOCUS ON JUST ONE EXAMPLE FROM THE ABOVE LIST OF CONCEPTS: INTEGRATED PRODUCT POLICY. INTEGRATED PRODUCT POLICY HAS RECENTLY EMERGED AS A UNIFYING CONCEPT THAT BRINGS TOGETHER CHANGES IN

MANAGEMENT SYSTEMS WITH A PRODUCT SYSTEM PERSPECTIVE BY INTEGRATING A VARIETY OF POLICIES AND PROGRAMS ACROSS THE FULL PRODUCT LIFE CYCLE.

INTEGRATED PRODUCT POLICY HAS BEEN DEFINED AS “PUBLIC POLICY, WHICH EXPLICITLY AIMS TO MODIFY AND IMPROVE THE ENVIRONMENTAL PERFORMANCE OF PRODUCT SYSTEMS”.

THE QUESTION FOR THE 21ST CENTURY, IS HOW CAN CANADIAN PUBLIC POLICY SUPPORT AND REINFORCE THE TRANSITION TO SUSTAINABLE PRODUCTION SYSTEMS. WHILE I ONLY HAVE TIME TO MENTION THEM HERE, THERE ARE A NUMBER OF ‘TOOLS’ IN THE ‘TOOL BOX’ THAT GOVERNMENTS CAN UTILIZE TO PROMOTE SUSTAINABLE PRODUCTION.

1) THERE ARE A NUMBER OF INNOVATIVE VOLUNTARY INITIATIVES EMERGING BY WHICH GOVERNMENTS CAN FACILITATE THE PRIVATE SECTOR “IMPROVING ENVIRONMENTAL PERFORMANCE WITHOUT SACRIFICING MARKET EFFICIENCIES”.

2) THERE IS A CRYING NEED FOR GOVERNMENTS TO PLAY AN IMPORTANT INFORMATION AND KNOWLEDGEWARE ROLE. INNOVATION IN THE PRIVATE SECTOR REQUIRES NEW TOOLS AND DATA. GOVERNMENTS CAN HELP BUILD CAPACITY FOR SUSTAINABLE DEVELOPMENT INNOVATIONS IN KEY INSTITUTIONS SUCH AS CANADIAN INDUSTRY, UNIVERSITIES AND GOVERNMENTS THEMSELVES.

WE DESPERATELY NEED TO BUILD OUR HUMAN-INTELLECTUAL CAPACITY IN THIS AREA IN ALL CANADIAN SECTORS OVER THE NEXT 5-10 YEARS.

3) GOVERNMENT MUST CONTINUE TO PLAY A ROLE IN BASIC SCIENCE AND TECHNOLOGY DEVELOPMENT. HERE, THERE WILL LIKELY BE AN INCREASING RELIANCE ON COLLABORATIONS OF FEDERAL AGENCIES, INDUSTRY AND ACADEMIA.

4) ECONOMIC AND FINANCIAL INSTRUMENTS WILL HAVE TO BE REORIENTED AND EMPLOYED TO BETTER ACCOUNT FOR THE FULL COST OF USING ENVIRONMENTAL SERVICES. TAXES AND CHARGES CAN PLAY A ROLE IN PROVIDING FINANCIAL INCENTIVES FOR CONSUMERS TO SUPPORT THE DIFFUSION OF INNOVATIVE PRODUCTS THROUGHOUT THE ECONOMY.

5) INTEGRATED PRODUCT POLICY BECAUSE OF ITS FOCUS ON THE ENTIRE LIFE CYCLE OF THE PRODUCT (RATHER THAN SIMPLY ON SPECIFIC FACILITIES, OPERATIONS OR SUBSTANCES) WILL REQUIRE A REFINING OF THE REGULATORY SYSTEM.

IN CONCLUSION, WE HAVE OPPORTUNITIES TO STRENGTHEN AND DEEPEN INSTITUTIONAL CHANGES AND INNOVATIVE PRACTICES IN PURSUIT OF

SUSTAINABLE DEVELOPMENT … BUT WE CONTINUE TO FACE BARRIERS… AS OFTEN ECONOMIC, POLICY AND PSYCHOLOGICAL AS TECHNICAL.

BUT SOCIAL CHANGE IS ALWAYS A SLOW, ITERATIVE PROCESS … WITH STEPS FORWARD AND STEPS BACK.

YET, WE HAVE NO CHOICE BUT TO CHANGE … ISSUES OF INTERGENERATIONAL EQUITY, RESOURCE STEWARDSHIP AND SOCIAL RESPONSIBILITY WILL KEEP SUSTAINABLE DEVELOPMENT IN THE FOREFRONT OF DECISION-MAKERS STRATEGIC CONSIDERATIONS IN THE 21ST CENTURY.

THANK YOU

IF I MAY BE PERMITTED A SMALL ADVERTISEMENT:

FOR THOSE OF YOU INTERESTED IN RESEARCH AND POLICY QUESTIONS RELATED TO THE LINKS BETWEEN SCIENTIFIC INQUIRY, TECHNOLOGICAL DEVELOPMENT AND INDUSTRIAL INNOVATION, THE CARLETON RESEARCH UNIT IN INNOVATION, SCIENCE AND ENVIRONMENT POLICY AT CARLETON UNIVERSITY WILL BE HOLDING A MAJOR CONFERENCE ON “SUSTAINABLE PRODUCTION AND THE KNOWLEDGE ECONOMYC IN CANADA: PUBLIC POLICY AND PRIVATE PRACTICE” A YEAR FROM NOW … IN SEPTEMBER, 2000..

The Age of Optimism

Just yesterday the *Wall Street Journal* reported on a random, presumably fair sample survey of the entire American population. The lead headlines were "Americans look to 21st Century with Optimism and Confidence," and "Optimism Outduels Pessimism." There was a brief detour into the failed predictions of 100 years ago — including the pessimistic that heavier-than-air flying machines are impossible, or that from IBM Chairman Thomas Watson in 1943 that "I think there's a world market for maybe five computers." Bill Gates, Watson's successor as computer quasi-monopolist, opined in 1981 that "640K of random-access memory ought to be enough for anyone."

Today, with 58.9 home computers in use in the United States having an average of 32 megabytes of RAM (or 50 times Gates adequate amount), we should be humble about pessimistic projections. But it goes both ways. Not so long ago there were overly optimistic forecasts that all diseases would be wiped out by the turn of the century, or that the automobile would be a relic by the turn of the century, since everyone would by then own one or more personal hovercraft able to manuever in three dimensions.

Well, whatever the flaws of forecasting, Americans appear to have great confidence in the future. The one area where confidence seems most unanimous is in the future of medical technology, with advances in communications and education next in line. Computers themselves did not rate a mention. But about medical technology itself there are decidedly mixed views. When asked whether they wanted to live to be 100, 52 percent said yes but fully 42 percent said no, and this answer did not vary much by age. Everyone knows by now that aging allows us to enjoy more of the marvels of future technology, but with the possibility of a diminished quality of life and the overriding question as to who is going to pay for it. This survey response reveals indirectly the subtleties of trying to quantify the value of increasing life expectancy, an area which the Boskin commission on the U. S. CPI discussed without trying to quantify or value.

But our topic tonight is not medical technology, where everyone supports the conclusion of the Boskin Commission that this is the most important single source of

downward bias in the CPI. No one ascribes to medical care the label "new economy" or attributes to medical care the role of reviving American productivity growth from its long slumber, simply because unmeasured gains in the quality of medical care have been with us throughout the postwar era, are nothing new, and cannot be claimed to have emerged suddenly in the last few years.

Instead, the heart of the "new economy" is not medical care, it is computers. And this is where we turn to the meat of our topic.

The "Solow Paradox"

It has been more than a decade since Robert M. Solow (1987) came up with his lovely quip, "You can see the computer age everywhere but in the productivity statistics." The prevailing reaction to Solow's paradox has been "well, the computers are indeed everywhere, so there must be something wrong with the productivity statistics." The idea that the contribution of computers to output is inherently difficult to measure and has been systematically understated can be classified as the first solution to the Solow paradox. In a minute, I'll show you some interesting statistics that lead me to doubt that we are missing the computers because of measurement errors.

A second possible solution to the Solow paradox has been suggested by the important work of Stephen Oliner and Dan Sichel (1994, Sichel 1997), who criticize Solow's basic premise by arguing that "the computers are *not* everywhere." Specifically, computers and related peripherals represent only about 2 percent of the nation's capital stock. Further, this tiny share is not likely to increase appreciably, as so much of investment in computers is chewed up by depreciation and obsolescence of relatively young hardware and software. Only if the return from computers were to increase dramatically in the future would their contribution to productivity growth accelerate.

The third explanation has been proposed by Paul David (1990) and others. David argues by analogy with the invention of the electric motor around 1880; the payoff of the electric motor in creating an acceleration of productivity growth in U. S. manufacturing did not become apparent in the statistics until the interval 1913-29. This analogy would seem to imply that it may take a full generation before systems of

production are changed to take full advantage of IT.

I prefer to make the case for a fourth possible solution to the Solow paradox. Computers may be pervasive, but they have not created a revival of productivity growth because something is wrong with the computers. Computers fail as a source of a productivity revolution because they pale in comparison with the great inventions earlier in this century that created the golden era of productivity growth; because many activities in the service sector are inherently immune to productivity improvements achieved by computers; because diminishing returns to increasing computer speed and memory has already set in; and because substantial activity created by computers has zero or negative productivity.

The Recent Productivity Revival in the United States

Recently some doubt has been cast on the relevance of the Solow computer paradox, because productivity growth seems to be reviving in the United States. Maybe we *are* starting to see the computer age in the productivity statistics. I've recently written a paper that raises questions about this widespread belief that the "New Economy" is finally starting to emerge in the U. S. productivity statistics. Let's look at this evidence . .

[show color Figures]

Qualifications vs. 2nd quarter figures.

Escaping "the Bad Old Days"

As the years go by without a productivity payoff from computers commensurate with their cost, journalists have become more frenetic in proclaiming that we are in the midst of a true revolution: "Computers may be the most profound technology since steam power ignited the Industrial Revolution." There is a "waiting for Godot" quality to the anticipation generated as productivity growth continues to languish while computer investment continues to surge. Those who wait for Godot appeal to Paul David's (1990) electricity analogy, arguing that since 25 years elapsed between the invention of electricity and the beginning of its transformation of farm, home, and factory, so it is reasonable to expect such a delayed impact of the computer. Yet if anything is clear, it is that however unimportant the computer is today in generating productivity growth, we can be sure that at the margin it was *more* important a decade ago and will be *less* important a decade hence, simply because continuing exponential declines in the cost of computer power reduce the marginal product of computer power, i.e., push incremental increases in computer power into lower and lower productivity uses.

To begin our investigation of why computers have not yielded a productivity revolution, it is useful to compare the contribution of computers to economic output and welfare with some of the more important inventions that had their main diffusion earlier in the twentieth century and help to explain the "one big wave" of MFP growth peaking in 1913-64 exhibited in Table 1. A useful context is to ask how the great inventions helped us to escape from the abysmal living conditions of the late nineteenth century.

Living Conditions in the Late Nineteenth Century

An eye-opening introduction to the conditions of that era is provided in a little-known book by Otto Bettman (1974), the founder of the famed Bettman Archive. Bettmann divides the horrors of the past into eleven categories, which for brevity will be greatly condensed here:

1. **Air, Food, Drink, and Health.** The urban streets of the 1870s and 1880s were full not just of horses but pigs, which roamed the streets and were tolerated because they ate garbage. In Kansas City, the confusion and stench of patrolling hogs

were so penetrating that Oscar Wilde observed, "They made granite eyes weep." The steadily increasing production of animal waste caused the more pessimistic observers to fear that American cities would disappear like Pompeii — but not under ashes. Added to that was acrid industrial smog, sidewalks piled high with kitchen slops, coal dust, and dumped merchandise, which became stirred together in slime after a rain. All of this was made worse in the summer, which was almost as unbearable outdoors as inside, especially with the heavy clothes of the day. Rudyard Kipling said of Chicago, "Having seen it, I desire urgently never to see it again. Its air is dirt." Added to putrid air was the danger of spoiled food — imagine unrefrigerated meat and poultry hung unrefrigerated for days, spoiled fruit, bacteria-infected milk, and virtually all types of food were suspected of adulteration. Epidemics included yellow fever, scarlet fever, and smallpox. The pain and lack of sanitation in surgery were endemic, and many hospitals were deathtraps.

2. Motive Power. Before the invention of electricity, urban streets were a chaotic jungle of horse trolleys, and horse-drawn conveyances of all types, made even more congested in winter by horse-drawn snowplows that did little more than move the snow out of the way of the trolleys by dumping it on the sidewalks. Rural life was also no picnic; among its features were isolation, loneliness, and the drudgery of fireplace cooking and laundry done by muscle-power. Travel between cities on railroads was surprisingly dangerous; in 1890 railroad-connected accidents caused 10,000 deaths. Emigrants traveled west on wooden benches in worn-out filthy boxcars attached to freight or cattle trains.

3. Housing. In 1882 only two percent of New York City's houses had water connections. Urban apartments were crowded, damp, airless, and often firetraps. Even middle-class apartment buildings were little more than glorified tenements; families were shelved in layers, with no insulation from the neighbors' cooking smells or babies' squallings. In the slums as many as eight persons shared a single small room.

4. Working Conditions. Those who have seen the movie "Titanic" may have shared my momentary shock at the working conditions of the sweating laborers shoveling coal into the huge mouths of the ship's boilers. Coal miners, steel workers, and many others worked 60-hour weeks in dirty and dangerous conditions, exposed to suffocating gas and smoke. Danger was not confined to mines or mills; in 1890 one railroad employee was killed for every 300 employed. Sewing in a sweatshop might

have been the most oppressive occupation for women but was not as dangerous as soap-packing plants or the manual stripping of tobacco leaves.

The Great Inventions

The transition from these often abysmal living conditions to today's much easier and more pleasant life resulted from the complex interaction of ideas, inventions, and the feedback from growing wealth that allowed poor families to live as well or better in many aspects of life than the wealthy of one hundred years earlier.

Here, however, I want to select five major inventions for comparison with the computer, or chip-based IT broadly conceived. These are:

(1) The first great invention in the "Group of Four" is electricity, including both electric light and electric motors. As shown by Nordhaus (1997), electricity drastically reduced the true price of light. Electric motors, after a developmental period of two or more decades emphasized by David (1990), revolutionized manufacturing by decentralizing the source of power and making possible flexible and portable tools and machines. After a somewhat longer lag, electric motors embodied in consumer appliances eliminated the greatest source of drudgery of all, manual laundry, and through refrigeration virtually eliminated food spoilage and through air conditioning made summers enjoyable and opened the southern United States for modern economic development. In fact, I would venture to make the claim, perhaps strange to Canadian ears, that one single application of electricity — that is, air conditioning — was a more important invention than everything done by personal computers and the internet. Ask the population of the ex-Confederacy in the United States which they would choose if they could only have one — air conditioning or a computer — and you know what the answer will be.

(2) Sharing the title with electricity for the most important invention that had its main diffusion in the twentieth century is the internal combustion engine, which made possible personal autos, motor transport, and air transport. Grouped in this category are such derivative inventions as the suburb, interstate highway, and supermarket. Gradually eliminated or greatly reduced were many of the ills of the late nineteenth century, from manure to unplowed snow to putrid air to rural isolation.

(3) The third group of great inventions includes both petroleum and all the processes which "rearrange molecules," including petroleum, natural gas, petrochemicals, plastics, and pharmaceuticals. These are largely an independent invention, but some of the innovations were induced by the demands of motor and air transport. They helped to reduce air pollution created by industrial and heating uses of coal, and they made possible many new and improved products, as well as conquering illness and prolonging life.

(4) The final member of the "Group of Four" is the complex of entertainment, communication, and information innovations that were developed before World War II. This set of inventions that made the world smaller can be traced back to the telegraph in 1844 and includes the telephone, radio, movies, television, recorded music, and mass-circulation newspapers and magazines. Television, which was invented in the 1920s and 1930s, is the only one of these innovations that was diffused after World War II. Otherwise, all the rest were well established before World War II and created a quantum leap in the standard of living when a year like, say, 1939 is compared with fifty years earlier.

(5) It used to be the four big inventions, but a bit of thought suggests that there was a fifth great invention that deserves to join the top rank. This is the invention of indoor plumbing and urban sanitation infrastructure. Shall we use the same mock public opinion poll as I suggested for southern Americans thinking about air conditioning — let me ask Canadians which they would choose if they could only chose one, indoor plumbing or the computer, and I think you know what the answer would be. I credit my colleague Joel Mokyr in drawing my attention to this fifth set of inventions, which starts with Pasteur's germ theory of disease, together with the development of clean urban waterworks, to which Mokyr gives credit for the great decline in mortality in the four decades prior to World War I.

The "Group of Five" inventions, in turn, created an increase in per-capita income and wealth that allowed an improvement in living standards even in those aspects of consumption where inventions did not play a major role, particularly the ability of families to afford many more square feet of shelter (and in the suburbs more land surrounding that shelter) than at the turn of the century.

Comparing Revolutions

Has the information revolution spawned by the computer created as great a change in living conditions as any of the four major complexes of early twentieth-century inventions? While retrospective exercises are inevitably subjective, it is interesting to play an expanded version of what I like to call the "New Yorker game." A few years ago the *New Yorker* commissioned a critic to sit in front a television set for an entire week and record his impressions. He had many reactions, but the one most relevant for us is that he was surprised from the reruns of 1950 TV shows how similar were the living conditions of the 1950s Ozzie and Harriet families in comparison to those of today. Clearly living conditions were far worse in the 1890s than in the 1950s, in large part because of the "Group of Five" inventions. We can surmise that a hypothetical critic revisiting the 1890s through a time machine would not have the same reaction as the *New Yorker* critic visiting the 1950s from the 1980s. What does seem sure is that society had cured most of the ills of late nineteenth century living conditions by the 1950s and 1960s without any help from computers.

What the Great Inventions Achieved

To understand at a deeper level why the computer revolution does not measure up to the earlier great inventions, it is useful to consider some of the ways in which the great inventions created productivity growth. Electric light was a unique invention that extended the length of the day for reading, entertainment, and other pursuits. Both the electric motor and internal combustion engine created faster and more flexible movement, directly raising the productivity of factory workers, housewives, truck drivers, and airline pilots as the machines they powered could rotate ever faster. Air conditioning put humans rather than Mother Nature in control of indoor climate, greatly expanded the area of comfortable habitation of the United States and other countries, and hugely increased productivity in hot and humid climates.

Petroleum refining, chemicals, plastics, and pharmaceuticals all involve the physical rearrangement of molecules in ways that change materials into more productive forms. The complex of electric and electronic entertainment and information industries arrived in a void in which nothing comparable existed and had, one may safely conjecture, a greater impact on everyday life of the average family than the second and third generation developments, e.g., VCRs, CDs, the first generation of color TV, and ever-larger TV screens, which provided merely better or more convenient ways of performing the same basic functions.

Some of the output of computers is, in principle, as productivity-enhancing as that of electric motors or motorized transport. From the earliest punch-card sorters, some applications of computer technology involved movement and speed. Numerically controlled machine tools, robots, and other computer-driven machinery has the same potential for productivity improvement as the earlier great inventions and doubtless accounts for the robust rate of productivity growth still apparent in some (but not all) manufacturing industries. The use of ever-faster computers and peripherals to churn out securities transactions, bank statements, and insurance policies should enhance productivity growth in the finance/insurance sector. And, just as the motor car enormously increased personal mobility and flexibility, so the computer has spawned inventions whose main output is convenience, most notably the ATM machine. But notice that the big advances in finance, insurance, ATM machines, airline reservations systems, and other primary uses of computer technology were achieved by the mainframe, not the personal computer, and are now 20 to 40 years in the past.

V. Where the Computer Falls Short

With this historical background, we can now explore some of the reasons why the computer has not made more of a positive impact on productivity growth. We begin with several general limitations of computers and then discuss the pervasive role of diminishing returns in the diffusion of computer technology.

Why Computers are Not Everywhere

In new results of Jorgenson and Stiroh (1995) and Stiroh (1998), the impact of computers on MFP growth come to a mere 0.07 percentage points for 1973-96 and only 0.13 points for 1990-96.

The Oliner-Sichel explanation of the Solow computer paradox focusses on the small share of computers in the capital stock. But we should go further by asking why computers have not appeared everywhere. An insightful study by McGuckin, Stiroh, and van Ark (1997) shows that more than 75 percent of all computer inputs are concentrated within three service sectors — trade, finance/insurance, and what they call "other services." Only these three sectors and five of 21 manufacturing sectors had more than 4 percent of total capital in the form of computers in 1991.

Hand and Eye Coordination. Computers are less pervasive than is generally thought, because there are real limitations to the replacement of human beings by computers. Commercial aircraft, large and small alike, will always need two human pilots, no matter how advanced the avionics in the cockpit. Trucks will always need drivers. In manufacturing, some critical functions have proven to be resistant to automation, such as the connecting of tubes and wires when an auto chassis is "married" to the body. No matter how powerful the computer hardware and how user-friendly the software, most functions provided by personal computers, including word-processing, spreadsheets, and data-base management, still require hands-on contact through a keyboard and mouse to be productive.

Face-to-face Contact in the Services. By their nature, many services involve in-person contact between clients and practitioners, whether doctors, nurses, dentists, lawyers, professors, investment bankers, management consultants, bartenders, wait staff, flight attendants, barbers, or beauticians. Many other services require in-person contact between the practitioner and an object, such as in auto repair, lawn maintenance, restaurant chefs, hotel housekeepers, and almost every type of maintenance of homes and machines. Computers are a relatively large share of capital in business, health, legal, and educational services, but in each of these the contribution of capital to productivity growth is relatively small.

Why Social Returns May be below Private Returns

A critical challenge posed by the Solow paradox is to explain how computers could simultaneously be contributing relatively little to aggregate productivity growth while at the same time be purchased with great eagerness by millions of business firms and consumers, spawning whole new industries and creating vast wealth.

There are numerous reasons why computers may be purchased even if they have no visible payoff in measured aggregate productivity growth.

(1) There may be a temporary delay in the productivity benefits of computers as training takes place and managers reorganize production. Baily and I were skeptical of this hypothesis in 1988, and it seems considerably more implausible now, ten years later, despite David's (1990) intervening attempt to provide an analogy with the diffusion of the electric motor. Also, this explanation is incompatible with the Brynjolfsson-Hitt evidence.

(2) Computers may be purchased as a result of managerial error. Firms may underestimate the full costs of information technology, e.g., by focussing only on hardware cost and by failing to include the cost of labor needed to maintain computers and provide ongoing training. The only real distinction between (1) and (2) is that the first is temporary and the second is permanent. The second, like the first, is incompatible with the Brynjolfsson-Hitt evidence.

(3) Computers are used extensively to provide information aimed at taking customers, profits, or capital gains away from other companies. This is a zero-sum game involving redistribution of wealth rather than the increase of wealth, yet each individual firm has a strong incentive to make computer investments that, if they do not snatch wealth away from someone else, at least act as a defensive blockade against a hostile attack. This may be at the heart of the apparent contradiction between the Brynjolffson-Hitt micro evidence and the failure of computers to spark a productivity growth revival in the macro data; the high payoff to computers for individual firms may reflect redistributions to computer-using firms from firms that use computers less intensively.

(4) Computers may improve working conditions. Firms without adequate computer equipment may not be able to hire high-quality employees. These higher quality employees, in turn, may provide some of the payoff to computers that Brynjolfsson-Hitt have measured. However, to the extent that computers allow consumption on the job, in the form of personal e-mail, games, or web access for consumption purposes, they may create unmeasured declines in work hours and output together with unmeasured increases in consumption.

(5) Computers may produce valuable services that are not included in official measurements of output and productivity, e.g., the convenience services of automatic cash machines (ATMs) and faster check-out made possible by bar-code readers in supermarkets and other retail outlets.

Factors (1) and (2) should be expected to disappear as firms learn to avoid mistakes in the use of computers. It is hard to believe that pervasive and ongoing managerial error this is still a major factor, if it ever was such. Factors (3) and (4) would seem to be critical. There is a "keeping up with the Joneses" aspect of hardware and software purchase motivated by competition, employee satisfaction, and employee recruitment. Added software complexity creates hardware obsolescence and the need to buy newer, higher-powered computers. As someone quipped, "What Intel Giveth, Microsoft Taketh Away."

How much of the motivation for the private purchase of computers remains for output mismeasurement? While this question may seem impossible to answer, one overriding factor limits its importance. The heaviest uses of computers are in industries that provide mainly or entirely intermediate goods, especially wholesale trade, finance, many parts of the insurance industry, business services, and legal services. If computers truly raised the output of these intermediate industries in unmeasured ways, then the benefits should show up in the output of final goods industries that exhibit higher output in relation to their undermeasured inputs. Yet this spillover from intermediate to final goods industries is just what cannot be found in the official data on output and productivity growth.

The Fundamental Limitation: Time

Since Gary Becker's seminal article (1965) on the economics of time, household production has been viewed as an activity which combines market goods and time. The fixed supply of time to any individual creates the fundamental limitation on the ability of exponential growth in computer speed and memory to create commensurate increases in output and productivity. In performing the two activities that were revolutionized by the personal computer, namely word processing and spreadsheets, I cannot type or think any faster than I did with my first 1983 personal computer that contained one-fiftieth of the memory and operated at one-thirtieth of the speed of my present model. The capital stock with which I work has increased by a factor of at least fifteen, according to the hedonic price methodology used by the BEA in the U. S. national accounts, yet my productivity has hardly budged, occasionally benefitting for a few seconds when I can jump from the beginning to the end of a 50-page paper much faster than in 1983. As a result, there has been an exponential rate of decline in my output-to-capital ratio, and an equally sharp decline in the marginal productivity of computer capital.

The Pervasiveness of Diminishing Returns

There is nothing unique about the applicability of diminishing returns to the computer hardware and software industries. Numerous industries have run into barriers to steady growth in productivity, most notably the airline industry when jet aircraft reached natural barriers of size and speed, and the electric utility industry when turbogenerator/boiler sets reached natural barriers of temperature and pressure.

What makes diminishing returns particularly important in understanding the computer paradox is the sheer pace of cost reduction, and hence the rate of which computer users are sliding down the computer demand curve to ever-lower marginal utility uses. My way of illustrating this point is to take word-processing. The upper frame in Figure 6 conjectures a total utility curve for word processing, plotted against the speed of the computer measured in mHz. Plotted are successive improvements starting at point A with the memory typewriter, which eliminated much repetitive retyping. At point B comes the early slow DOS PC with Wordperfect 4.2. Much faster computer speeds allowed the development of Wordperfect 6.0 for DOS, with a fully graphical WYSIWYG interface, as at point C. Further order-of-magnitude increases in speed bring us today's state of the art at point D, Windows 98 with the

latest version of Microsoft Word. Yet look at how the curve flattens out. The real revolution in word processing came at the beginning, by ending repetitive retyping and by allowing revisions to be inserted while the rest of the document would automatically reformat itself. The productivity enhancement of WYSIWYG was minor in comparison, and what the final step to Windows contributed, beyond ease of training for novice users, escapes me.

The bottom frame replots the same relationship with marginal utility on the vertical axis. This is the demand curve for computers; a set of continuous improvements rather than discrete improvements would result in a continuous nonlinear demand curve instead of the piecewise function drawn in Figure 6. This demand curve is drawn on the simplified assumption that word processing is the only use of computers, but the point can be made in multiple dimensions. A steady decline in the cost of producing computer speed has allowed the user to slide down from point A (not shown in the bottom frame) to B to C to D. But clearly, as the diagram is drawn, a large part of the consumer surplus occurred in going from A to B to C, and further gains will be relatively small.

Continuity from Mainframes to Personal Computers

The diminishing returns argument provides the definitive answer to the Paul David (1990) "delay" hypothesis. The reason that electric motors and consumer appliances took time to diffuse is that initially they were very expensive and didn't work very well. But the personal computer worked reliably from the beginning, provided its main benefits early on, and encountered relatively soon not just diminishing returns but the pervasiveness of face-to-face technology in the service sector that limits the ability of super-fast computers to replace labor input in a significant way.

The David (1990) "delay" hypothesis encounters another obstacle. Personal computers are only a secondary step in the evolution of computer technology that began with the first commercial mainframe computer (the UNIVAC I in 1951). Hedonic price indexes show that steady price declines at geometric rates of 25 to 35 percent have characterized both the mainframe and personal computer industries since the beginning. Many of the industries that are the heaviest users of computer technology, e.g., airlines, banks, and insurance companies, began in the 1960s and

1970s with mainframe technology and still perform the most computation-intensive activities on mainframes, often using PCs just as smart terminals to access the mainframe data base. In this sense computers have been around for more than 40 years, not just a decade or so, and the "waiting for Godot" hypothesis of David and others loses further credibility.

Is Some Computer Investment Producing Negative Social Returns?

It is unusual to have a section of an academic paper suggested by a newspaper cartoon, but in this case the cartoon is so appropriate that it must be included (see Figure 7). It suggests some of the ways in which computer games and the internet have crept into the office environment in ways that may diminish productivity more surely than the traditional coffee break or trip to the water cooler. The explosion of the internet and the web in the last few years might seem to create a new function for personal computers that allow them to escape the merciless vice of diminishing returns, but this conclusion is open to doubt.

First, much personal web access, both from the office and from home, is a substitute for other forms of entertainment or information. Much information available on the web duplicates that already in print, as suggested by Figure 8, and many functions of on-line services were provided prior to the development of the web. Just as the productivity of a word processor is limited by the typing speed of the user, so the potential surplus provided by the web is limited by the leisure time of the consumer (even if extra leisure is taken on the job). Second, much investment in web sites by commercial firms falls under category (3) above, the use of the computer to redistribute wealth rather than create wealth. And the commercial use of the internet largely duplicates other forms of advertising, so from society's point of view extra employees have been hired to duplicate a pre-existing function, simply for offensive or defensive competitive purposes. And this competitive drive extends into the nonprofit sector. What economics department does not have its web site, designed to impress prospective students and faculty members? Yet in what sense do such web sites produce better students or faculty members, rather than just reallocating them among departments?

V. Conclusion

Profound issues are raised by the apparent failure of IT to boost the rate of multi-factor productivity (MFP) growth or of average labor productivity (ALP) growth in the United States in the past decade, beyond the sparkling productivity performance of the computer industry in making computer power faster and cheaper. Where is the payoff for the other 99% of the economy that uses these computers?

To advance our understanding of the failure of computers to revive productivity growth, we contrast the role of the computer with the great inventions of the early twentieth century, initially by asking how the greatest advances from the abysmal living standards of the late nineteenth century were achieved. These advances had nothing to do with computers, but rather were achieved by an advance in general knowledge, particularly regarding health, and five key groups of inventions, namely (1) electricity, (2) the internal combustion engine, (3) petroleum and chemicals, and (4) electric and electronic entertainment and information, and (5) indoor plumbing and sanitation infrastructure. By the 1950s these inventions had diffused throughout the economy and life bore little resemblance to that of the 1890s, while in contrast life today differs relatively less from that of the 1950s.

The failure of computers to have a productivity impact comparable to that of the earlier great inventions reflects the simple fact that computers have to interact with humans, and humans have a limited quantity of time to combine their unique talents (thinking, typing, planning) with the computational and information-gathering resources of computers. The productivity of computers is increasingly subject to diminishing returns and a dramatic decline in the ratio of computer output to computer capital, due to the increasing mismatch between the clock speed of computers and the finger speed of operators writing documents and creating spreadsheets. Further, the computer revolution encounters physical limits in replacing humans in such diverse occupations as airline pilots, truck drivers, flexible finger-sensitive manufacturing assembly, and surgery. Most basically, the output of most industries within the service sector requires some type of face-to-face contact between practitioner and client, or practitioner and an object.

Some uses of the computer provide a real convenience, like the ATM machine. But for other uses the investment is duplicative of existing resources, with only a small

prospective social payoff. Many computers are purchased by business firms in order to compete with other firms. The aim is redistribution of market share, not an improvement in aggregate productivity. This is the primary reason why computers may have a social return that is lower than their private returns, the opposite of the super-normal returns that have sometimes been suggested. While many earlier inventions have been subject to diminishing returns, the role of diminishing returns in computers is more important and pervasive, simply because the cost curve is shifting down the demand curve so rapidly.

The recent development of the internet and the World Wide Web may appear to shift the demand curve and delay the onset of diminishing returns, and to some extent this is true. But much commercial activity on the web simply duplicates existing forms of advertising, requiring more people to achieve the same purpose as previously, and hence reducing productivity. Much personal web access is a substitute for other forms of entertainment.

In the end our conclusion is that the productivity slowdown is real, and that diminishing returns places the most productive contribution of the computer behind us in the past. Our conclusion stands in sharp contrast to the widespread view that we have a "new economy" dominated by the revolutionary implications of the information age. The "bad old days" of the late nineteenth century may indeed have been terrible, but at least they witnessed the creation of truly important inventions that made possible a half-century of rapid growth in productivity (between roughly 1915 and 1965) that far exceeds what occurred before, what has occurred since, or what is likely to occur in the foreseeable future.

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II. RESOURCES AND TECHNOLOGY

CAPITAL INVESTMENT CHALLENGES IN CANADA

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CAPITAL INVESTMENT CHALLENGES IN CANADA

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PREFACE

AS A NEW MILLENNIUM APPROACHES, Canadians are going through a time of dramatic economic change. Markets are becoming global and economic activity across nations is becoming increasingly integrated. Revolutionary developments in computer and communications technology are facilitating globalization, and are also altering a great deal the workplace and the lifestyles of Canadians. At the same time, largely as a consequence of the information revolution, knowledge-based activities are becoming increasingly important within the Canadian economy and the economies of other industrialized nations.

These and related major transformations of the economic environment invite a comparison with the Industrial Revolution of the 1800s. As in the earlier time, major structural changes are giving rise to uncertainties. Firms and workers are struggling to find their place in the new economic order. Canadians collectively face the question of whether their nation's physical, human and institutional resources will provide a firm foundation for continued prosperity. Many see Canada's prospects as being much less secure than in earlier years, when the country's rich natural resources played a major role in shaping the Canadian economy.

To examine fully the medium to longer-term opportunities and challenges of these developments, the Micro-Economic Policy Analysis Branch of Industry Canada asked a group of experts to provide their "vision" for Canada in the 21st Century on a number of important issues. Each author was required to undertake two formidable tasks: first, to identify major historical trends and develop scenarios to illustrate how developments in his/her respective area might unfold over the next ten to fifteen years; and second, to examine the medium-term consequences of these developments for the Canadian economy.

The papers coming out of this exercise are now being published under the general heading of "Canada in the 21st Century". This series consists of eleven papers on different aspects of Canada's medium-term outlook. The papers are divided into three major sections. The first section, *Scene Setting*, focuses on important developments that are going to shape the medium-term economic environment in Canada. The second section, *Resources and Technology*, looks at trends among some important components of Canada's wealth creation and considers the actions needed to ensure that these factors provide a firm foundation for continued prosperity. The last section, *Responding to the Challenges*, explores individual, corporate and government responses to the medium-term challenges and offers some options for appropriate course of action.

As part of the Resources and Technology section, this paper by Professor Ronald Giammarino of the University of British Columbia, notes various findings suggesting that there is an investment problem in Canada. The relatively poor productivity performance, low levels of R&D investment and the slow development of high-technology industries in Canada in relation to many of the OECD countries are indications that market failures may be impeding investment. To create an

improved environment for investment, a number of challenges must be addressed. The author argues that Canada needs to address a number of challenges for improving the investment climate: First, it is necessary to take into account the increased international mobility of capital by maintaining taxation rates in line with those of other industrialized countries, and direct tax revenues toward infrastructure investments that will enhance the quality of life and increase the efficiency of capital and labour. Second, R&D and other investments that generate significant spillovers need to be supported. To do this, the author suggests an international approach, such as a multilateral commitment to the improved enforcement of property rights. Third, environmental policies must not place Canadian firms at a competitive disadvantage. If Canadian companies, on the other hand, choose to exceed international environmental standards, the author suggests that it may be appropriate to offer them some financial incentives.

SUMMARY

THE PURPOSE OF THIS STUDY IS TO IDENTIFY CHALLENGES that Canadians will face in generating and exploiting investment opportunities over the next 10 to 15 years. Investment is the activity that leads to capital formation and is an important contributor to productivity and output growth. Capital formation increases labour productivity and income levels by providing the tools with which effort is levered into greater output. This report first discusses the role of investment in the Canadian economy and then reviews trends in Canada and other countries.

The productivity of Canadian industry went through a sharp decline in the mid 1970s similar to most industrialized countries. This suggests that Canadian investment levels might have been low. However, while productivity has levelled off or improved slightly for other developed countries, labour productivity growth in Canada has been below average and total factor productivity has actually declined over the past 15 years. The reasons for this are not clear. Some of the decline could be attributed to lower overall investment and, more specifically, to low levels of investment in R&D. In addition, more recent evidence suggests that Canada's industrial structure has not moved towards higher value, high technology areas as rapidly as other countries have.

Neither a low investment level nor a particular investment composition *per se* need be cause for concern since it might be that investment opportunities in Canada are not as valuable as those found elsewhere. It would be counterproductive to encourage investment in low return projects. However, there are externalities and market failures that might impede investment. If the decline in productivity, especially relative to levels found in other developed countries, reflects such impediments, then opportunities for improvement exist. The objective of this study therefore is to identify specific problems that might impede investment now or in the future. This will identify the challenges that must be dealt with over the medium term.

There is one main trend and one important theme that underlines this study of the investment policy environment that Canada will face. The trend is the increased level of factor mobility and international integration that world markets are experiencing. The investment decisions made by Canadian corporations and the policy decisions made by government must deal with the problems and opportunities that globalization implies. The theme that provides a base for this paper is that in most cases specific investment decisions are best made by individuals responding to market signals. In the past it has been common for policy makers to look at specific areas that are important to economic growth and provide investment or savings incentives to stimulate activity in these areas. It is not likely that this strategy will be successful in the future. First, past experience does not indicate that such a strategy is effective. More specifically, in most cases there is little reason to believe that policy makers are better able to make investment decisions than private corporations or citizens. For instance, it appears that efforts to stimulate R&D

investment have failed and that Canada has been slow to invest in new technologies. Furthermore, encouraging a specific sector has and will continue to run into challenges from our trading partners.

This does not mean that there are no opportunities for policy makers to improve investment; the sections below identify specific areas where opportunities do exist. However, the general point is that policy makers should be less concerned with specific decisions and more concerned with the decision-making environment. *The challenge is to develop new ways of supporting investment. The appropriate steps in doing so involve less direct incentives and more international policy coordination, regulation, and public investment*.

Following are key challenges resulting from areas where the market might not take full advantage of investment opportunities owing to externalities or market failures.

- Increased globalization will generate greater factor mobility: investment in particular will increasingly flow to the environment that offers the highest overall return. This return will include both pecuniary and nonpecuniary components so that many investments, especially those that rely on human capital, will be made where there are both low costs of operating and high quality of life. T*he challenge is to ensure that Canada makes the infrastructure investments needed to maintain a high quality of life and to increase the efficiency of capital and labour.* The market might not meet this challenge on its own because increasing infrastructure provides a direct benefit to Canadians who use these investments and an indirect benefit by attracting investment. For instance, an increase in the education level of the work force not only increases the quality of life for the average Canadian, it also makes investment in Canada more attractive.

- It has been well established that investment, particularly in R&D, generates spillovers that benefit many firms besides the initial investor. As a result, the social value of some investment exceeds the private benefit, and this supports a case for investment subsidies. However, there is also evidence that the international knowledge spillovers are extensive so that subsidizing investment in one country could mean subsidizing a transfer of knowledge to another country. *The challenge is to replace direct subsidies with international mechanisms that help investors capture more of the total returns from their investments*. This could entail greater coordination and enforcement of laws protecting patents and other property rights. Alternatively, it could involve facilitating international collaboration in areas of basic research and R&D so that private networks take on the problem of protecting the benefits of investment.

- Environmental issues and their impact on investment decisions will increase in importance and complexity as Canada adjusts to more open markets. As a wealthy, developed country, Canada could wish to exceed international environmental standards by devoting more resources to improving and protecting its environmental endowment. However, imposing higher standards might place Canadian firms at a competitive disadvantage and could lead to flights of capital. The policy problem is how to support private sector investment and implement specific social choices at the same time. *The challenge is to ensure that firms have a competitive cost base while simultaneously ensuring that Canadian political choices are implemented.* This will require new ways of dealing with corporate incentives. For instance, if the political system encourages Canadians to exceed international environmental standards, then it might be better to subsidize firms that incur the cost of exceeding the international standards rather than simply impose on firms the standards and the attendant increase in the cost base.

- The specific problems of low investment in general, low R&D investment in particular, and a slowness in channelling resources from low technology to high technology activities can all be explained by the way in which Canadian managers assess investment opportunities. There is concern that Canadian managers underinvest in long-term, risky projects. One common explanation is that Canadian investors are too averse to risk. However, this is inconsistent with the diversification opportunities, both domestic and international, that exist. An alternative explanation is that today's managers tend to be myopic because they undervalue the long-run benefit of investments. Managers' response to this complaint often is that they do assess opportunities correctly but are inhibited from making long-term investments because of the behaviour of modern capital markets. The argument is that investment in a long-run venture will reduce current period profits and this will lead to a drop in share price and/or a hostile takeover of the firm. Consequently, some managers argue that they must reject long-term valuable investments (such as technological advancement) in favour of less valuable investments that have more immediate cash payoffs (such as resource extraction).

  There is no evidence that capital markets do not value long-term investment. Moreover, the threat of a hostile takeover has not been shown to have a large impact on long-term investments. There is, however, evidence that Canadian managers use evaluation techniques that are known to cause valuation errors. This might contribute to the failure among managers to recognize the inherent value of high risk, long-term ventures. *The challenge is to increase competitive pressure on Canadian managers so that they will be induced to pursue valuable investment opportunities vigorously.* This will require opening up investment opportunities to competition and making the market for corporate control (the takeover market) more competitive. Policy

makers will need to review ownership restrictions, corporate governance guidelines, barriers to capital markets, and product market barriers to entry.

- Corporate decision making is also influenced by the regulation of financial markets. For instance, bank loans are a significant channel through which resources are invested; however, it is widely recognized that bank lending can be drastically distorted through deposit insurance regulations. *The challenge is to implement a system that consistently and regularly evaluates and improves the regulation of financial markets.*

INTRODUCTION

THE FUTURE ECONOMIC AND SOCIAL WELL-BEING of Canadians will be fundamentally influenced by the investment choices made individually and collectively by private and public sector decision makers. Employment, consumption, lifestyle and the environment will all be influenced by the capital stock of the economy and the rate of capital formation that results from investment.

The purpose of this study is to consider the investment challenges that Canadians will face over the next 10 to 15 years. The focus is on challenges that must be met in order to gain maximum benefit from investment opportunities. Some challenges are quantifiable and straightforward. Many others are complex and emerge from an increasingly globalized economy undergoing rapid technological and social change.

The first part of this study addresses the question of whether or not there is 'an investment problem' in Canada. Investment adds to social and economic well-being by increasing productivity. Trends in productivity suggest that Canadian investment levels have been rather low and that investment seems to be weighted towards middle technology industries. Neither a low investment level nor a particular investment composition *per se* need be cause for concern if they reflect optimal investment decisions. However, certain externalities and market failures might impede investment and prevent Canadians from deriving the full benefit of their investment opportunities. Indications that such impediments exist include the decline in productivity, especially compared to levels in other developed countries, the relatively low levels of R&D investment and the relatively slow development of high technology industries. This also points to opportunities for improvement.

The remainder of this paper identifies specific problems that might impede current and future investment. This will help to describe the challenges that must be dealt with over the medium term.

This report first examines the implications of globalization on investment decisions. It is worth noting that the globalization of world markets for both commodities and investment has made investment 'footloose'. This factor mobility has implications for the types of investment that will be undertaken and for the importance of policy to investment choices. There could be an investment flow to low-cost countries that could render policies towards a particular type of investment ineffective. Alternatively, globalization could focus policies on producing benefits to clusters of networks of industry.

The study next considers the question of knowledge transfer through investment and trade. This is followed by an examination of the implications of business investment, globalization, and growth of the economy for the environment.

The final section examines the possibility that investment inefficiency stems from the decision-making environment. This includes exploring in some

detail the possibility that management is myopic in its investment choices. The impact of the regulation of financial markets on investment decisions is also examined.

Although demographic trends and infrastructure considerations are important factors, this report will not analyze these forces in depth as they are the subject of other studies commissioned by Industry Canada.

Is There an Investment Problem in Canada?

> "When the first primitive man decided to use a bone for a club instead of eating its marrow, that was investment."
> anonymous, cited in Copeland and Weston (1988)

This quote is used in a widely-used text on corporate finance to convey the simplicity and importance of an investment decision. Investment provides labour with tools needed to improve economic well-being. The question 'Is there an investment problem?' refers to whether Canadians are taking too much or too little out of current consumption in order to create the chance of a future payoff.

The textbook answer to this question is that investment should be undertaken when the value of the additional future benefits from investment exceed the cost. This is called the Net Present Value of (NPV) rule: invest when the present value of the benefits exceed the present value of the costs. When capital markets are frictionless, there is no need to review the aggregate level of investment since individuals and firms would be able and willing to undertake all valuable investments. Corporate managers, fearing employment loss through dismissal or a takeover will strive to maximize share value which implies that they will seek and exploit all opportunities with positive NPVs. In such a situation, there is no reason to question the resulting level or composition of investment. Private agents responding to market signals exploit valuable investment opportunities.

In fact, however, capital markets and the decision-making process are not frictionless. It is widely believed that externalities and market failures could impede investment and thereby prevent an optimal level from being attained. One classic example is the development of a new technology through R&D. An investment in technology provides a return, perhaps in operating efficiency, to the company sponsoring the R&D. In addition, competitors and other industries also benefit from the new technology. Hence, the social value is higher than the private value and the level of investment might be considered too low by society.

In this context, it is difficult to assess the quality of investment decisions being made in Canada. The ideal approach of evaluating a representative set of individual investment decisions is impractical. It would be necessary to evaluate the private and social benefit as well as the appropriate discount rate for each opportunity. It would also be necessary to consider the impact of policy decisions on these estimates.

This section takes the alternative approach of considering basic determinants of investment levels. These fundamentals relate to demographic trends, broad ratios of capital to labour, and the proportion of output that is reinvested in the economy. While broad aggregate trends help to determine rough guidelines for the required quantity of investment, they do not offer

much information about the quality of the capital stock. To examine this aspect of the problem, it is useful to consider productivity growth. Productivity is measured in terms of output per unit of input. To the extent that returns on investment will translate into higher future output, productivity growth can be seen as a reflection of the aggregate return on investment. This section also examines the level of R&D investment in Canada relative to other countries.

Conclusions about whether or not there is an investment problem in Canada are based on aggregate levels of investment and trends in productivity.

Income, Investment and Demographic Factors

The most basic and widely-used measure of output is gross domestic product[1] (GDP). On an absolute per capita basis, Canada's GDP is high by international standards, as Table 1 indicates. Among the G7 nations only the U.S. and Japan have higher levels of income.

In recent years about 21 percent of Canada's output has been 'plowed back' through investment. As seen in Table 2, the largest component of investment comes from the private sector with machinery and equipment leading the way.[2] Strong investment growth in machinery and equipment is also evident, continuing a trend that has held up for most of 1980s.

As Canada's population grows, the need to add to the country's capital stock will also grow. A larger population brings an increased demand for output, a larger supply of labour, and an attendant increase in investment opportunities. Statistics Canada (1993) predicts that Canada's population of about 30 million will grow to about 35 million by the year 2011. This implies an average growth rate of about 1 percent per year.[3]

Table 1

GDP Per Capita, 1993
US dollars based on Purchasing Power Parity

Canada	19,409
France	18,702
Germany	18,506
Italy	17,823
Japan	20,279
United Kingdom	17,030
United States	24,302
Average G7	19,435

Source: *OECD Historical Statistics,* 1995.

TABLE 2

INVESTMENT LEVELS IN CANADA
MILLIONS OF 1986 DOLLARS

	1992	1993	1994	1995
Government Investment	16,217	16,334	17,264	17,797
(% of GDP)	2.9	2.9	2.9	2.9
Residential Construction	32,908	31,517	32,463	27,973
(% of GDP)	5.9	5.5	5.4	4.6
Business Nonresidential	25,730	25,861	27,196	25,971
Construction (% of GDP)	4.6	4.5	4.6	4.3
Machinery and Equipment	56,564	48,383	54,010	59,477
(% of GDP)	8.3	8.5	9.0	9.7

Source: Statistics Canada, Cat No. 13-001.

Demographic projections of this sort can be used to derive a rough estimate of Canada's investment requirements over the next 15 years. For instance, based on reasonable assumptions about labour force growth and the relationship between capital stock and labour productivity, Slater (1992) estimates gross investment will have to be between 20.6 percent and 26.9 percent of GDP to maintain even modest increases in labour productivity. Slater's forecast does not include public sector investments in environmental protection of infrastructure. Depending on how those areas are dealt with, Canada's investment requirements could be even higher.[4]

Table 3 presents the percentage of GDP devoted to investment over the past 15 years. Table 4 indicates how Canada compares to Japan, the U.S. and

TABLE 3

INVESTMENT AS A PERCENTAGE OF GDP
MILLIONS OF 1986 DOLLARS

1981	82	83	84	85	86	87	88	89	90	91	92	93	94	95
22	20	19	19	20	20	21	22	23	22	22	22	21	22	21

Source: Statistics Canada, Cat No. 13-531.

TABLE 4

GROSS FIXED CAPITAL FORMATION AS A SHARE OF REAL GDP
SHARE OF GDP

Average	1980s	1989
Canada	21.0	23.2
Japan	29.5	34.2
U.S.	17.3	17.9
OECD	20.5	22.1

Source: Investment Canada, derived from OECD national accounts.

all other OECD countries in recent years. These figures suggest that on average Canada's investment has been in line with other OECD countries.

However, the relatively low levels of investment in the early 1980s might be responsible for declines in productivity in recent years. Furthermore, recent investment shares are at the low end of Slater's estimates.

Demographic trends can also help to determine the geographic distribution of future investment needs. Table 5 presents estimates of recent levels and projections of interprovincial migration over the 1996-2001 period. The table indicates an expected continuation of migration to British Columbia and Ontario from all other parts of the country. This suggests that investment,

TABLE 5

INTERPROVINCIAL MIGRATION
THOUSANDS

	1975-76	1980-81	1985-86	1990-93	1996-2001
British Columbia	-5.0	39.0	-3.7	73.2	326.4
Alberta	26.6	46.0	-5.1	6.7	12.8
Saskatchewan	5.3	-3.6	-7.0	-19.8	-88.4
Manitoba	-5.0	-8.8	-1.9	-13.0	-72.3
Ontario	-18.9	-33.9	32.7	-14.6	124.1
Quebec	-13.4	-23.5	-4.8	-27.3	-191.0
Atlantic Provinces	10.1	-13.5	-13.2	-6.5	-72.65

Source: Statistics Canada (1993).

TABLE 6

REGIONAL INVESTMENT
% CHANGE

	1986-1989	1990-1991
B.C.	25.0	-2.0
Prairie Provinces	7.0	2.0
Ontario	14.0	-8.0
Quebec	15.0	-8.0
Atlantic Provinces	11.0	-4.0
Canada	14.0	-4.0

Source: Statistics Canada (1993).

especially in infrastructure, will be a major source of demand over this period, particularly in British Columbia. Figures presented in Table 6, taken from the Canada West Foundation (1992), suggest that some investment growth may be in anticipation of future population growth. These figures must nevertheless be viewed with caution because both migration and investment tend to be highly cyclical. A recession in British Columbia could cause a repeat of the mid 1980s when the province experienced net out-migration and a slow-down in investment.

TRENDS IN CANADIAN INCOME, INCOME GROWTH, AND PRODUCTIVITY

IN TERMS OF PRODUCTIVITY, CANADA'S ECONOMY HAS A HISTORY that is quite similar to other industrialized countries. Table 7 displays some of these common features. The period from 1960 to 1973 is often referred to as the 'golden age' for industrialized countries as income grew at consistently high rates. This is followed by a period of considerably slower growth over 15 years beginning with the sharp decline in 1973.

Has the slowdown in GDP growth been the result of declining productivity and investment? To answer this question it is useful to employ various measures of productivity and consider its movement over time. One simple measure of productivity is real GDP per employed person. This is a better measure of productivity than GDP per capita because it adjusts for changes in the labour force. Table 8 shows the trend in industrialized countries over a period of four decades, based on this measure of productivity. Using Canada's output as a base measure each year, the table indicates that total GDP per employed

TABLE 7

GROWTH OF REAL GDP PER CAPITA

	1960-73	1973-79	1979-89	1989-93	1960-93
Canada	3.6	2.9	1.8	-1.0	2.4
France	4.3	2.3	1.6	0.2	
Germany	3.7	2.5	1.7	2.1	2.7
Italy	4.6	3.2	2.4	0.7	3.2
Japan	8.3	2.5	3.4	2.2	5.0
U.K.	2.6	1.5	2.2	-0.3	1.9
U.S.	2.6	1.4	1.5	0.8	1.9
G7 Average	3.7	2.0	2.0	1.0	2.6

person in Canada has trailed the United States since 1950 although the gap has narrowed considerably. This measure also shows that Canada's lead over the other G7 nations has diminished.

Other measures of productivity show similar trends. *Capital productivity* is a widely-used indicator based on output per unit (usually dollars) of investment. *Labour productivity* is another measure that simply considers the amount of output produced for each unit of labour input. Output is usually measured by the value added of GDP and labour input is considered to be the number of workers or hours of work.

TABLE 8

REAL GDP PER EMPLOYED PERSON
CANADA=100

	1950	1960	1970	1980	1989
Canada	100	100	100	100	100
France	50.1	60.3	77.0	87.7	91.4
Germany	45.3	62.3	74.7	84.8	87.2
Italy	38.6	52.9	76.0	89.4	92.8
Japan	20.0	29.5	55.1	68.5	77.3
U.K.	70.8	69.1	70.3	72.7	76.0
U.S.	131.6	126.8	120.6	109.3	106.3

Source: Rao and Lempriere as cited in Slater (1992).

TABLE 9

LABOUR PRODUCTIVITY AND TOTAL FACTOR PRODUCTIVITY

	Labour Productivity			Total Factor Productivity		
	1960-73	1973-79	1979-94	1960-73	1973-79	1979-94
Canada	2.0	0.6	-0.1	2.9	1.5	1.2
France	4.0	1.7	1.7	5.4	3.0	2.6
Germany	2.6	1.8	0.5	4.5	3.1	0.9
Italy	4.4	2.0	0.9	2.8	2.9	1.9
Japan	5.6	1.3	1.4	8.3	2.9	2.5
U.K.	2.6	0.6	1.6	3.9	1.5	2.0
U.S.	1.6	-0.4	0.4	2.2	0.0	0.8
G7	2.9	0.6	0.8	4.3	1.4	1.4

Source: OECD, *Economic Surveys* 1994-1995.

Although both measures are useful, they have drawbacks. For example, investments can lead to long and uncertain payoffs. A large investment one year might depress measured capital productivity considerably during that year and in the future until the return on this investment is recognized. This makes the capital productivity indicator notoriously volatile. Moreover, capital productivity is highly cyclical because it depends on capacity utilization rates that vary directly with output.

Labour productivity is a complex measure that reflects a number of factors. One set of factors relates to inputs, such as capital, energy, and infrastructure that are used in producing goods. Other things being equal, more complementary inputs will make labour more productive. The second set of factors concerns the efficiency of the production process. This includes management skills, education levels of workers, government policy on competition, and pollution standards.

An alternative view of productivity is offered by the *total factor productivity (TFP)* measure. This is defined as total output minus a weighted sum of factor inputs. Hence TFP gives a residual measure that captures technological advances, improvements in the quality of inputs, changes in scale and capacity utilization. A general decline in productivity is evident in the total factor productivity and labour productivity figures shown in Table 9.

All of these measures of productivity show a decline that starts in the mid 1970s and continues through to the late 1980s for most countries. It goes beyond that period for Canada. In fact, the decline in productivity is so pronounced and widespread that Stanley Fisher (1988) refers to it as “the most significant macroeconomic development of the last two decades.”

Understanding the decline in productivity is critical to understanding Canada's investment challenges. If productivity declines can be arrested or reversed, the resulting changes in income growth could be dramatic. Fisher drives this point home by relating productivity to expectations about income growth.

> "When per capita income is growing at 4 percent it doubles every 18 years; when it grows at only 2 percent it doubles every 35 years. The permanent income, defined as the annuity of a 25-year old German citizen, basing her expectation of income growth on the average performance in the period 1955 to 1973 would be 80 percent above her current income; that of a 25-year old basing her expectations on the growth rate of income in the 1973 to 1986 period would be only 22 percent above her current income."

Although this is a simple illustration, the dramatic contrast in income expectations that these two periods in history can generate might help to explain the current mood among Canadians. Taylor (1996) describes this mood in the popular press, as follows:

> "The truth is, that by almost every conceivable measure... we are among the richest, most comfortable people in the world. We are also, without question, much better off than our parent's generation. What has happened in the past few years is simply that, for the first time in memory, our greed has gotten ahead of our capacity for growth. Instead of adjusting our expectation, we've clung to the notion that things should always get better and better at a faster and faster rate... It's not that being greedy is a bad thing. But it has turned us into a nation of whiners and moaners."

The degree to which investment and productivity are linked in practice is ultimately an empirical issue to which researchers have given a great deal of attention. Slater (1992) provides a useful overview related to this link and concludes that "the weight of evidence in studies of the postwar experience of western industrialized countries demonstrates a highly probable cause-and-effect linkage between investment and savings efforts and long-run productivity and economic growth."

An overview of the factors that contribute to growth is presented in Table 10, based on the work of Dennison (1985).

This work shows that the traditional measure of investment, namely increased capital input is not the only or the most significant factor in explaining output growth. Other forms of investment play an important role. For example, infrastructure and human capital investments contribute to education; education as well as R&D contribute to technological progress; and human capital, infrastructure, and the regulatory environment[5] have an affect on the quality of management and its ability to reallocate resources efficiently.

TABLE 10

GROWTH CONTRIBUTORS: USA 1929-1982

Average annual growth of real business output attributed to:	3.1%=100%
Increased Labour Input	25%
Increased Educational Qualifications	16%
Increased Capital Input	12%
Improved Allocation of Resources	11%
Economies of Scale	11%
Technological Progress	34%
Less: negative factors inhibiting growth	9%

Source: Palda (1993).

More recently, DeLong and Summers (1991) have provided evidence that the role of investment in productivity growth is much larger than Dennison's work suggests. They have found a strong statistical relationship between investment in machinery and equipment and economic growth. Using data on the 1960-1985 period, they have found that each percentage of GDP that is invested in machinery and equipment is associated with one-third of a percentage point increase per year in subsequent GDP growth. They also estimate that the social return on equipment investment in a well-functioning market is on the order of 30 percent.

R&D INVESTMENT

INVESTMENT IN R&D IS CONSIDERED CRITICAL TO PRODUCTIVITY and economic well-being. The breakdown of productivity presented in Table 10 highlights the importance of R&D because 34 percent of growth is directly tied to technological progress and another 16 percent is related to educational qualifications.

Griliches (1988), who has reviewed substantial work on this issue, has found that R&D plays a large and statistically significant role in explaining productivity. Moreover, reductions in R&D investment can be tied to some of the productivity slowdown of the mid 1970s. However, because it accounts for only 15 percent of the decline, several other factors come into play, such as the monetary policy response to the oil price shock.

Given that Canadian productivity continues to lag many other G7 nations, Canada's relative R&D performance could be the cause. The Conference Board of Canada (1994) presents this view and its implications for Canada in a recent survey of R&D spending intentions. It states:

> "Canada's preparedness for the 'new economy' is often called into question due to, among other issues, the level of resources allocated to performing R&D. Compared with other industrialized nations... the level of business enterprise expenditure on R&D in Canada in 1991 as a percentage of GDP at 0.8 percent... [is] far behind the allocation of leading economies such as Japan (2.2 percent), the United States (1.9 percent), Germany (1.8 percent) and Sweden (1.6 percent)."

An OECD study (1995) similarly suggests that Canada has not been very successful in picking up high-growth investment options and that the country's overall productivity has suffered as a result. The report states that "Canada (and Australia) had relatively small shifts in output shares into high growth and out of low growth industries. In particular, Canada was one of only two countries that experienced gains in medium technology manufacturing. While in many other countries the output share of high-technology industries increased considerably, in Canada it remained virtually unchanged." This trend might reflect an improvement in Canada's comparative advantage in the medium technology areas. Alternatively, an underlying factor might be that Canadian managers are not properly valuing new technologies. This is elaborated upon in the next section.

Palda (1993), while recognizing the importance of innovation, cautions against viewing innovation and R&D as the same concept. He argues that R&D is too narrow. He argues convincingly that R&D is a proxy for total innovation and that this can be misleading when used in isolation. In particular, he correctly points out that R&D is part of an investment management process and must be examined in this light. The extent to which financial decision making contributes to investment challenges is examined in the next section.

CONCLUSION

ALTHOUGH THEY DO NOT MAKE AN OVERWHELMING CASE, the trends examined in this report suggest that there is an investment problem in Canada. The quantity of investment, measured by the fraction of total output that is invested, is consistent with levels found in other developed countries. However, recent levels could be too low to support modest productivity growth. Moreover, the productivity of the Canadian economy has trailed other developed nations. The relatively low levels of R&D investment and indications that Canadian industry has not moved towards high technology sectors as rapidly as other countries also suggest that the level of investment is less than optimal. This is cause for concern when valuable investment opportunities are not being utilized because of market failures and externalities.

INVESTMENT CHALLENGES

THIS SECTION LOOKS AT SOME SPECIFIC AREAS where investment can be enhanced. Certain challenges are already evident; others are more hidden.

INVESTMENT, TRADE, AND GLOBALIZATION

THE MOST SIGNIFICANT CHALLENGES IN THE COMING 15 YEARS will stem from the opening up of markets to liberalized trade and the mobilization of factors of production.

The role of trade in fostering investment and the role of investment in fostering trade is well documented and examined. Some of the more traditional models of trade[6] begin with the observation that international trade in goods and international trade in investment can substitute each other. When there are no economies of scale and no barriers to the flow of capital and goods across borders, trade and investment are perfect substitutes. A firm can either invest in its home country and ship to a foreign country or invest in the foreign country and ship to the home country.

This concept has long been rooted in economic theory and is recognized as a special case. Recently it has been popularized in the work of Reich (1991). He states:

> "We are living through a transformation that will rearrange the politics and economics of the coming century. There will be no national products or technologies, no national corporation, no national industries. There will be no national economies."

The implication is that globalization will not only have an impact on production; it will also change the way in which policy and social decisions are made. This view has very significant implications for investment. The 'footloose' corporation will have no national allegiance; investment will hinge on providing an environment that supports low-cost output. In addition, infrastructure investments that improve the quality of life are critical to attracting both the most productive workers and the capital they will use in production.

Such a position is in contrast to Porter (1991) who sees a 'clustering' of investments and corporations to take advantage of product market opportunities and gains from collaboration. In Porter's view, governments can promote investment by spurring productivity through increased product market competition while at the same time supporting the linkage of industry-based clusters.[7]

A concrete and important example of an economy of scale that might result from liberalized trade is the accumulation of human capital through 'learning by doing.' The benefits of learning by doing within a closed economy have been recognized for some time. Lucas (1993) has recently used this concept in the context of trade to explain what he describes as the 'economic miracle'

of Korea. The basic idea is that trade enables labour and capital to be used for new production processes. Because these processes are new, the returns on human capital investments on learning by doing are high. In turn this generates a greater accumulation of human capital and higher levels of productivity. Lucas further supports his theory as he compares South Korea with the Philippines in the early 1960s and finds that they were very similar in size, income levels, labour force participation, and education. He observes that over the next 28 years Korea experienced a 6.2 percent increase in per capita income per year while over the same period the average growth in the Philippines was only 1.8 percent. Noting that similar 'miracles' occurred in Taiwan, Hong Kong and Singapore, Lucas argues that one common feature of these 'miracle' economies is that "all of the East Asian miracle economies have become large scale exporters of manufactured goods of increasing sophistication." This allowed for learning by doing in advanced areas, high returns on human capital, and a positive investment spiral.

This phenomenon will undoubtedly be studied further in great detail in the years to come. It does indicate that many of the investment opportunities that are emerging with more liberalized trade will be in the area of human capital. Hence it is critical for Canadian policy to focus on human capital development.

The challenge is to ensure that Canada makes the infrastructure investments needed to maintain a high quality of life and to increase the efficiency of capital and labour. The market might not meet this challenge on its own because increasing infrastructure provides an indirect benefit by attracting investment as well as a direct benefit to Canadians who make use of the infrastructure. For instance, an increase in the education level of the work force not only makes investment in Canada more attractive. This in turn provides spinoff benefits to other Canadians. In addition, a direct benefit is provided to those who improve their education.

Spillovers and Knowledge Transfers

Another benefit of investment with an international dimension is the diffusion of knowledge. Knowledge transfers have occurred in the domestic intra-industry, domestic inter-industry and at an international level. All of these transfers and spillovers have been studied in the context of investment in R&D although it is reasonable to suspect that transfers will occur through basic investment as well.

An investment in R&D is commonly viewed as a way to decrease the costs of production. It is also widely recognized that the outcomes of investments in R&D are difficult to protect. The technology that results from an R&D investment can often benefit firms in the same industry, in other industries and in other countries. Consequently, the total returns on the R&D investment are not fully captured by the private investor. A gap therefore

develops between the return that accrues to the investing firm (the private return on the firm's initial investment in cost reduction) and the return that accrues to all users of the technology (the social return). This wedge gives an indication of the extent to which there are R&D spillovers.

Bernstein (1988) estimates the intra and inter-industry spillovers for seven Canadian industries, using data from the 1978 to 1981 period. He finds significant spillovers for all of the industries; the lowest spillover is in the food and beverage industry and the highest in the chemical industry. Using a different methodology and international data for a longer time period – 1964-1986, Bernstein (1996) extends these results. He finds the social rates of return in Canada are from 2.5 to 12 times greater than the private returns. In the U.S. the range is from 3.5 to 10.

These combined results indicate that investment spillovers, both domestically and internationally, are extensive and a direct benefit from investment activity. However, because the returns on these investments do not all accrue to the investing firm, the investment incentives might be unclear.

The challenge is to facilitate technological investments in a global context. It will be necessary to replace direct subsidies with international mechanisms designed to help investors capture more of the total returns from their investments. This could call for greater coordination and enforcement of laws protecting patents and other property rights. Alternatively, it could involve facilitating international collaboration in the areas of basic research and R&D so that private networks take on the challenge of protecting the benefits of investment.

Environmental Concerns

GLOBALIZATION AND INCREASED TRADE WILL CREATE NEW CHALLENGES for managing the environment. Even if labour and capital do not become as mobile as Reich maintains, they will still be important factors contributing to an increasingly mobile work arena. This will have a significant impact on environmental practices and the ability of government to control these practices. The possible consequences of globalization are very diverse and current research in this area is still too early to formulate predictions. Olewiler (1992) has categorized current economic thinking on this matter into two broad camps: the 'Optimists and Pessimists'.

The optimistic view of globalization is that the decline of national concerns in decision making, giving way to an increase in global perspectives, will lead to higher wealth and a higher level of environmental quality of life. The basic notion is that globalization will generate both an increase in wealth through gains from trade and a convergence of wealth internationally. The indicators on productivity presented in the previous section suggest that a great deal of convergence has already taken place. If it is assumed that increased environmental quality is a luxury good, then income growth will lead to a higher demand for environmental investment as the world will be able to 'afford' lower

levels of pollution. As a result, companies will compete to produce 'green' products. Moreover, technological transfers will also increase so that the latest technologies will be available. This implies that developing countries will not follow the usual pattern of adopting polluting industries and then moving into non-polluting industries. The technology transfers and integrated capital markets will allow firms to move directly into non-polluting technologies.

The pessimistic view essentially dismisses all of these points. The difference is based on varying assumptions about how consumers will treat environmental quality. Rather than viewing environmental investment as a benefit, as the optimists do, the pessimistic view regards pollution abatement and investment in environmental improvement as a cost that is to be minimized. Globalization makes it more difficult for government to enforce environmental policies that bring optimal social benefits because firms will respond to more stringent requirements simply by moving investment elsewhere. The lack of trade restrictions and the competition for investment will hinder policy makers. Moreover, with increased capital mobility, attempts to finance the massive costs of cleaning up polluted areas will be met with flights of capital. Resources will move to clean 'havens' with low clean-up liabilities.

Neither of these extreme views represents an accurate forecast. However, they help to illustrate one of the biggest investment challenges facing Canada. Given the desire of protecting this country's environmental endowment, how does Canada ensure that investment will be directed appropriately in light of the new competitive implications of such an investment? Government has an important role to play on this front. However, the knowledge to help guide actions in this area is quite limited.

Olewiler (1992) summarizes some relevant findings, while emphasizing their preliminary nature. Following are her observations:

- The link between traditional measures of welfare (per capita GDP for instance), the economic activity associated with growth, and pollution is not well established. However, the OECD[8] (1991) has compiled the following estimates that suggest a possible link. In a comparison of six countries on a per capita basis, Canada, which at the time had the second highest level of GDP per capita, had the highest emissions of carbon dioxide (CO_2) and nitrogen; the highest sulphur dioxide (SO_2) and intensity of energy use.
- Although most countries including Canada do not have historical records on environmental expenditures relative to GDP, the available evidence does suggest that expenditures are relatively small. In the U.S. for example pollution abatement expenditures have averaged about 1.7 percent of GDP over the past 25 years. This percentage has been fairly constant, peaking at 1.9 percent in 1981 and reaching a low of 1.4 percent in 1972. Some argue that this is because progress has

TABLE 11

ENVIRONMENTAL INDICATORS

	GDP[a]	CO_2[b]	SO_2[c]	Municipal[d] Waste	Energy[e] Intensity
Canada	15.5	4.8	146.4	632	9.6
West Germany	11.3	3.2	21.3	331	4.5
Japan	12.8	2.2	6.8	394	3.3
Spain	5.0	1.5	NA	322	2.2
U.K.	9.3	2.9	63.1	353	3.7
U.S.	18.4	5.8	84.0	864	7.8
OECD	12.2	3.4	48.3	513	4.8
World	N.A.	N.A.	N.A.	N.A.	1.6

a 1989 U.S. dollars at 1985 prices and exchange rates.
b CO_2 in tonnes of carbon emitted in 1988
c SO_2 in kilograms, average annual in late 80s
d municipal waste is in kilograms, late 80s.
e energy intensity is in tonnes of oil equivalent, 1988.
Source: OECD (1991), cited in Olewiler (1992).

been made in reducing the level of pollution in the U.S. so that lower investment in pollution abatement is sufficient. On the other hand, an Environmental Protection Agency (EPA) study done in 1990 predicts that environmental protection costs will increase to 2.6 percent of GDP by the year 2000.

- The effect of environmental policy on the location and quantity of investment is not clearly established. However, as Olewiler points out, most contemplated increases in current levels of expenditure are not likely to have a large impact on pollution investment activities. Moreover, if environmental requirements induce industries to locate elsewhere, the industries that leave are more likely to be the so-called 'dirty' industries so that the net cost of the lost investment is reduced somewhat. Leonard (1988) provides support for this in a study on the impact of environmental regulations on location. He finds that there were very few industries in the U.S. that were influenced in their choice of location by environmental regulation. Those that were fell into the following categories: i) manufacturers of toxic, dangerous or carcinogenic products; ii) copper, zinc and lead processing; iii) manufacturers of organic chemicals.

Other studies are either theoretical or simulations and estimates. For example, Jorgenson et al (1993) uses a simulation to show that if a carbon tax of $60 per ton had been introduced in 1990, emissions would fall by 30 percent by the year 2020, coal production would fall by 50 percent, oil and gas extraction would fall by 10 percent, the capital stock would fall by 2.2 percent and GNP would decline by 1.6 percent. Although the impact of such a large change is considerable, actual policy changes have been very small.

- Environmental regulation could lower investment by reducing productivity and hence the return on investment. Because increases in productivity are the main reasons of investment decisions, a decrease in return might reduce investment by reducing productivity.

The policy problem facing Canada is how to support private sector investment and implement specific social choices at the same time. *The challenge is to ensure that firms have a competitive cost base while simultaneously ensuring that Canadian political choices are implemented.* This will require new ways of dealing with corporate incentives. For instance, if the political system requires that Canadians exceed international environmental standards, then it might be necessary to subsidize firms that incur the cost of exceeding the international standards.

TECHNOLOGICAL CHANGE

THIS IS A PERIOD OF RADICAL CHANGE IN PEOPLE'S DAILY LIVES. Technological advancements have brought flexibility to the workplace and are playing a big role in shifting lifestyles. These social and economic changes present two significant challenges.

First, the economy must channel resources towards new markets and opportunities. Development, production and marketing requires financing in the private sector. This financing will likely take place under conditions where the issuer is better informed about the profitability of the venture than is the investor. This is known as asymmetric information. It is recognized that asymmetric information in financial transactions can lead to market failure when potentially valuable investments are not funded. Solutions to this problem rarely involve government intervention because government does not have an extra advantage of more information in this area. Venture capital firms and innovative financial contracts provide at least a partial solution to the problem. A competitive, efficient financial sector is perhaps the most important solution to facilitate this area of investment.

Second, the public sector must make appropriate investments in infrastructure. For instance, work that can be done on a flexible schedule and from home will have greater communication requirements but perhaps less growth

in municipal transportation. Education is another area requiring further support so that new technology can be understood and utilized.

Given the considerable uncertainty about where the current wave of technology is heading, it is impossible to provide accurate quantitative forecasts of Canada's investment needs in this area. It is nonetheless critical to meet this investment challenge because new investment will have a tremendous affect on this country's productivity and standard of living.

THE DECISION-MAKING ENVIRONMENT

THIS STUDY HAS SHOWN THAT POLICY CONCERNS MUST BE DIRECTED towards supporting investment opportunities for the private sector. Ultimately, therefore, the benefit that Canadians will derive from these opportunities will be determined by corporate decision making. In turn, the most important influence on decision making will come from corporate governance mechanisms including the role of the board, corporate control through takeovers and proxy contests, and the role of institutional investors and regulators on investment decisions.

The importance of the decision-making environment to aggregate investment performance has too often been understated. Just consider the massive investment losses experienced by financial institutions in the 1980s to understand the importance of governance and regulation. Despite warnings that the deposit insurance system created dangerous investment incentives, these problems with bank regulation in Canada and the U.S. were largely ignored. It took massive losses and failures to bring about a flurry of regulatory action. The price of this lesson is huge. Estimates of the cost of the savings and loan crisis in the U.S. indicate that taxpayer losses will be equal in size to the entire Canadian federal debt. Similar losses in Canada, though not nearly as large, are massive.

Currently, Canada is at another critical juncture in regulatory policy with respect to corporate governance. The large number of corporate failures and apparent managerial excess has raised concern that the cost of the current governance system is too high and that a new structure is needed. Given the importance of organized security exchanges in the process, it is not surprising to find securities exchanges as well as securities regulators around the world commissioning detailed examinations of corporate governance. In Canada, the Toronto Stock Exchange set up a committee that produced a report (1995) entitled “Where Were The Directors.” While some applauded the effort, many felt that the recommendations of the report were insufficient given the size of the problem.

This section offers a brief overview of some of the issues that have arisen in the area of corporate decision making. This includes a description of basic issues in investment decision making in Canada, and a comparison of commonly reported techniques used in Canada with approaches used elsewhere. This review suggests that the low level of investment in long-term, risky projects such as in R&D could be rooted in managerial myopia. It also considers the argument that the lack of R&D investment in Canada is the result of pressures placed on management by short-term investors, i.e., an impatient capital market. Views are that the capital market will not tolerate long-term investments and looks only for short-term profits. This report confirms that there is no evidence to support this claim. Some pressing regulatory issues are also examined in this section.

How Investment Decisions are Made in Canada

Several methods of evaluating capital investment are currently being used.[9] The most widely accepted approach bases investment decisions on a project's Net Present Value (NPV). The NPV measures the magnitude and timing of resources used, the time value of money, and an appropriate adjustment for risk. Other widely-used approaches include the internal rate of return (IRR), the payback method, and the accounting rate of return. All methods except the NPV are known to have pitfalls that can lead to incorrect investment decisions.

A 1991 survey of approaches to capital budgeting in Canadian businesses by Jog and Srivastava (1994) indicates that Canadian firms use a number of different approaches for capital budgeting. The survey was sent to 582 firms taken from the TSE 300 and a number of large foreign-owned and private corporations. A total of 133 firms responded. The respondents indicated not only that they use a number of different capital budgeting techniques but, in many cases, that more than one technique is applied simultaneously. At the same time, the survey found that either the NPV or IRR are widely used by corporations in evaluating expansion plans. About one-half of the firms use the payback method and a number of firms continue to use the accounting rate of return. The use of the latter two techniques is surprising and alarming given that these techniques are conceptually flawed and could lead to resource misallocations, especially in the case of the accounting rate of return method.

Jog and Srivistava also examined the opportunity cost of funds and found that over one-half of the respondents use the weighted average cost of capital that can provide an accurate measure in many cases. Surprisingly, about one-quarter of the respondents use the cost of debt to evaluate the firm's cost of capital, despite the fact that there is little justification for using the debt rate. Canadian firms are slower than their American counterparts to correct this error. A similar study of American firms conducted more than one decade earlier by Schall et al (1978) indicates that only 17 percent of the respondents in the U.S. used the cost of debt at that time.

While the increasing use of discounted cash flow methods is encouraging, there is no indication that more recent developments in capital budgeting are being used. There are two key problems to applying standard capital budgeting techniques to long-term, risky investments that can make investment decisions appear myopic.

The first problem is that standard applications of discounted cash flow methods do not always recognize changes in the risk of an investment over the project's life. Instead, a single discount rate is estimated and applied to each cash flow over what can be a lengthy investment horizon. Owing to the uncertainty of the investment, the discount rate is often quite high. This approach usually does not correctly assess the value of long-term risky investments such as R&D. For example, an initial investment is usually made in a pilot project. The result of the pilot project will determine the viability of subsequent devel-

opment stages. At each stage new information is provided to redefine the risk. The risk of the new project might be high initially but then could diminish substantially once new information is subsequently provided. By applying the large initial discount rate to long-term cash flows, the analyst overstates the risk and the risk adjustment and consequently underestimates the value of the project.

The second concern is a failure among managers to recognize the 'real options' inherent in any long-term and very risky project. When a firm enters a new market or develops a new technology, it is investing in the option to take advantage of future opportunities. The firm need not invest additional future funds in new capacity. It has the option of abandoning any productive capacity put in place if new information indicates that the investment is not worth undertaking.

The value of options inherent in an investment opportunity has been shown to depend *positively* on the underlying risk and the length of time before the subsequent investment outlays are needed. For this reason, ignoring the options inherent in an investment will understate the value of the investment. The understatement will be especially strong for very long-term, risky investments.

To illustrate this problem, suppose that a natural gas producer in Canada is given the opportunity to bid on a contract to develop the resource in an Asian country.[10] The investment goes through the following sequence of stages: i) initial exploration; ii) reservoir development; iii) production; and iv) distribution. The entire venture will take 30 years. Management decides that, in the context of its Canadian operations, such a project has a required rate of return of 20 percent. However, managers conclude that there is considerably more risk in operating in this foreign country; there is political risk and the risk that the expertise will not be as effective in a different sociological and political climate. They therefore increase the required return to 30 percent.

The errors are fundamental. First, the socio/political risk that the company faces might be resolved quickly. Within the first year managers will learn how well their expertise works in the foreign environment. Therefore, while the discount rate can be higher for the first year, there is no need to apply the same high rate to subsequent years. Second, management is ignoring the option to abandon the project if it cannot operate profitably. Third, management is ignoring the option to expand. If the company can develop the expertise to operate in Asia, then it can apply this expertise to other countries. By making these fundamental valuation errors, management not only deprives its shareholders of an opportunity to invest profitably, it also deprives Canadians of the opportunity to invest in high value-added human capital.

Is the Capital Market Impatient?

An alternative explanation of the inability of Canadians to exploit valuable investments is that capital markets are inefficient and cause managers to

become short sighted. This is further based on the assumption that many investors in today's capital markets are interested only in short-run gains. Investment dealers and fund managers whose livelihood depends on regular performance evaluations must often be more concerned with short-term trading profits than long-term capital gain or dividend income. It has been argued that such investors would be unwilling to hold the shares of companies that make investments with long lead times.

This argument is inconsistent with a good deal of conventional financial theory and empirical evidence. Investors, whether they plan on holding shares for the long run or the short run, rationally anticipate selling the shares to other investors at the end of their investment horizon. They would be concerned with the selling price and the fact that it depends on the future holding period of some unknown investor. Even if it is assumed that shares must be sold to a succession of short-term investors, the price at any time will anticipate the chain of prices at which the shares will be sold and this chain, taken as a whole, reflects the long-run value of the firm.

There is substantial evidence to support the notion that share prices reflect the long-run value of the firm. McConnell and Muscarella (1985) offer one example in their evaluation of the joint hypothesis that managers maximize the value of the firm and that the value of the firm reflects long-term capital investments. They analyzed 547 announcements of long-term investments made by 285 different industrial companies. Their empirical results support the joint hypothesis: the market price of the stock did increase after the announcements.

The Canadian capital market does not seem to differ from the U.S. market in this respect. In another study of Canadian firms, Johnson and Pazderka (1993) test whether the market places a positive value on research and development expenditures. Using data from the 1985-88 period, the study estimates the relationship between the market value of equity and the following: the book value of equity, a measure of market power, R&D expenditures and other investment expenditures. The analysis takes into consideration a number of subperiods; all cases show that the market value of the firm is significantly and positively related to R&D expenditures.

These studies and several others focus on R&D or strategic investment decisions and place no condition on the role that current earnings play in the market's reaction. The firms studied might have invested in R&D only in good times, when earnings were positive and pressure to improve short-run performance was negligible. A more recent study by Chan, Martin, and Kensinger (CMK) (1990) addresses this concern directly and, in the process, further supports the view that stock markets are generally not myopic.

The CMK study examines R&D announcements over a six-year period from 1979 to 1985. The research was restricted to firms with available stock price data. Further restrictions in the research produced a final sample of 95 announcements. The announcements only lead to a market reaction if the information provided is not previously known to the market (the authors had

to first decide what was and was not new information). The authors conservatively classified new information in an ad as one that mentions a change in R&D spending from the previous year. Because the market is likely to expect some increase in R&D in general, this classification would, if anything, reduce the estimated market reaction to R&D information.

The empirical results of the CMK study are quite striking. The study shows an abnormal return of 0.85 percent on announcement day that is statistically significant and economically quite large. Moreover this is followed by a post-announcement return of 0.53 percent that is again statistically significant.

To address the question of how current earnings affect the market's reaction, CMK split its sample into those firms (62) that announced an earnings increase in the quarter in which the R&D announcement is made and those firms (33) that announced an earnings decrease. The estimated abnormal return over two days for both groups was positive and statistically significant. Moreover, although the estimate for the earnings increase group is 1.54 percent and for the earnings decrease group is 1.01 percent, the authors were unable statistically to reject the hypothesis that the effect of the announcement was the same for both samples.

R&D announcements are normally greeted positively by investors. There are some cases, however, where the market reaction is negative. The CMK study sheds some light on why this occurs. It finds that announcements by firms that are considered to be low tech generate negative and weakly significant abnormal returns while announcements by firms in the high-tech sector report lead to significantly positive returns. There is no reason to suggest that R&D cannot be valuable in low-tech industries; however, the chances of this are lower and the market might react accordingly.

CMK also shows the relationship between the announcement effect and the following: i) the intensity of the firm's R&D relative to an industry norm; ii) the level of technology in the industry; iii) the increase in R&D relative to the company's sales; iv) industry concentration; and v) an announcement of the firm's market power. The only significant variable that could influence an announcement is found in the ratio of the firm's R&D intensity relative to an industry norm, and only when the firm is in the high-tech sector.

In summary, empirical evidence does suggest that the market is generally patient in its valuation because stock market value does reflect long-run decisions. As has been shown, the market responds to an announcement of long-term strategic plans generally and to R&D decisions more specifically. Moreover, the response is generally positive and significant, although the market does seem to differentiate between R&D investments made in different industries. The positive response might be restricted to firms in high-tech areas. A positive response has even been found among firms that report operating losses in the period in which the R&D announcement is made. These results indicate that managers do not abandon long-term investment in R&D in favour of enhancing short-run earnings.

Another area of concern is that attempts to avoid costly disruptions brought on by a myopic market for corporate control could lead to managerial myopia. To illustrate, suppose that managers know more about the value of a firm and the firm's investment options than the market does.[11] The informational asymmetry is greater for long-term projects than for short-term projects. Consequently, managers with valuable long-term prospects who face the threat of a takeover will respond by shifting to short-term projects that the market can better value and respond to. The social and private cost of such a decision translates to the loss of valuable long-term investment opportunities. This is where public policy could be important; it is possible to increase the value of the firm through policies that shelter managers from takeover threats.

The stock market's reaction to the adoption of protectionist measures in the form of an anti-takeover charter amendment is mixed. Linn and McConnell (1983) find positive abnormal returns while DeAngelo and Rice (1983) and Jarrell and Poulsen (1987) find insignificant returns. Hence, it is not certain whether increased managerial protection causes the value of a firm to go up. If it does, it is uncertain whether the increase is due to expectations of more efficient investment or to greater bargaining power given to corporate managers.

Meulbroek et al (1990) examine this more closely by considering the level of R&D investment undertaken by firms before and after they adopt anti-takeover provisions. Meulbroek et al base their study on a sample of 554 anti-takeover amendments proposed between 1979 and 1985. The authors exclude firms that did not report any R&D expenditures during the entire sample period, leaving a total of 203 proposals of which 179 were passed in the last three years of the sample period.

The authors look at the ratio of R&D to sales and examine the change in this ratio for three windows surrounding the date of adoption of the amendment. The windows considered are (-1,1), indicating the period beginning from the year prior to the amendment through to the year after the amendment, (-1,2) and (-1,3). They find that none of the estimated changes are statistically different from zero. The authors then adjust the figures to reflect general changes in R&D expenditure during this period by subtracting the rate of growth of R&D/sales for all firms covered by the Compustat database. Here, significant negative changes in R&D are reported for all windows: Relative to the market, R&D fell by 15 percent in the (-1,1) window, 25 percent in the (-1,2) window and 36 percent in the (-1,3) window. Surprisingly, greater takeover protection led to lower levels of R&D spending.

The authors consider the possibility that the decrease in R&D spending results is because of takeover pressure, despite the anti-takeover amendments. In fact, 52 of the 203 firms were subsequently subject to a successful or unsuccessful merger, or tender offer. The authors report similar findings in a subsample of firms that are not subsequently subject to a takeover attempt. It thus appears that reducing the threat of a takeover does not lead to an increase in R&D activity.

Another possibility for myopic behaviour is an actual takeover or restructuring. The concern is that high leverage, either due to a takeover or for other reasons, means the firm cannot afford to invest in valuable R&D because this will diminish its ability to service its debt in the short run. In an extensive study of this matter, Hall (1990) examines a panel of annual data for 2,500 manufacturing firms. The data cover the period 1959 to 1987 and contain information on R&D spending and other corporate characteristics. The objective of the study is to determine the effect of the following factors on R&D spending: i) leveraged buyouts, ii) mergers and acquisitions, and iii) increases in debt not accompanied by ownership changes.

As Hall points out, leveraged buyouts (LBO) have received a great deal of attention even though they account for a relatively small portion of total activity: Of the 780 acquisitions that were identified among the firms studied, only 76 could be classified as an LBO. In an LBO the firm becomes privately owned by a group that extensively uses debt financing to facilitate the acquisition. The resulting debt load is believed to lead to a reduction in R&D spending, as has been pointed out.

However, Hall turns this assumption on its head by suggesting that for this very reason companies that place great importance on R&D spending will not be subject to an LBO. In fact, of the 76 LBOs only six were in industries that seemed to invest a significant amount (i.e. more than 3.5 percent of sales) in R&D. The unimportance of LBOs to R&D activity is further illustrated by the fact that firms subject to an LBO account for only 1 percent of the total R&D activity in 1982. The post LBO investment activity in R&D is difficult to determine because firms that go private are not required to provide the same reports as others. Whatever the effect, it is unlikely that LBOs have an important impact on overall R&D performance.

Hall also examines the R&D intensity (R&D/sales) of the 336 firms that were involved in acquisitions during the period. She performs a regression analysis to determine whether firms that have acquired other firms change their R&D intensity relative to other firms in the same industry. The analysis is performed for all acquisitions and then separately for the group of firms that did not report any R&D activity during the period. The result is that R&D intensity does show a decline. While the estimated effect is statistically insignificant for the entire sample, it is significant for those firms that had reported R&D activity. Firms that engage in R&D activity and acquire other firms decrease their R&D intensity relative to the mean level of R&D intensity in their industry. This undoubtedly reflects economies of scale in R&D activity, such as the elimination of duplication and better coordination of activities and support services. These economies of scale could in fact provide the synergy that motivates the takeover in the first place. They are also part of the reason why research clusters and coalitions are supported in the previous section.

Finally, Hall considers the effect of leverage on R&D intensity. A total of 177 firms were classified as having engaged in a leveraged restructuring. This

classification was given to firms that had increased their long-term debt by more than 75 percent of their total market value at the beginning of the year. This analysis is similar to the analysis for acquisitions. The results indicate that leveraged restructurings are associated with significant reductions in R&D intensity relative to the industry. In addition, Hall ran separate regressions to account for acquisitions. She finds that any effect of acquisitions on R&D is essentially attributable to the increase in leverage that accompanies the acquisition.

These studies indicate that acquisitions and leverage increases are both tied to reductions in R&D intensity. However, the threat of a takeover does not seem to have a significant impact on R&D. What does this mean for decisions on R&D spending? Unfortunately, these studies report only correlations and do not determine cause and effect. It could be that higher leverage forces managers to reduce spending on valuable R&D. However, if the capital market is not myopic, why would managers voluntarily increase leverage if this will lead to value-reducing activity? An alternative explanation of this correlation is that, owing to asymmetric information, managers of firms with R&D opportunities do not engage in leverage, preferring instead to rely on internally generated funds for financing, while managers of firms that have exhausted valuable R&D opportunities are able to issue debt and do so to benefit from the tax advantage of debt.

REGULATION

REGULATIONS IMPOSED ON CAPITAL MARKETS ALSO HAVE A STRONG IMPACT on investment. Perhaps the most important example of this is bank regulation. Bank lending is a large and important channel through which savings are directed towards investments. Regulations that have an impact on bank policy will also have an impact on investment decisions. Two important developments in the last 15 years that will continue to play an important role in the future are: i) competition in the banking segment and ii) deposit insurance regulation.

Competition in banking was severely restricted prior to the 1981 revision of the *Bank Act*. Since that time, foreign banks and financial institutions outside of banks have gained access to the traditional bank market. At the same time Canadian banks are gaining access to new markets such as investment banking. Canadian banks are now making their way into the international marketplace and international banks are becoming more visible in Canada. The increased product market competition should lead to improvements in investment decisions by the banks. However, the largest banks in Canada have restrictions on ownership concentration making the market for corporate control less effective.

Bank regulation has had a huge impact on investment decisions and will continue to do so. The deposit insurance system leans towards riskier institutions resulting in high risk investments that often have low value.

Regulation also has an impact on corporate governance and the market for corporate control. This report used the fundamental precept that a well-

functioning capital market would operate at optimal investment levels. This is based on the assumption that managers act in the best interest of shareholders and, accordingly, vigorously seek valuable investment projects. Corporate governance, involving the board of directors and active shareholders, is the mechanism that keeps managers' incentives aligned with shareholder welfare. Impediments in a healthy market environment will insulate managers from discipline and allow inefficient practices to occur. One impediment is the restriction on maximum shareholdings that are found by law in the banking sector and in other sectors of the economy. Anti-takeover laws also dampen the discipline on management. *The challenge is to review corporate governance impediments on an active basis to increase the market discipline among managers*.

THE CHALLENGES AHEAD

THIS STUDY HAS IDENTIFIED A NUMBER OF INVESTMENT CHALLENGES that Canadians will have to meet in the medium term. They are summarized below. The analysis leads to a more general message: The openness of Canada's economy, the increase in factor mobility, and the rapid pace of technological change imply that there will be major investment requirements over the next 10 to 15 years. With globalization and the integration of financial markets, funds for investment will come from a larger 'global' pool than has been the case in the past. As a result, the ability of Canadians to benefit from investment opportunities will depend upon the ability of management to recognize and exploit opportunities. It will also depend upon policies that facilitate investment. Such policies would not entail direct government involvement in investment incentives nor compromise the lifestyle Canadians desire. This is a difficult balance to maintain and is perhaps one of the biggest challenges.

The following is a synthesis of other challenges ahead:

- Demographic trends suggest that in the long run Canada must at least maintain, but should more likely increase, the share of output devoted to investment in order to achieve even modest levels of productivity growth. Regionally, migration to British Columbia and Ontario from the rest of the country will require further and different investment allocations. While the private sector must adjust to these movements through market shift, the public sector must also make adjustments to allocations for infrastructure and social services.
- Globalization is one of the most significant challenges over the medium term. The management of the investment environment over this period will be critical as factor mobility — the mobility of both labour and capital increases. The implications of factor mobility are not clear at this stage. There are views that investment will be enhanced simply by keeping production costs down and investing in infrastructure that improves the quality of life. Others see the need to create a competitive environment for firms; one which allows them to form mutually beneficial clusters. Whatever policy mix is prescribed, it is clear that investment and productivity growth opportunities are enhanced by trade.
- Environmental concerns and their impact on investment decisions is also a major challenge for both public and private sectors. Currently, a relatively small fraction of output is devoted to environmental protection and improvement. It is unclear whether this investment will increase in the face of globalization. However, existing evidence suggests that current environmental policy has not had a significant impact on investment location and quantity. On the other hand, sim-

ulations of more significant policy changes suggest that it can have a large impact on investment and incomes. More research is needed to clarify whether more significant policy decisions on the environment will have a strong impact on investment.

- Investment demands certain spillovers that are not captured by the investor. This 'externality' can lead to lower investment and diminish the full social value that could be drawn from such activity. Policy directed towards the ability to appropriate returns from investments are therefore desirable. This is particularly important in sectors of the economy that engage in trade, which has shown to give rise to significant international spillovers.
- The productivity of the Canadian economy has not improved to the same degree as other OECD countries. One reason might be the slowness of corporations to respond to high-technology opportunities. Another could be the significantly lower levels of R&D expenditures in Canada. Policy concerns such as these have previously been addressed through government incentives. This does not seem to have worked in the past and is less likely to work now owing to a more integrated market setting.
- Management practices in Canada point to a problem of myopic decision making. There is no evidence that myopia is induced by capital market imperfections or the threat of takeovers. It appears that competition in the market for corporate control might provide the incentives needed to improve management practices.

NOTES

1 Although GDP is a widely-used measure of income it includes gross investment and hence overstates net income by depreciation, the amount of capital stock used up in producing this level of output.

2 The figures provided in Table 2 are not directly comparable to those found in Table 1. This is because of the need to place the figures in Table 2 on a common basis to facilitate international comparisons.

3 This is based on Statistics Canada's medium growth projection. Statistics Canada also considers a high and a low growth scenario with 2011 populations of 33 and 37 million, respectively.

4 Some aspects of investment infrastructure and environmental enhancement are discussed in the next section.

5 In particular, regulations that affect corporate governance and product market competition.

6 See, for example, Melvin (1996).

7 For an excellent analysis of Porter, Reich and work by Thurow (1992), see Harris and Watson (1992). The next section discusses the way in which clustering can help to internalize the externalities associated with technological advances.

8 Additional information and elaboration on the measures provided can be found in Olewiler (1992).

9 This subsection is based on this author's paper "Patient Capital? R&D Investment in Canada" (1995).

10 This example, though fictitious, is based on an actual investment opportunity that a Canadian company decided not to pursue.

11 This example is based on Stein (1990).

BIBLIOGRAPHY

Bernstein, J. I. "Costs of Production, Intra-Industry and Inter-Industry R&D Spillovers." *Canadian Journal of Economics*, 21 (1988): 324-47.

_____."Trade and Investment with Constant and Increasing Returns to Scale." *Canadian Journal of Economics*, 1996, pp. S463-S467.

Canada West Foundation. *Canada 2000*. Canada West Foundation, 1992.

Chan, Su Han, John D. Martin and John W. Kensinger. "Corporate Research and Development Expenditures and Share Value." *Journal of Financial Economics*, 1990, pp. 255-76.

Copeland, Thomas and J. Fred Weston. *Financial Theory and Corporate Policy*. Addison-Wesley Publishing Company, 1988.

Crane, David. *The Next Canadian Century*. Stoddart Publishing Company, 1992.

DeAngelo, Harry and Edward M. Rice. "Anti-Takeover Charter Amendments and Stockholder Wealth." *Journal of Financial Economics*, 1983, pp. 329-59.

De Long, J. Bradford and Lawrence H. Summers. "Equipment Investment and Economic Growth." *Quarterly Journal of Economics*, 1991, pp. 445-502.

Dennison, E. *Trends in American Economic Growth*. Brookings Institute, 1985.

Fischer, Stanley. "Symposium on the Slowdown in Productivity Growth." *Journal of Economic Perspectives*, 1988, pp. 3-7.

Giammarino, Roland M. "Patient Capital? R&D Investment in Canada," in *Corporate Decision Making in Canada*. Edited by Ronald J. Daniels and Randall Morck, University of Calgary Press, 1995.

Giammarino, Ronald M. and Robert L. Heinkel. "A Model of Dynamic Takeover Behaviour." *Journal of Finance*, 1986, pp. 465-80.

Griliches, Zvi. "Productivity Puzzle." *Journal of Economic Perspectives*, 1988, pp. 3-7.

Hall, Bronwyn H. "The Impact of Corporate Restructuring on Industrial Research and Development." *Brookings Papers on Economic Activity*, 1990, pp. 85-135.

Harris, Richard G. and William G. Watson. "Three Visions of Competitiveness: Porter Reich and Thurow on Economic Growth and Policy," in *Productivity, Growth and Canada's International Competitiveness*. Edited by Tomas J. Courchene and Douglas D. Purvis, 1992, "Bell Canada Papers on Economic and Public Policy".

Hirschey, Mark. "Intangible Capital Aspects of Advertising and R&D Expenditures." *Journal of Industrial Economics*, 1982, pp. 375-90.

Jarrell, Gregg A. and Annette B. Poulsen. "Shark Repellents and Stock Prices: The Effects of Anti-Takeover Amendments since 1980." *Journal of Financial Economics*, 1987, pp. 127-68.

Jog, Vijay M. and Ashwani K. Srivastava. "Corporate Financial Decision Making in Canada." *Canadian Journal of Administrative Sciences*, 1994, pp. 156-76.

Johnson, Lewis D. and Bohumir Pazderka. "Firm Value and Investment in R&D." *Managerial Decision Economics*, 1993, pp. 15-24.

Jorgenson, D. W. and P. J. Wilcoxen. "Energy, the Environment, and Economic Growth," in *Handbook of Resource and Energy Economics*, 3. Edited by A. V. Kneese and J. L. Sweeney, North Holland Press, 1993.

Leonard, H. J. *Pollution and the Struggle for the World of Product*. Cambridge University Press, 1988.

Linn, Scott C. and John J. McConnell. “An Empirical Investigation of the Impact of Antitakeover Amendments on Common Stock Prices.” *Journal of Financial Economics*, 1983, pp. 361- 99.

Lucas, Robert E. Jr. “Making a Miracle.” *Econometrica*, 1993, pp. 251-72.

Maddison, Angus. “Long-Run Dynamics and Productivity Growth.” *Banco Nazional del Lavoro Quarterly Review*, 1979.

McConnell, John J. and Chris J. Muscarella. “Corporate Capital Expenditure Decisions and the Market Value of the Firm.” *Journal of Financial Economics*, 1985, pp. 399-422.

Melvin, James R. “Trade and Investment with Constant and Increasing Returns to Scale.” *Canadian Journal of Economics*, 1996, pp. S361-S365.

Meulbroek, Lisa K et al. “Shark Repellents and Managerial Myopia: An Empirical Test.” *Journal of Political Economy*, 1990, pp. 1108-17.

OECD. *The State of the Environment*. Organization for Economic Cooperation and Development, 1991.

_____. *Economic Surveys: Canada*. Organization for Economic Cooperation and Development, 1995.

Olewiler, Nancy. “Environmental Quality and Policy in a Global Economy,” in *Productivity, Growth and Canada’s International Competitiveness*. Edited by Tomas J. Courchene and Douglas D. Purvis, 1992, “Bell Canada Papers on Economic and Public Policy”.

Pakes, Ariel. “On Patents, R&D, and the Stock Market Rate of Return.” *Journal of Political Economy*, 1985, pp. 390-409.

Palda, Kristian. *Innovation Policy and Canada’s Competitiveness*. The Fraser Institute, 1993.

Porter, M. E. and Monitor Company. *Canada at the Crossroads: The Reality of a New Competitive Environment*. Business Council on Economic Issues and Supply and Services Canada, 1991.

Reich, R. B. *The Work of Nations: Preparing Ourselves for the 21st Century Capitalism*. Alfred A. Knopf, 1991.

Schall, L. D. K., G. L. Sundem and W. R. Geijsbeek. “Survey and Analysis of Capital Budgeting Methods.” *Journal of Finance*, 1978, pp. 281-87.

Sinclair, W. “Controlling Effluent Discharges from Canadian Pulp and Paper Manufacturers.” *Canadian Public Policy*, 1991, pp. 86-105.

Slater, David et al. *The Contribution of Investment and Savings to Productivity and Economic Growth in Canada*. Investment Canada Working Paper No. 10, 1992.

Squires, Robert J. “R&D Outlook 1995.” Conference Board of Canada, 1994.

Statistics Canada. *Population Projections for Canada, the Provinces, and the Territory 1993-2016*. Catalogue No. 91-250 Occasional. Statistics Canada, 1993.

Stein, Jeremy C. “Takeovers and Managerial Myopia.” *Journal of Political Economy*, 1988, pp. 61-80.

Taylor, Peter Shawn. “Melancholy Babies.” *Saturday Night*, May 1996, pp. 23-28.

Thurow, L. C. *Head to Head: the Coming Economic Battle Among Japan, Europe and America.* William Morrow & Co., 1992.

Tobin, James. “Monetary Policies and the Economy: The Transmission Mechanism.” *Southern Economic Journal*, 1987, pp. 421-31.

TSE Committee on Corporate Governance. *Where Were the Directors: Corporate Governance and the TSE*. Toronto Stock Exchange, 1995.

Woolridge, Randall. “Competitive Decline and Corporate Restructurings: Is a Myopic Stock Market to Blame?” *Journal of Applied Corporate Finance*, 1988, pp. 26-36.

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LOOKING TO THE 21ST CENTURY — INFRASTRUCTURE INVESTMENTS FOR ECONOMIC GROWTH AND FOR THE WELFARE AND WELL-BEING OF CANADIANS

By Christian DeBresson, Université du Québec à Montréal, and Stéphanie Barker, Université de Montréal

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We cannot discuss the future seriously once the situation starts to become difficult, yet that is precisely the moment when we must discuss it. Otherwise we end up mired in propaganda, with an official future that prevents us from addressing the real problems.

Nicole Morgan
Le Sixième continent — L'Utopie de Thomas More
Paris: Vrin, 1996
quoted in *Le Devoir,* August 5, 1996, p. B1

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PREFACE

AS A NEW MILLENNIUM APPROACHES, Canadians are going through a time of dramatic economic change. Markets are becoming global and economic activity across nations is becoming increasingly integrated. Revolutionary developments in computer and communications technology are facilitating globalization, and are also altering a great deal the workplace and the lifestyles of Canadians. At the same time, largely as a consequence of the information revolution, knowledge-based activities are becoming increasingly important within the Canadian economy and the economies of other industrialized nations.

These and related major transformations of the economic environment invite a comparison with the Industrial Revolution of the 1800s. As in the earlier time, major structural changes are giving rise to uncertainties. Firms and workers are struggling to find their place in the new economic order. Canadians collectively face the question of whether their nation's physical, human and institutional resources will provide a firm foundation for continued prosperity. Many see Canada's prospects as being much less secure than in earlier years, when the country's rich natural resources played a major role in shaping the Canadian economy.

To examine fully the medium to longer-term opportunities and challenges of these developments, the Micro-Economic Policy Analysis Branch of Industry Canada asked a group of experts to provide their "vision" for Canada in the 21st Century on a number of important issues. Each author was required to undertake two formidable tasks: first, to identify major historical trends and develop scenarios to illustrate how developments in his/her respective area might unfold over the next ten to fifteen years; and second, to examine the medium-term consequences of these developments for the Canadian economy.

The papers coming out of this exercise are now being published under the general heading of "Canada in the 21st Century". This series consists of eleven papers on different aspects of Canada's medium-term outlook. The papers are divided into three major sections. The first section, *Scene Setting*, focuses on important developments that are going to shape the medium-term economic environment in Canada. The second section, *Resources and Technology*, looks at trends among some important components of Canada's wealth creation and considers the actions needed to ensure that these factors provide a firm foundation for continued prosperity. The last section, *Responding to the Challenges*, explores individual, corporate and government responses to the medium-term challenges and offers some options for appropriate course of action.

As part of the *Resources and Technology* section, this paper by Professor Christian DeBresson of Université du Québec à Montréal and Stéphanie Barker of Université de Montréal, focuses on identifying promising long-term infrastructure investment opportunities. The authors highlight a number of important long-term trends. These include: the increasing importance of

knowledge-based learning activities; the more modest pace of economic growth in Canada and other advanced industrial economies; the emergence of Asia as the new centre of world economic growth; and the worsening of global environmental problems.

On the basis of these trends, the authors develop a list of promising infrastructure projects centred on four objectives. The first is to increase Canada's participation in the global learning economy – for example, through investments in preschool learning, programs to enhance secondary school performance, and the development of Internet tools and applications. The second objective is to build trust between economic actors through local institutions, which would evaluate major proposed projects and make the results available to citizens of affected communities. The third objective is to improve the quality of life and the environment, perhaps by promoting the use of electric vehicles within cities and introducing urban recycling programs. The fourth is to reposition Canada in the world economy by establishing multidisciplinary centres of excellence in research on global economic and social issues.

SUMMARY

THIS PAPER PROPOSES INFRASTRUCTURE INVESTMENTS in the following areas:

- Preschool education.
- Experimental programs of excellence to reduce the high-school drop-out rate.
- Two institutes for teaching modern foreign languages.
- Research into possible Internet applications, particularly the evaluation of possible interactivity.
- Development of technology monitoring networks.
- Development of local forums to evaluate technology.
- Gradual replacement of fossil fuels by electricity in urban and inter-city transportation, recycling and water clean-up.
- Overhaul of infrastructure in city centres and neighbourhoods.
- Relational investment aimed at reducing transaction costs between partners in these infrastructure projects.

Given public sector deficits, these investments must be financed by the private sector. Any additional public borrowing would only serve to increase our vulnerability to financial crises. As in the 19th Century, the three levels of government must promote and support public-private partnerships for such projects, and must first involve potential users. The *subsidiarity* principle must guide the management of these infrastructure initiatives.

Infrastructure choices focus on four goals:

1. Increase our participation in the knowledge-based economy.
2. Establish and maintain a climate of trust.
3. Improve the quality of life and the environment.
4. Reposition Canada within the world economy.

Ten major irreversible trends dictate the choice of those objectives:

- The increasing dominance of the knowledge-based economy.
- The search for well-being as the driving force within our economies.
- Asia as the new centre of the global economy and economic growth.
- The worsening environmental crisis.
- The gradual replacement of competitive zero-sum games with emulative, positive-sum games.
- The increasingly heavy transaction costs imposed by the innovation economy — which can be reduced only through mutual trust between players.
- The downsizing of all forms of organizations, including governments.

- The accelerating pace of technological change.
- Globalization, which proceeds in tandem with the revived role of large urban agglomerations.
- The dominance of the volatile international financial sector.

Canada's position is evaluated in light of each one of these trends. We develop extreme scenarios, analyse their interactions, and project the reactions of the various actors. This makes it possible to define more precisely the critical points as well as the relevant means of action. The paper pays special attention to the revival of various types of communities, particularly those based on mutual trust between their members.

INTRODUCTION[1]

WE ARE HONOURED THAT OUR VISION OF CANADA'S FUTURE is of interest and welcome the opportunity to explain it. It does not often happen that elected representatives, who think and plan within the time frame of an electoral mandate, turn to people who work in a more relevant perspective — the long term.

Infrastructure investment decisions concern the future of our children and our children's children. While assessing the economic benefits of infrastructure investment can be difficult,[2] Robert Heilbroner urges that the issue be considered at a higher level:

> *The collective efficiency … [of] an economy cannot exceed [the limits] of its infrastructure*.[3]

The state of the infrastructure defines what economists call the frontier of possibilities in collective production. Like all capital investment, infrastructure investment logically precedes production activity. Capital investment is needed for private production; infrastructure is required for economic exchanges and transactions between economic agents, and hence for the very functioning of society.

The impact of infrastructure investment may be evident only to the next generation; the effects are often indirect and difficult to predict.[4] It has been recognized since the work of Nicolai Kondratieff (1922, 1984)[5] that infrastructure investment tends to be massive, indivisible and concentrated in time,[6] with the economic impact visible only in the long run (although it is impossible to give a precise number of years).[7] It is often the ancillary, complementary investments following initial large commitments that make infrastructure efficient.[8] In our opinion, despite experiments in cost-earnings analysis, it is impossible to make a priori assessments of the relative value of infrastructure investments, just as it impossible to predict from the first application of an innovation whether or not it will be a radical innovation.[9] It is also impossible to predict a priori whether the initial investment in infrastructure will be followed by the additional investments required to receive all the economic benefits. The economic impact, in terms of infrastructure benefit and other benefits, is felt long after the original investment. We shall see later that this is the current situation with the Internet.

We welcome this opportunity to suggest some directions for future social choices, while adopting a time horizon that allows us to take into account infrastructure investments; these must be considered in a long-term perspective.

We appreciate and accept the challenge, although with some trepidation. Our judgment, informed as it is, is necessarily subjective. Yet any choice regarding infrastructure is partially subjective. One must put forward a *vision* of how our particular part of the world can be made a better place — what the Greeks

called *œtopia* — because infrastructure choices always reflect the desired shape of future society. Thus we acknowledge that our choices are associated with a subjective social and ecological vision. There are two dangers in such an exercise, however: first, the danger of being carried away by optimism to unrealistic conclusions (what Thomas More called *utopia* — the non-place); and then the danger of sinking into excessive pessimism, overwhelmed by the year 2000 apocalypse syndrome that is so prevalent today, seeing nothing but problems and perils.

We shall try to avoid these pitfalls, first by identifying 10 trends that we believe are irreversible, in order to see where Canada stands in relation to them. Second, we shall identify the greatest uncertainties about the future and examine the most extreme scenarios connected with them. Third, we shall suggest the probable reactions of the main actors in the face of these extreme situations. Fourth and last, we shall discuss where, when and how society's choices about long-term investment can improve the opportunities of future generations. Our approach is not purely economic, but also social and cultural. In such a document, however, we can do no more than list a series of infrastructure investments and make some guesses about their effects; to try to estimate precisely the scale of their impact and their costs would be to conjure up fantasies. Our ultimate aim is simply to promote reflection and debate.

Some Irreversible Trends

Certain trends are unlikely to be reversible. Their direction cannot be altered by future economic and political choices, although their extent and speed may be influenced. Canada can only prepare to adjust its choices and its actions in accordance with these trends, in order to derive as much benefit as possible. In our opinion, the following are the most important trends.

Trend 1: The growing dominance of the "knowledge-based economy"[10]

An ever-greater part of human activity is being devoted not to the production of goods using tools and other devices but to the design and preparation of these goods. This trend has accelerated since the Second World War, as evidenced by the growing proportion of highly educated workers in the labour market. At the same time, just as the life cycle of products has shortened, it is not uncommon to see workers benefit during their lifetime from several (often two or three) periods of training.

Services and investment in immaterial and intangible products account for a growing share of economic activity, while the share of material goods has lessened (OECD, 1996).[11] For example, human knowledge and know-how, encoded and transcribed into computer software, have rapidly surpassed computer hardware in importance. The focus of economic activity is shifting from the use of production inputs in as efficient a way as possible to the creation of new inputs, and from the exploitation of comparative advantages to the creation of new advantages.

What does this imply for infrastructure development? There will be a shift away from investment aimed at supporting the exchange of goods (transportation) and information (communications), and toward investment in the exchange and creation of knowledge (education, training, relations and technology). In terms of communications infrastructure, Canada is doing well (see Figures 1-A and 1-B). In a political climate where the actions of nations-states are increasingly perceived as protectionist and anti-competitive, infrastructure investments in public and non-competitive goods have become acceptable political objectives (World Bank 1994, Tassey 1992).[12]

In terms of the knowledge-based economy, Canada's position has improved over the past 10 years, particularly within the NAFTA and in comparison with the United States. However, recessions, debt and budgetary constraints threaten this progress, which is in fact tentative. While the institutional infrastructure for the knowledge-based economy is already in place (although not being used to full capacity), it should be strengthened so that Canadians derive maximum benefit from it.

FIGURE 1A

INFRASTRUCTURE INVESTMENTS BY THE THREE LEVELS OF GOVERNMENT, 1956-93

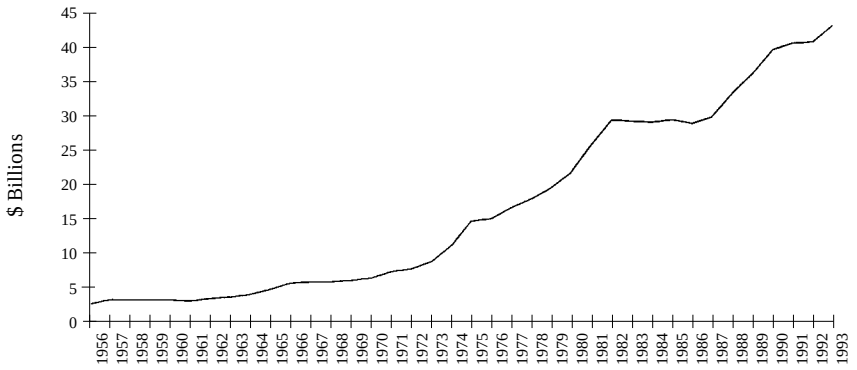
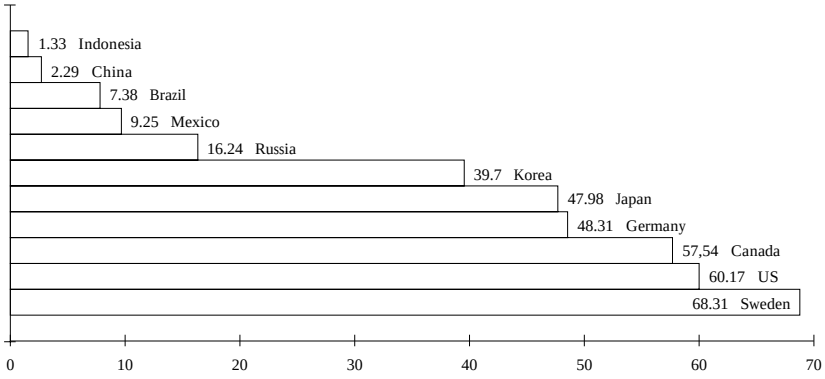


FIGURE 1B

NUMBER OF TELEPHONE LINES PER 100 RESIDENTS, 1994



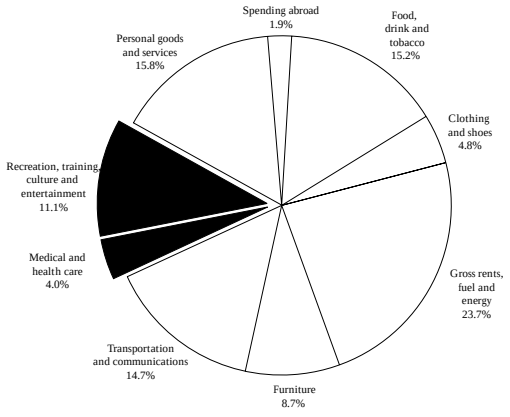
TREND 2: FROM THE ACQUISITION OF CONSUMER GOODS TO THE SEARCH FOR WELL-BEING

CONSUMERS IN THE ADVANCED INDUSTRIALIZED COUNTRIES (AICs) are devoting an increasing share of their incomes to the purchase of intangible goods and services, such as recreation, tourism, education or health care, where quality is more important than quantity (see Figure 2). For a substantial proportion of the population in these rich countries, the underlying reason for this shift in consumer behaviour is the search for a better quality of life, for well-being.[13] The reason rich countries are spending a smaller share of their income on the acquisition of durable consumer goods than they did 50 years ago is simply that they have enough: the marginal satisfaction derived from additional acquisitions is falling. We have moved from an "acquisition" economy to an "abundance" or "saturation" economy.

The shift is partly recorded in the reports of the United Nations Development Programme (UNDP).[14] For rich countries, this means that the thrust of urban and environmental infrastructure investment will have to change.

FIGURE 2

PERCENTAGE DISTRIBUTION OF PERSONAL EXPENDITURES ON CONSUMER GOODS AND SERVICES, PER CAPITA, 1992
1986 DOLLARS



The Scandinavian countries have involved all segments of society in this new type of economic activity driven by a search for well-being. In Canada, as in the United States, we find a bipolar model of consumption. A large part of the population consists of people with stable jobs, who are following or even ahead of the shift in expenditures toward well-being. However, another large segment of the population consists of those with precarious incomes, particularly in Newfoundland, the Maritimes, eastern Quebec, east Montreal and other depressed farming or industrial areas; such people continue to devote most of their meagre income to housing and food, and they continue to struggle with lack of schooling and high social alienation. An endemic high rate of unemployment, long periods of seasonal unemployment, a high proportion of young people outside the labour market, a high crime rate linked to the world's third highest level of drug abuse, and a suicide rate dangerously close to the world average — these indicators show that Canada has allowed the formation of an urban underclass largely excluded from economic activity.[15] Without growth or job creation, economic polarization of this kind seems very difficult to combat except through radical change.

Global economic growth is concentrated in the large newly industrialized countries (NICs) of East and South Asia (China, Indonesia and India). These populations are striving to better their material conditions by purchasing durable consumer goods, which triggers the attendant income multiplier and capital accelerator effects. In these regions, the main focus of infrastructure investment remains transportation, irrigation and energy. Elsewhere, in Africa, part of Asia and Latin America, one third of the world's population is still on the threshold of absolute poverty, struggling for basic subsistence while the minimal economic entitlements needed to benefit from a market economy slip ever further from their grasp.[16] In subsistence economies, basic needs such as housing, water and sewage, schools and hygiene must take precedence in infrastructure development initiatives.

All recent international studies agree that the gaps between these three types of economy are widening. The last two trends point to an important conclusion: it is unrealistic to expect economic growth more than a few percentage points higher than that currently found in advanced industrialized countries such as Canada.[17] We must accept that the 30 years of solid growth following the Second World War are a thing of the past, and we must lower our expectations. The challenge now is to determine the conditions that will best promote the modest growth of our economy, and that will enable all its members to share in the collective well-being.

Two phenomena lie at the root of this situation. First, there is the irreversible drift of the economies of the AICs away from the Keynesian model, which is characterized by a demand for durable consumer goods. These economies can no longer generate growth by manipulating demand, because expenditures on intangibles — which account for a growing share of household spending — do not have the local income multiplier and capital accelerator

effects to support rapid growth. Today, our economy's internal structure does not require and cannot support such growth.[18] The second phenomenon manifests itself as our third irreversible trend.

TREND 3: ASIA, THE NEW CENTRE OF THE WORLD ECONOMY

THE RAPID ECONOMIC GROWTH that will characterize the next historical cycle will centre on the NICs, particularly those in Asia (China, Indonesia, India and a number of smaller countries). With the exception of the Philippines and Burma, over the past 20 years all the countries of Asia have experienced rapid growth — in some cases on the order of over 10 percent annually, often on a continuing basis. Growth of this kind displays the classic signs of a genuine economic takeoff. Just yesterday, these were subsistence economies struggling with famine and epidemics. Today, they enjoy strong income growth, burgeoning consumer spending on locally made durable goods (with the associated income multiplier and capital accelerator effects), strong savings, and high industrial investment rates (particularly in infrastructure).

East Asia benefits from two positive factors. First, its population, educated and efficiently trained, offers a large, relatively cheap pool of human capital. Its education infrastructure is thus a key asset for maintaining industrial growth in the new knowledge-based economy. Second, it is geographically close to the new technological dynamo of the world economy — Japan. This country is not only the second-greatest industrial power in the world but it must invest abroad a good part of its enormous financial reserves to prevent its own economy from overheating. The East Asian countries also share a cultural homogeneity unknown to the countries of South Asia (India, Indonesia and even Pakistan, struggling with bitter ethnic tensions).

The lack of security agreements in Asia, however, could slow the region's rise to economic prominence. Peace and war are maintained in a delicate balance by a number of factors, including ethnic and religious tension, pressures related to natural resources, and U.S. foreign policy on advanced arms sales to rival powers. Nevertheless, assuming no major armed conflicts, the economic domination of Asia appears certain over the next century.

At the same time, it must be acknowledged — not without regret, since we too are North Americans[19] — that the United States and North America as a whole are facing economic decline. While the pace of U.S. decline is a matter of debate, the trend is irreversible in light of the external factors just described and because of internal vicious circles. For instance, the collapse of the public school system and the high drop-out rate have resulted in a significant degree of functional illiteracy. The system for maintaining the level of human capital — which is necessary for maintaining economic prosperity — is in grave trouble. While U.S. universities retain their hegemony,[20] increasing numbers of their professors and researchers are recent immigrants. Yet research and teaching no longer attract the best brains in the United States.[21] The sys-

tem for replenishing human capital, which is vital for economic prosperity, has broken down.

Like education, other types of infrastructure are, in a deplorable state. In 1990 the U.S. Department of Transportation produced cost estimates of urgent infrastructure projects: $50 billion to repair 240 000 bridges; $315 billion to bring road quality up to 1983 levels; $25 billion for air traffic control. Also, the U.S. Department of Housing and Urban Development estimated the cost of rehabilitating existing public housing at $20 billion and the annual cost of repairs and maintenance at between $60 and $118 billion.[22] Several economists had hoped that, with the end of the Cold War and the fall of the Soviet Union, the United States might seize the opportunity to spend its "peace dividend" on infrastructure investment, but there are few concrete signs that it will do so.

Two factors are triggering a phenomenal rise in transaction costs (the magnitude of which will be discussed under Trend 6): the lack of cohesion among the various ethnic and social groups within American society and the predominance of a culture of acquisitive individualism that favours settling every possible conflict through litigation. The "social glue" (to use Douglas North's expression) is starting to deteriorate; as a result, on one side we have the social decline of a very large number of people, while on the other side the well-to-do retreat into fortified encampments, paying growing portions of their income directly or through taxes to maintain an increasingly fragile "public order." The combination of these factors suggests that the economic decline of the United States is irreversible.

How much benefit Canadians can derive from the global economic growth will depend on their ability to capitalize on the possibilities offered by Asian growth and (unfortunately) by the decline of U.S. economic might,[23] while gradually reducing Canada's dependence on the North American market. A major factor will be Canada's exports of knowledge-intensive goods and service to Asian countries.

These trends have some direct implications for infrastructure. Our institutions (trade, transportation and education, particularly language teaching) are all oriented toward relations with the United States, the United Kingdom, France and, to a lesser degree, other European countries. We do not have the infrastructure needed to benefit from the new economic powers emerging in Asia. Substantial infrastructure investment will be necessary in this area.

Continued strong economic growth in the NICs will depend partly on their skill and success in solving the problem that countries now on the decline have left to them: the precarious global environment.[24] This means that sustained economic growth is by no means a certainty, even in new regions of the world.

TREND 4: THE LOOMING ENVIRONMENTAL CRISIS

ONLY IN THE LAST 10 YEARS or so have ecologists started to grasp how human activity affects — and sometimes paralyses or even reverses — the self-regulating feedback loops of natural systems. Think of the following cases: the thinning of the ozone layer as a result of CFC emissions; global warming (the greenhouse effect) as a result of CO2 emissions; acid rain resulting from a wide range of pollutant emissions; soil depletion resulting from agricultural and industrial exploitation and the use of chemicals (particularly pesticides and fertilizers), and so on. Ecology is a relatively young science and researchers will probably find other natural and human-caused vicious cycles as they pursue their investigations. Concern about the sustainability of ecological systems is still a recent phenomenon, and it is a good bet that new problems will be discovered once the issue receives more attention.

Sustainability has been an objective and a priority for at least 10 years in countries whose relative economic comfort allows them to adopt a long-term perspective. Consumers searching for a better quality of life would prefer — and are now demanding — the closure of polluting industrial facilities (such as nuclear plants), the replacement of polluting technologies (such as those that use CFCs and fossil fuels), clean-up programs for rivers and lakes, and so on. Nevertheless, we should not assume that economic activity will evolve in the direction of environmentally sustainable growth simply because of the apparent official consensus on the need for such an approach in the advanced industrialized countries. While the quest for well-being in the AICs promotes this movement, in the Third World the search for economic security and welfare works to opposite effect.

In countries where famine and disease are endemic, the only priority is each family's daily struggle to survive. Any restriction imposed by the industrialized world on the use of natural resources to support this subsistence economy immediately encounters virulent (and quite legitimate) opposition, unless financial compensation is offered in return. In countries where economic growth is just taking off (such as China or Indonesia), the engine of growth is the quest for economic comfort through the acquisition of durable consumer goods; the resulting growth is the primary source, directly and indirectly, of industrial pollution. Unless the countries wishing to promote sustainable development act in partnership with the newly industrialized countries to invest, develop and distribute technologies that are clean, cheap and economically advantageous (in other words, technologies capable of satisfying the NICs' thirst for growth and comfort), global sustainable growth is an unlikely prospect. While the co-operative development of clean technologies (at least in prototype form) would seem a realistic goal in the medium term, there is less likelihood that this will also be true of the development and dissemination of technologies that are *cheap, economically advantageous and sustainable*. Sustainable growth faces a highly uncertain future.

The environmental dangers so far identified already imply considerable outlays for infrastructure in Canada. Despite its relatively small population and industrial base, Canada ranks fifth or sixth in the world in absolute CO2 emissions.[25] In 1990 this country was the world's fourth-largest sulphur dioxide and nitrogen dioxide polluter, again in absolute terms.[26] In terms of per-capita greenhouse gas emissions, Canada stood fourth in the world in 1991.[27] And above all, Canada is one of the world's largest producers by volume of nuclear and other hazardous wastes.[28] Despite considerable efforts since the 1970s to combat industrial pollution, one of North America's assets — the key natural resource of water[29] — remains poorly protected. We have a long way to go in order to ensure that the water in our lakes and rivers can serve multiple uses. Moreover, Canada recycles very little of its reusable resources.[30]

The media and the country's politicians have trumpeted loud and long Canada's top ranking under the UNDP's composite index for life expectancy, educational level and income.[31] This has served to distract attention from the country's generally poor showing on environmental issues and its only fair rating on a range of social problems (unemployment, drug use, school drop-out rate, etc.). All these areas require infrastructure investment, but we must also provide for resources to be used for environmental problems that as yet are unrecognized.

Let us now examine the *qualitative* consequences of the first four trends.

TREND 5: FROM A COMPETITIVE ZERO-SUM GAME TO AN EMULATIVE POSITIVE-SUM GAME

ECONOMIC ACTIVITY IS SHIFTING from the production and exchange of tangible goods to the supply of services, where new knowledge is created by the provider of the service while the customer/user consumes it. In a knowledge-creation economy, we can move from a "zero-sum game" (*If you make it, I won't*) to an emulative, co-operative "positive-sum game" (*If I share my knowledge with you, I still keep it and it will not be lost in the process*). The co-operation of different technical players is becoming increasingly important. More than ever, collaboration is becoming a crucial factor in the creation of value.

In a zero-sum game, there is no real incentive for the actors to co-operate. One actor will make a move (quite aware that the other may retaliate) to derive maximum benefit from a situation in which the interests are inherently antagonistic.[32] This is not the case in a learning-based economy, since knowledge is not an object of competition but rather of emulation. Unlike the situation with a tangible good, *I can share my knowledge with you without losing it along the way*. Knowledge is inexhaustible; using it does not deplete it, but rather refines it. Moreover, the interaction between partners who share their respective knowledge often leads to the creation of new knowledge that would never have been generated in isolation. This kind of synergy is an emergent property of a co-operative system.[33] The mathematical analogy best illustrating this idea

TABLE 1
A GAINS TABLE FOR A ZERO-SUM GAME, SHOWING THE BENEFITS (HERE, PERCENTAGE SHARES) OF COMPETITION OF THE TYPE "I WIN, YOU LOSE; I PRODUCE OR YOU PRODUCE"

First actor	Second actor	
	Cooperates	Doesn't cooperate
Cooperates	50 50	65 35
Doesn't cooperate	30 70	40 60

TABLE 2

A GAINS TABLE FOR A POSITIVE SUM GAME ("STAG GAME"), SHOWING THE BENEFITS (HERE, ACQUIRED KNOWLEDGE) OF COMPETITION OF THE TYPE "WE ALL WIN MORE WHEN WE WORK TOGETHER"

First actor	Second actor	
	Cooperates	Doesn't cooperate
Cooperates	original + joint creation original + joint creation	original + transfer original
Doesn't cooperate	original	original

is perhaps that of the hunting party: it is in the interest of the hunters to co-operate in beating the woods in order to capture a choice deer (the "stag game").

Competition is turning into emulation. The drive to win does not necessarily mean shutting out the other, but creates a model for the loser of the contest to emulate. The creation of new technical knowledge through innovation often requires co-operation among economic actors. Innovation is impossible without co-operation.[35] The learning that results is *interactive*.[36] Innovation and the creation of new technical knowledge are emergent properties of a systematic relationship between companies; if they do not co-operate, no innovation and no new knowledge are produced. The newly created knowledge surpasses the simple transfer of the original knowledge.[37] When they start co-operating, the partners do not, generally speaking, consider that they may end up creating new techniques. While the co-operative aspect of the production and trade of

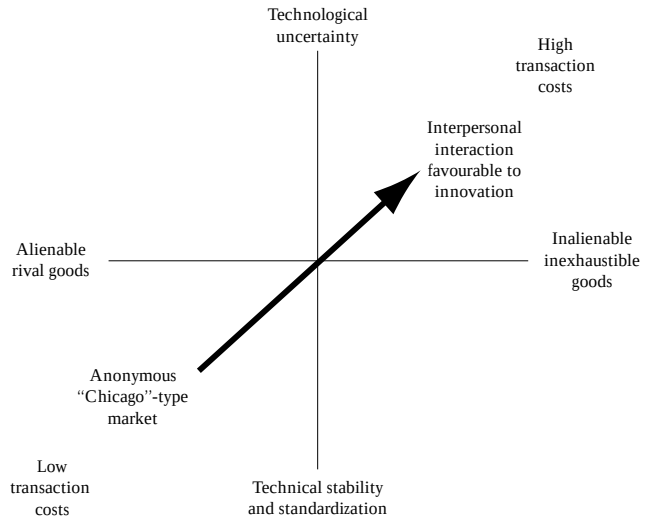
goods in a free-trade system is the *ex post* result of following common trade rules, co-operation becomes the essential *ex ante* prerequisite for the learning process — something without which the process cannot be initiated.

Canada's performance in terms of co-operation, while still uncertain or even weak, is improving. Some metropolitan areas (for example, Montreal, Ottawa, and other cities in southeastern Ontario) and certain industries (for example, forestry, pulp and paper, electronics and telecommunications) have a tradition of co-operation, but in Canada as a whole, the picture is not encouraging. There are few institutions working toward developing this kind of co-operation in Canada compared with Japan, Korea, Italy, Scandinavia and the Netherlands. True, we are doing better than the United States, but this is not saying much.

TREND 6: AN ECONOMY WITH HIGH TRANSACTION COSTS

OVER THE PAST 10 YEARS, it has become increasingly clear that firms no longer compete individually but rather as part of internally co-operative networks of firms. As the pace of introduction of new products has increased, these networks have probably expanded. The network phenomenon leads to greater co-ordination of activities and to more transactions taking place outside the market. Figure 3 shows the transition to an economy with high transaction costs.[38]

FIGURE 3



With the accelerating pace of change in products and technologies, the economy is moving from the zone of low transaction costs to a zone of high transaction costs. While these costs are considered to be quite low in Japan, Douglas North (a recent winner of the Nobel Prize for economics) judges that in the United States transaction costs already account for at least 45 percent of economic costs.

> *One can think of transaction costs as all those costs incurred in operating an economic (market) system.… The more complex an economy, the more individuals will be engaged in co-ordinating and operating that system. So it is not surprising that the transaction sector … in the American economy in 1970 was 45% of GNP.*[39]

The best type of economy — one rich in innovation — necessarily has high transaction costs. We are not referring to the cost of traditional inputs (labour, natural resources and capital), but rather to *relational costs* or the cost of *social interaction* prior to signing a market contract. In the short run, economic organizations try to lower their highest costs. The new focus of competitiveness, however, will be reducing transaction costs, since they have become the primary source of cost. Any factor that can reduce transaction costs becomes that much more important.

What is important is not reducing transaction costs in absolute terms, however. Only an economy with standardized goods and unchanging technology can have low transaction costs. The lower left quadrant of Figure 3 has low transaction costs because the buyer knows exactly what he is getting. Innovation inevitably involves higher transaction costs. Since they cannot be avoided, the key is to ensure that the value created largely offsets the additional costs involved.

Transaction costs can be reduced through factors that facilitate negotiation, that reduce the need to monitor the implementation of agreements, that simplify co-ordination arrangements in organizations, and that promote communication and understanding. The most important factor is undoubtedly mutual trust.[40] This means trust in the rules of the game (or in what Douglas North calls the institutions), trust that other parties will adhere to the implicit and explicit rules, and trust that the other parties are working for the good of the group and will not seize opportunities for immediate personal gain at one's expense.

Trust is a multi-dimensional phenomenon. When focussed on a specific goal, trust can be based on mutual commitment. However, the foundation of trust is often common membership in a community. A community is different from a market in that it forges multi-dimensional links among its members, while a market links two parties by and for a single transaction with an operational goal. In an anonymous market, traders do not necessarily know or even come in contact with each other, whereas the establishment and maintenance

of trust requires interpersonal contact. In light of inevitably rising transaction costs, we believe that communities and long-term co-operative relationships will enjoy a major revival. Their ability to facilitate trust-based commitments offers an efficient way to reduce transaction costs.

Over the past decade, bitter recriminations have been levelled at "Japan Inc." and even at "Quebec Inc." The Japanese retort that their population has proportionately as many engineers as the Americans have lawyers, perhaps reflecting the fact that they have an efficient system of co-operation, while in the United States a culture of litigation inflates transaction costs.[41] Despite some clear cases of collusion and exclusion on the part of "Japan Inc." and "Quebec Inc.," we must accept that it is not only economically logical but also more efficient, faster, less costly and less uncertain to co-ordinate activities with people of the same language and culture who understand the same implicit and explicit rules than with people from other traditions.[42] One of the advantages of Silicon Valley over Route 128 around Boston is the state of development and dynamism of its social network and clubs.[43] Nothing in this behaviour can be construed as fundamentally protectionist, and such a diversity of cultures is in fact a prerequisite to the mutual gains flowing from free trade in goods and services.

In a learning-based, innovative economy, anonymous markets (where buyers and sellers do not know each other and do not negotiate face to face) are losing ground to markets with personal contact; fairs and ongoing trade shows are experiencing a revival. Making a comeback are the old guild neighbourhoods of the medieval towns and the marketplaces of towns in the Industrial Revolution, where people from outside knew they could obtain specific goods and services. These are what Alfred Marshall calls new "industrial districts." Their success is based on strong multi-dimensional links and an abundance of trust. Rising transaction costs also lead to the downsizing of units taking part in trade, in parallel with the new domination of economies of scope versus economies of scale.

Canada does not seem to be particularly competitive in terms of transaction costs. While the centres of innovations around Toronto, Montreal, Ottawa and Vancouver seem to have made effective use of the dense social networks that reduce transaction costs, the level of trust between business communities remains fairly low. While Canada does appear to be in a fairly good position in comparison with the United States, its position is not so good relative to the Scandinavian countries and even to Italy, still less to Japan and Korea. Perhaps a commitment to a common infrastructure project (such as a high-speed rail system linking Quebec, Ontario and the U.S. northeast) would help build the trust needed to compete efficiently in terms of transaction costs.

TREND 7: DOWNSIZING

AS OTHER AUTHORS EXAMINE DOWNSIZING, we shall discuss it only briefly here. The increased costs of internal co-ordination (the internal equivalent of market transaction costs) is leading to downsizing in all organizations. Further, the need for flexibility and economies of scope to ensure the rapid turnover of products leads to a reduction in the size of production units and manufacturing facilities within organizations.

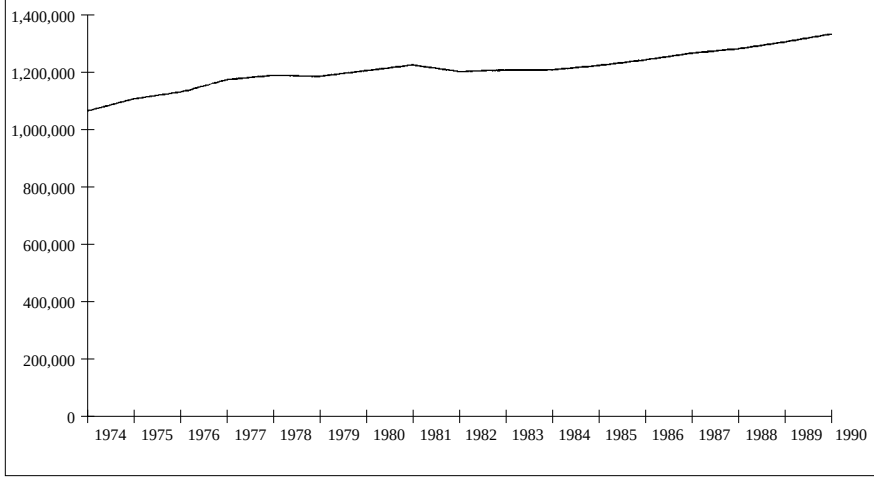
In a "saturation economy" that is increasingly oriented toward well-being and services, a direct and personal relationship between customer and supplier is once again becoming an essential prerequisite to economic activity. After a half-century dominated by the mass production of standardized items considered identical and banal, we are returning to customized or small-run production and to specialized services.

This trend should eventually spread to governments and nation-states. Despite the strong push for downsizing and restructuring in government organizations, Canadian governments still seem to have a long way to go in that regard (see Figure 4).

Downsizing is accompanied by another trend: delegating the same administrative task to several decentralized units of smaller size. The reduction in the average size of nation states is a worldwide phenomenon that cannot be attributed to historical coincidence; it can be interpreted as an attempt to reduce co-ordination costs.

FIGURE 4

TOTAL NUMBER OF FEDERAL, PROVINCIAL AND MUNICIPAL GOVERNMENT EMPLOYEES, 1974-90



In this regard, Canada is faring poorly. Even though production units have been scaled down (on the model of custom or reduced-run producers[44]), Canada's industries are more often vertically integrated than their competitors; the pulp and paper industry is a good example. In addition, its manufacturing and banking firms are heavy and inflexible. Canada must also cope with a population that is geographically dispersed, something that poses considerable administrative challenges. While the downsizing trend does not appear to have reached Canadian institutions yet, they will eventually have to adapt, voluntarily or not. This eventuality will necessarily involve vertical disintegration and the decentralization of operations, as well as a devolution of power and authority to autonomous units in order to ensure that existing infrastructure is used more efficiently.

TREND 8: THE ACCELERATING PACE OF KNOWLEDGE CREATION AND TECHNOLOGICAL CHANGE

AS THE CREATION OF SCIENTIFIC KNOWLEDGE PICKS UP SPEED,[45] the technological opportunities for changing products and production processes increase. As new products are launched more frequently, it becomes more important to find flexibility in basic installations and to reduce total long-term costs than to reduce variable and marginal costs. Investments in new technologies and learning capacity become strategic assets for successful competition. Investments in skills can be targeted so specifically that they might not be recoupable if and when the firm elects to withdraw from a market. However, the specificity of assets may be overstated, since firms opt for new skills with a view to the long-term exploitation of their new assets for a wide range of activities. Yet these kinds of investment decisions, with such important long-term consequences, remain risky, since it is impossible to accurately gauge the risk factors involved. Non-recoverable costs not only pose a market entry barrier for potential competitors, but also present an increased risk of failure for those who have to pay them.

Technological competition increasingly depends on investment in training and learning. In a world where opportunities and economic targets (as well as the identity and behaviour of actors) are constantly changing, scientific, technological and commercial monitoring become critical. In these circumstances, network-based alliances can help firms reduce risk and keep up-to-date with the myriad new developments in order to minimize potentially non-recoupable costs.

Japan, Brazil, the European Union and France have systematically instituted technological monitoring in the public sector. In Canada, similar attempts by public institutions such as the National Research Council have had only a limited impact. More successful has been public support for co-operative initiatives in this line by networks of firms or related industries. All

industries should be consulted to ensure that they have rapid and efficient access to technological monitoring services.

TREND 9: GLOBALIZATION

SPURRED ON BY POSTWAR MULTILATERAL LIBERALIZATION (GATT, Bretton Woods) and by the increasing importance of "knowledge" (which is inherently international) in production, the economic activities of most nations have become more and more international in focus. This is the phenomenon of *globalization*. This trend has been amply documented and we shall discuss it here only briefly.

What we shall do is look at some of the aspects of globalization that are less often mentioned. The increasingly interdependent nature of trade flows among the AICs obscures the emergence of a new and important development in the world economy: international interdependence in terms of direct investment, and interdependence between this investment and international trade. At least half of trade is conducted within transnational organizations or between their subsidiaries. These transnational corporations act, economically, like world oligopolies using all means at their disposal in order to conquer markets, including retaliation.[46] These transnational oligopolies take into consideration the local allocation of resources and their comparative advantages (natural or created), and they exploit them throughout the world. Competition within and between oligopolies uses the search for technological innovation. Innovation strengthens the position of one actor while weakening that of the targeted competitor. Accordingly, a critical consideration for transnational oligopolies is being able to establish themselves in the geographic location best suited to the process of technological innovation.

The current interest in globalization is somewhat faddish, however. Other trends are working in the opposite direction — shifts not from national to international, but from national to regional. Paradoxically, metropolitan areas, which create the most positive externalities, here are playing a dominant role. These local communities provide the needed scientific and technological infrastructure, and benefit from lower transaction costs (see Trend 6).

The two trends discussed above indicate how important it is to "cultivate" innovative metropolitan areas by ensuring that they have solid scientific and technological skills plus reliable social capital. Transnationals already established in Canada (regardless of their country of origin) will then enjoy well-developed bases for their activities, attracting a wide range of investment. Investments by international consortiums yield the benefits of easy access to newer developments and rapid participation in them. Another aspect of globalization is the major structural change that has occurred since the late 1970s, resulting in a much more tightly integrated world financial market.

TREND 10: THE DOMINANCE OF A VOLATILE AND GLOBALLY INTEGRATED FINANCIAL SECTOR

EVER SINCE THE SECOND OIL SHOCK IN 1979, economic recoveries have been fairly weak and limited mainly to financial and speculative growth. While our economy is now better protected from financial crises than it was in the 1920s or 1930s, financial recoveries today have fewer economic effects.

Financial markets now operate 24 hours a day, and brokers can speculate up to 50 times a day. This means that turnover times are shorter and asset values change more quickly. Financial information is exchanged more and more rapidly. Government issues have shorter maturities, are traded more and more on secondary markets, and are held less time in portfolios (on average, 2.5 to 10 days). Leveraging of assets is easier, and speculative price bubbles (inflated share values) have become more likely. These conditions match those identified by Kindleberger as indicative of a possible financial crisis.[47]

The extreme speed of speculative bubbles would be of only marginal importance were it not for their impact on bankruptcies and the money supply, as well as on interest rates, government debt, the role of the dollar as an international currency and, perhaps in the long run, the general level of economic activity.

The immediate impact of a purely financial crisis can be the utter ruin of retirees who depend on their modest pensions. A crisis can also affect holders of mutual fund and retirement funds (which now hold four to five times more assets than multinational banks). A financial crisis can destroy these assets and trigger serious social problems.

The new degree of interdependence is shown by some of the processes involved in the Wall Street crash of October 1987.[48] On the second day of the market correction, the U.S. Federal Reserve promised not only "easy money" but also selectively offered ridiculous interest rates with the aim of saving brokerage houses in danger of going under; partly it was trying to stave off a payments crisis that might have triggered a wave of bankruptcies. The subsequent loss of confidence in the U.S. dollar as an international currency was a major factor in its devaluation by almost 20 percent. In the years following the crisis, the economies of Europe and Japan had to make major domestic and competitive adjustments, particularly in terms of their foreign direct investment, which in turn led to domestic recession and capital outflows. The U.S. economy then experienced inflationary pressures as the cost of U.S. imports rose.

It should be realized that the fall of the dollar in 1987 was cushioned only by a massive purchase of U.S. government securities by the Japanese. Although these events are not widely recognized, Japan's intervention is estimated to have cost as much as the Marshall Plan.[49] This illustrates the degree of fragility and interdependence in the international financial system.

Financial processes dominate to such an extent that governments are very limited in their ability to influence their national currencies through interest

rates. Higher interest rates can cause an immediate depreciation in previous government issues. When a currency is overvalued, it is vulnerable to speculative fluctuations. A government budget designed to counter speculation will cause a change in credit rating. If, like Canada, the country is carrying a large debt load, the government thereby loses its ability to fashion independent economic policy. According to Lawrence Summers:

> *If … nations dedicate their monetary policy to achieving a foreign exchange target, they lose their ability to conduct monetary policy with a view to domestic objectives*.[50]

These financial processes are not new. What is new is their speed, their impact and the extent of the corrections they engender. These have changed the way business and government affairs are conducted. And there is no indication that this new climate will change; in fact, it will probably intensify.[51]

A trend that may prove particularly dangerous is the growing pressure on the U.S. dollar. The dollar and the Federal Reserve Board are being called on more and more frequently to act as lender of last resort. The Mexican crisis is a good example. Speculation against the overvalued peso touched off a flight of capital and led to the collapse of the secondary government securities markets. In a single day, Mexican banks found themselves with 20 percent of their loans unrecoverable, and they were unable to make any new loans. President Clinton overrode the U.S. Congress to support the peso, citing the importance of Mexico's financial health for NAFTA. He dipped into (in fact, almost exhausted) the United States' reserves for stabilizing the dollar. In 1991, Lawrence Summers (who, before he became a member of the Clinton administration, was free to express himself more openly) summed up the dangers that a financial crisis would present to the dollar from the viewpoint of Federal Reserve policy:

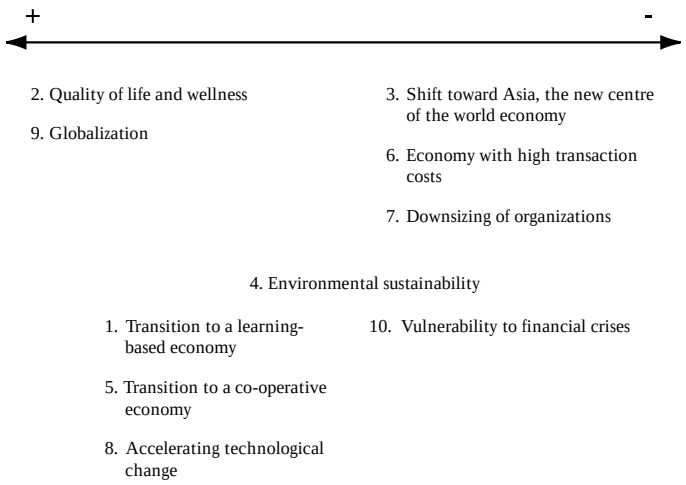
> *The crucial point here is that the international dimension greatly complicates the problem of the lender of last resort. While sufficiently activist lender-of-last-resort policies can always contain a liquidity crisis, there is a risk that they will set off a currency crisis*.[52]

This kind of pressure on the dollar as the main international currency echoes the situation in 1931. Until then, the British pound had been the currency of international commerce. The crisis precipitated by its fall led to the end of multilateralism, the rise of protectionism, a return to currency areas and, with the collapse of world trade, a worldwide recession that affected all countries. A number of parallels and a number of differences can be seen between the current situation and that of the 1930s; in some ways, however, the present situation is worse than the past.

The risks of a financial crisis and the pressures on the U.S. dollar can only increase. Canada will probably be profoundly affected by these developments.

FIGURE 5

CANADA'S POSITION RELATIVE TO THE MAJOR TRENDS DESCRIBED



Multinational banks, pension funds and mutual funds are totally integrated with Wall Street and are heavily involved in short-term loans. This means they are subject to speculative waves and exchange rate fluctuations. The heavy debt load carried by every level of Canadian government (exceeded only by Italy among the industrialized countries) leaves us vulnerable. Policy initiatives aimed at slowing the increase in this burden by reducing current budget deficits are overly timid, and they are based on the premise of renewed growth, which we feel is ill-advised. The high debt-to-assets ratios of Canadian corporations leaves the country extremely vulnerable to a financial crisis. The apparent solidity of financial institutions is partly illusory, given their exposure in the real estate market. Recession persists in Canada, and it may well deepen as the U.S. economy experiences a downturn. New Zealand recently weathered a financial crisis, and it would be naive to believe that Canada is immune or protected. The financial crisis that gripped Mexico from December 1994 to January 1995 occurred when the country was carrying a debt load lower than that of some Canadian provinces. So far, bankruptcies, although they are much more numerous than in the past, have not reached epidemic proportions, and a payments system crisis has been avoided.[53] The Bank of Canada has not yet had to rescue any major financial institutions nor expand liquid assets to support the most heavily indebted provinces.[54] In recent years, economists have been warning about the pressures on our still overvalued dollar. Where does Canada stand relative to these trends?

CANADA'S SITUATION

THE CANADIAN ECONOMY FARES quite well in terms of knowledge, but its competitive position is not so good in terms of transaction costs and flexibility. Also, the country is geographically poorly situated relative to Asia, the emerging centre of the world economy. While it is well positioned to take advantage of globalization, Canada remains extremely vulnerable to financial crises. Most Canadians today enjoy an excellent quality of life but this is threatened by dimming prospects for future economic growth and by pollution. Most of our strengths and limitations today are the outcomes of our past development.

Our development model has gradually changed from an economy based on transportation infrastructure supplying far-flung wealthy cities with goods high in value but low in weight and volume (as described by Harrold Innis) to an economy whose comparative advantages lie in energy-intensive manufacturing and export.[55] More recently, Canada's comparative advantage in North America appears to be shifting toward knowledge-intensive activities.

In the past, Canada's development always depended largely on international financing and government loans. Although the Canadian banking system has gained greater independence and its transnationals have grown in international stature, its tight integration with the world financial system and the country's growing debt level make Canada very vulnerable to any financial or economic upset in the United States. Built on a strong central government and on resource-based industries and financial institutions that are vertically integrated, the Canadian economy has as yet seen little in the way of vertical disintegration, and this structure has bequeathed it a legacy of high transaction costs. Canada's traditional cultural mosaic does help promote relations with certain foreign economies, but it also contributes to higher internal transaction costs.

The 10 trends identified here must be accepted and exploited, and their negative effects must be mitigated. Canadians' prospects can be summarized by drawing an analogy with the situation of Scandinavians in the early part of this century. Industrialization in Scandinavia got under way late, well after Europe had ceased to be the main centre of industrial development. Scandinavia carried on with industrialization while keeping its distance from European conflicts and world wars. Following its own distinct development path, in the 1930s it invented the welfare state. It soon became dependent on world markets, not simply European markets. Similarly, industrialization arrived late in Canada, after the rise to dominance and world hegemony of the United States. In the coming century, when the centre of the world economy has shifted from North America to Asia, Canadians will have the opportunity — and this is their niche — to become world suppliers in technology and services that are environmentally sustainable and knowledge-rich. But a radical change will be required to insulate Canada from the economic difficulties and financial crises of the United States, the collapse of its world hegemony, and the dethroning of

the U.S. dollar as the main currency of international exchange. This vision and this strategic direction are fraught with uncertainties, which we shall discuss in the following section.

THE UNCERTAINTIES MARKING FUTURE SCENARIOS

IN THIS SECTION, we review the main uncertainties about the future. The outcomes of these uncertainties lie outside the control of economic actors — neither governments, industries nor any single country can determine them. We shall construct scenarios around the most extreme outcomes of these uncertainties.[56] Although the actual outcomes will in all probability fall short of the extremes discussed here, exploring the worst-case and best-case scenarios can be helpful in deciding the best courses of action. At the end of our discussion of each uncertainty, we shall suggest the kind of infrastructure investment that could help to improve Canada's situation.

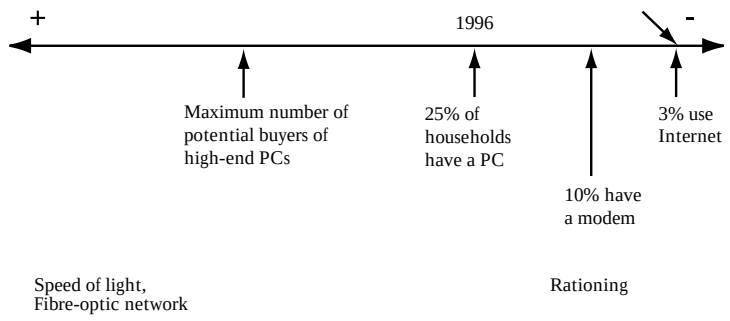
UNCERTAINTY 1: ACCESS TO THE GLOBAL COMMUNICATIONS NETWORK

WE STILL DO NOT KNOW WHAT THE ARCHITECTURE and standards will be of the future global system for communicating knowledge. We also do not know what applications will emerge to bring greater value, better performance and lower costs to the Internet.

Access to the Internet depends, among other things, on the capacity of service providers and the rates they charge. Estimating the total support capacity of service providers would be, to say the least, premature. A number of private corporations, some of them very large, have recently entered the market. This market is obviously lucrative and relatively easy to enter. That is why there are still many providers connecting to the system for free (the "free-rider" phenomenon). If the system were to become a pay service, the number of entries would undoubtedly drop. Yet new entries are needed to increase capacity. What will be the elasticity of capacity supply of service providers relative to

FIGURE 6

INTERNET ACCESS



profits and rates? What will be the elasticity of demand relative to providers' rates? How will access to the Internet be affected by the economics of Internet supply and use, of access to service providers and services? These questions are impossible to answer. Rates and standards are not yet regulated. The shares of public and private service providers and the use of the network are also not yet regulated. Regulation may not even be necessary, or it may become essential. These considerations will depend on the main uses that potential users make of the Internet.

In 1996, virtually the only activities that clearly put to use the Internet's speed and low cost are the location and downloading of bibliographic information, as well as international scientific collaboration (through Internet forums). Most other uses remain experimental, are forms of technological snobbism or fetishism,[57] or reflect the fact that some economic actors are able to "free-ride" the system. Most of the applications available on the Internet remain more practical with other technology (for example, it is cheaper to buy a television to watch movies than to equip a home computer with the necessary equipment to watch movies over the Internet). The usefulness of other Internet applications will depend on the development of ancillary support technologies, particularly software ("intelligent" search engines, for example). This uncertainty has led to a significant rivalry between competing Internet systems and standards.

The consequences of this uncertainty have direct implications for participation in the learning-based economy. The Internet can potentially not only provide access to new international libraries, but also promote the exchange and transfer of knowledge among research groups. The crucial question here is who will have access to these facilities. Figure 6 presents our view of the state of the Internet today. Because this technology is relatively new, it seems to hold limitless promise. Yet so far, only a small number of people are able to use the Internet: well-educated, often professional, computer-literate, generally young, owners of relatively sophisticated home computers (and modems), with access to a service provider and to the necessary software. And of these people, only a handful know how to use the Internet effectively.[58] Useful applications remain quite limited.

Beyond search functions, the Internet can become useful to the learning-based economy if — and only if — the user is *actively* involved in an *interactive* manner with other *people*. It has been conclusively shown that learning cannot be passive. Yet the system as it stands today is entirely passive; the user is simply a *spectator*, with his or her interaction limited to an algorithmic dialogue with the machine.

The average citizen in 1996 finds little utility in the Internet — even less than the French find in their Minitel. Even the efforts of media-oriented companies to develop spectator-oriented Internet uses have yet to produce any applications that could not be provided more cost-efficiently by other delivery systems.

This type of access is limited physically — at a very basic level — by the potential market for high-end personal computers, by computer training, and by the capacity and rates of service providers. Other potential Internet access providers, such as the cable TV companies, still have little in the way of content, applications and technical know-how to offer a clientele that is still not very computer-literate.

Nonetheless, the Internet as a technological platform is generating its own investigative research synergy. With no demand to meet and with no guarantee that there will ever be such a demand, software engineers and electronic equipment manufacturers are developing anciliary technologies as options without expecting any immediate economic return. This means that the Internet may become an important tool of the learning-based economy, particularly for access to knowledge from abroad.

If this comes to pass, a larger share of the population may gain access to the learning-based economy. In a recent report on employment strategies,[59] however, the OECD argued that new electronic, computer and telecommunications technologies could lead to enhanced productivity or to social exclusion.

Imagine the following scenario: over the next few decades, the Internet continues to be accessible only to well-educated and computer-literate professionals using high-end personal computers. This would lead to the creation of a large underclass of people — the majority of the population, in fact — with no possibility of using the Internet as a learning tool. The result: the larger part of human capital would rapidly become out of date. If we assume that communications firms manage to develop economically viable Internet-based applications, then for one part of the population it is likely that vicarious experiences via computer (as is already the case for television) will simply become an alternative to the mediocre programming of television networks. And if the ranks of the underemployed continue to swell, we shall see a population that spends most of its time living vicariously as mere spectators.[60] Little has changed since the advent of television. We shall discuss the reactions of the various actors in the following section.

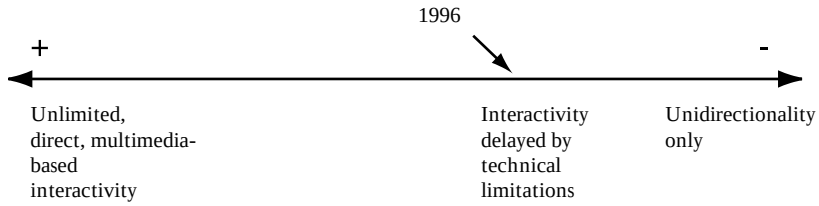
UNCERTAINTY 2: INTERACTIVITY?

HERE IS A KEY QUESTION: How much activity on the Internet will be interactive, and how much will be one-way? When television was being developed, the original designs called for interactivity; however, TV has become the epitome of unidirectional transmission. The Internet, on the other hand, has already proven its potential for interactivity (something that only the telephone has had up to now); an example is IRC (Internet Relay Chat) which, as long as the network is not congested, makes direct conversations possible over the Internet.[61]

This feature of the Internet brings to mind the metaphor of the global village. A number of international communities have formed or established

FIGURE 7

INTERACTIVITY



themselves on the Internet.[62] However, most Internet use at present remains one-way. "Surfing" and electronic mail (e-mail) are nothing more than one-way reading or sending of information. Libraries, research resources and global directories can be created in this fashion, but this is simply an extrapolation and quantitative development of research and access to electronic data bases. Given the cuts being made in all areas, including education (and library services), these developments are welcome. But they can make only a modest contribution to the learning-based economy by facilitating the international dissemination of information.

What role will interactivity eventually play on the Internet? Depending on the final outcome of the interactivity question, the effects of and on the Internet (and on all global communications systems) will vary considerably. Yet we have no idea what this outcome will be.

A host of people are now working to develop the architecture of the Internet, and they will be joined by many more. It is tempting for economists to apply Adam Smith's "invisible hand" metaphor to this example of a technological system, but it must be admitted that the Internet will be fashioned by many, quite visible hands, some of them more powerful than others.

What will be the relative roles of the telephone, cable and media companies? When will the narrow window of opportunity offer the propitious moment to introduce a regulatory body? How will this regulatory body perceive the needs of Internet users, and what can and should be considered a "reasonable" set of criteria for public regulation?[63] As in all struggles between rival systems, a number of visible hands are involved, and a few consortiums may well end up setting the standards, intentionally or otherwise. This is a volatile, competitive process, and there is no way of telling what the outcome will be and no guarantee that the best solution will win.[64] Still-evolving technological systems thus remain a major source of uncertainty for the future.

The two uncertainties associated with the worldwide communications system — interactivity and access to service providers — are related to each other. People's ability to interact in real time is directly proportional to the

total capacity of service providers but inversely proportional to the number of people using system resources. The parameters of communications systems affect economic agents, their welfare and their well-being in a variety of ways.

Would investment in Internet infrastructure be useful and desirable at this time? If so, should public funds be used? If private interests (groups, clubs, etc.) find economically useful applications for the Internet, they should also have the needed incentive to invest in larger server capacity and in the development of ancillary software and technologies. Accordingly, private interests that benefit from this infrastructure without investing in it (the "free-rider" problem) should pay for the use they make of the system: their use contributes to system overload, thereby blocking other users and hampering direct real-time interactivity, even slowing the growth of interactivity. In our opinion, public investment in Internet infrastructure should not be considered except in the case of public goods, in which the private sector is slow to invest in any case. The question of public goods on the Internet raises a host of issues, including security, privacy and the whole question of individual freedom versus collective rights. Ethics is another area of public interest that governments prefer to forget. Public investment should also be aimed at supporting direct interaction on the Internet, since it is this mode of use that promotes genuine democratic public debate and encourages us to learn and to participate in the creation of new knowledge.

In concrete terms, the Internet's function as an international research network should receive support. While it is already clear that some public money will go to support libraries, a part of these funds should be directed to facilities to link the libraries of the world together, even with one-way surfing and information retrieval.

In general, it is still too early to foresee the ways in which Internet applications might serve the public interest. Activities that should be considered for public funding include research, the experimental development of content and software, and the evaluation of the system as a whole. Expanding the knowledge horizons of public agents may thus encourage them to develop useful applications. In particular, it would useful to investigate (and to experiment with) ways for communities to profit from the public forum capabilities of the Internet. Research programs of this kind should be experimental.[65]

A word of warning is in order here. The federal and provincial governments are just now reacting (in a rather knee-jerk fashion) to the prospect of Canada's becoming a nation of computer illiterates. They are looking for a fast technological fix — hooking up all the schools to the Internet — to solve a very complex problem. The approach may even backfire. The overhasty introduction of computers into schools has sometimes simply turned teachers and students off computers. Installing hardware to allow Internet access could have a similar effect, discouraging people from using the network. Any experimental introduction of the Internet into schools should be prepared in three stages. First, educational activities and content need to be developed, for which the

Internet is, pedagogically speaking, the ideal medium. Second, teachers need special training. Third, a voluntary pilot project should be carried out, with a control group using a different technology for comparison purposes. As with any innovative approach, the applications, users and problems encountered must be identified before the technology is adopted.

These initiatives, which require modest investment and cannot do harm, will help ensure a positive outcome to Internet development. They constitute one viable investment option among the many potentially necessary measures.

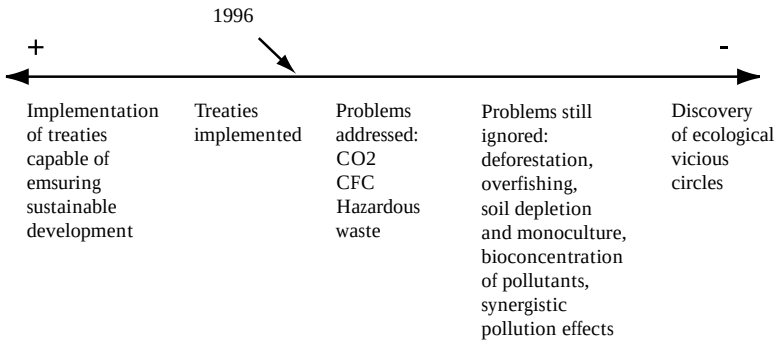
UNCERTAINTY 3: THE SPATIAL-TEMPORAL DIMENSION OF THE ENVIRONMENTAL CRISIS

THE ENVIRONMENTAL CRISIS IS A MAJOR SOURCE OF UNCERTAINTY. Not only is there no consensus on the causes of ozone layer depletion and global warming, but environmental science is only starting to enable us to understand the interdependencies among ecological systems. The long-term effects of the different products we currently use — including fluorocarbon substitutes — remain unknown.

We do not know whether international agreements will actually make sustainable development possible. Some recent estimates predict that the 1996 scenario proposed in the Brundtland Report (*Our Common Future*, World Commission on Environment and Development) cannot be achieved without foreign aid on an unprecedented scale, and there is no guarantee that even such a massive influx of aid would actually result in sustainable development.[66] In addition, environmental priorities change, imposing unpredictable pressures on transportation systems, several industries (energy production, distribution and use), and urban infrastructure (sewers, wastewater treatment, waste manage-

FIGURE 8

THE SCOPE OF THE ENVIRONMENTAL CRISIS



ment and landfill). Environmental uncertainties appear to be those most difficult to adequately assess.

In terms of investment, six classes of requirements emerge from the foregoing scenario:

1. As a major world polluter (see part one), we must accept our responsibility to clean up the environment.

2. Where possible, all production processes must be made environmentally sound.

3. Facilities that cannot be made safe must be replaced or mothballed.

4. We must address a major challenge: developing clean and economical substitutes. This may help us establish links with the NICs by exporting or collaborating on the development of these substitutes; CIDA and IDRC could play a role here. These projects would likely require investment in new lines of research. For example, the economic revitalization project for east Montreal — particularly the Rosemont area, where Canadian Pacific's old Angus switching yard is being converted — presents a challenge as well as an opportunity.

5. After we have made some progress in this area, our international voice on behalf of regulation and development will enjoy new credibility, and we shall be able to play a bigger role in the search for sustainable development. Such initiatives will likely lead to the creation of new international institutions. Since Montreal is the headquarters of international agencies associated with NAFTA and the United Nations, this represents not only a challenge but an unparallelled opportunity.

6. To meet the environmental crisis, new institutions must be established. Our democracies, the heirs of the Age of Enlightenment, are built on the principle of individual rights and, occasionally, collective rights. But there is no provision in democracies for technological choices.[67] Such choices are made on behalf of the authority and rights of either owner-investors or citizen-users. When it comes to the environmental impact of these technologies, however, the two visions are at odds. It is thus necessary to set up public forums to debate these issues, and the obvious setting is the place where these technologies are used and where the environmental problems are rooted.[68] Public hearings have been tried on an experimental basis in certain communities and cities. While broad consensus has not always emerged from such exercises, there has usually been agreement by large majorities. To ensure that decisions follow a democratic process, the final step in these public

debates should be a referendum on the resulting government choices. This measure would *institutionalize democracy* and empower citizens to shape their immediate environment. Otherwise, all the decisions will be made by technocratic institutions, which are myopic (if not blind) giants. Their choices will arouse opposition among citizens of the various communities affected and will lead to technological inefficiency and wasted investment.

The six points presented here are potential avenues for examining the current environmental crisis. This issue will only gain in importance as the crisis starts to affect the existing system of international trade, perhaps triggering a return to trade-bloc-style protectionism.

UNCERTAINTY 4: INTERNATIONAL GOVERNANCE AND REGULATION

A MAJOR SOURCE OF UNCERTAINTY is represented by the international arrangements and treaties governing the rules of international behaviour, international institutions, and what Kindleberger calls "international public goods." This applies to issues such as pollution, intellectual property, privacy and international trade. Some of these issues are new (pollution and privacy, for example) and bases for agreement have yet to be established. But that is not really our concern here. Other issues have deep historical roots, marked sometimes by controversy (e.g., intellectual property) and sometimes by consensus (e.g., commercial rights). It is this latter group we are concerned with here, particularly international regulations on world trade, since the outcome of these issues will affect the scope and impact of market globalization.

The terms of references of the postwar treaties are almost completely out of date. The 1949 General Agreement on Tariffs and Trade (GATT), for example, refers exclusively to trade in commodities, whereas the majority of trade these days (excepting farm goods and textiles) involves foreign investment, services, knowledge, migration, and so on. The Bretton Woods accords and the gold-convertibility of the international currency (the dollar) virtually all ended in 1972 with the unilateral measures adopted by the Nixon administration (see Trend 10, above, and Uncertainty 5, below). Since then, financial speculation (with its tax-free profits) has escalated and financial markets have become much more volatile. Moreover, there is no generally accepted theory on what conditions favour mutual and dynamic gains from trade liberalization (other than static gains from freer commodity trade). Thus there is no real benchmark for international relations.[69]

New international regulations must be drafted for the learning-based economy. New multilateral accords on issues relevant to the knowledge-based economy are needed. The Uruguay Round and the World Trade Organization have made some attempt to address these issues, but the results are confused and inconsistent. For example, the Uruguay Round Subsidies Agreement

appears to conform to the general approach of mutual gain through trade liberalization. It stipulates clearly that R&D subsidies are still allowed. This agreement abrogated the 1986 Tokyo Round's Aircraft Manufacturing agreement, which had been passed in response to lobbying by Boeing, McDonnell-Douglas and Airbus with the support of the Department of Commerce in Washington and the European Commission in Brussels. On another front, the Agreement on Trade-Related Intellectual Property Rights (TRIPs) is, in the view of several experts on trade policy and law, a dangerous protectionist precedent. The legal foundation of this agreement is very weak, luckily, making it virtually impossible to implement. Instead of following the tradition of *reciprocity*, well established in international law (according to which countries make mutual concessions on their commonalities and eventually converge toward one another), the TRIPs agreement derives from the *internationalist* tradition (abandoned ages ago in international law) in that it overtly requires[70] signatory countries to establish patent laws according to common general principles. The legal foundations of intellectual property are themselves fairly shaky.

Lastly, the restrictions placed on the use of technical knowledge in multilateral trade agreements can in no way be justified in terms of mutual welfare.[71] On the contrary, the experience of the past 40 years indicates that a large part of world economic growth is due to first Europe's and then Asia's efforts catch up to foreign technology. Given that, in a positive-sum game (see Trend 5, above), the firm that shares its knowledge is the firm that learns the most in a process of exchange,[72] knowledge sharing should be liberalized and encouraged. Even though the patent system contributes to the dissemination of technological information among all countries, unless mandatory licensing clauses are instituted, the rights of large firms (particularly the multinationals) and the restrictive power granted them can slow the adoption of foreign technologies at the local level.

The relative failure of the Uruguay Round to establish the international playing rules for the learning-based economy indicates that the entire multilateral system currently in place needs to be overhauled.

Uncertainty regarding international rules stems from the fact that the world economy is no longer dominated by a hegemonic power, but has evolved into a multipolar structure. The United States is now backing away from its leadership role, and the new economic leaders — Japan and Germany (or Europe) — are reluctant to assume the mantle. In addition, the United States has embarked on a protectionist tack — in opposition to the system it itself helped to build.

The main danger faced by the multilateral liberalism ushered in by the GATT in 1969 comes not from the NICs[73] but from the government of the United States itself. The 1988 act of Congress known as "Super 301" stipulates a punitive tariff of 100 percent. This is a short-sighted attempt by the United States to use its market size to encourage its domestic business lobbies to "extract unilateral, unrequited trade concessions from others" in an illegal and

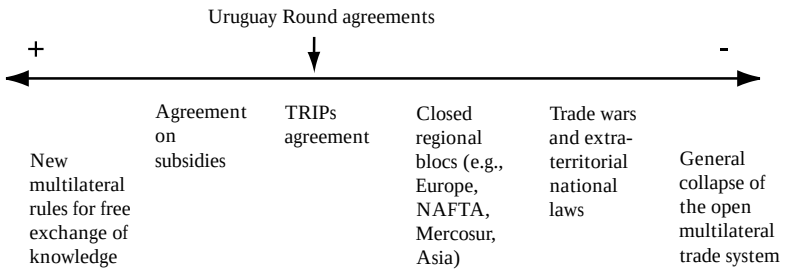
discriminatory manner that contravenes the Most Favoured Nation clause (Articles I and II of the GATT fundamental principles). Clara Hills, the U.S. Commissioner of Commerce, had made assurances that this act, at the discretion of the United States, would never be invoked against GATT regulations.[74] Nonetheless, this aggressive unilateral approach by the Americans was recently revived, resurfacing in extra-territorial legislation (introduced by Senators Helms and d'Amato) aimed at countries and firms trading with Cuba, Libya and Iran.[75] This policy direction threatens the stability of the international rules of the game, particularly since it is advanced by the party that remains, after all, the leading global economic power and the largest market in the world. The United States is also the architect, promoter and enforcer of the open multilateral trade system.

The enforcer not only is failing to apply the law, but is also undermining the very laws it helped to create. The result may be the collapse of the rules of international trade.[76] Were a trade war to start today, it would rage virtually unimpeded. Regional trading blocs dominated by different currencies (the dollar, the yen, the ECU or the German mark) could form if the advantages enjoyed by members of these blocs are not extended to outside parties. In fact, some aspects of the NAFTA are protectionist with respect to Asian competitors. Figure 9 sums up the extreme scenarios.

It is obviously in the best interests of Canada, a small country dependent on imports and exports, for multilateral free trade to be maintained and extended. Yet Canada's manoeuvring room to support this development is limited because of the small size of its domestic market. That is precisely why Canada must collaborate with partners. For example, it should actively work toward constructing and developing a broad-based coalition to defend and extend the open multilateral trade system.

FIGURE 9

UNCERTAINTIES LINKED TO INTERNATIONAL TRADE RULES



This idea worked for the Cairns group in the area of agriculture, but Canada should consider allying itself with other groups on other issues. For example, the European Union has adopted a more liberal position than the United States on TRIPs and compulsory licences. In the civil aircraft manufacturing industry, for instance, Canada has more in common with Indonesia, Brazil and China than with the United States and Europe. Alliances with rising world economic powers would prove to be one of the best possible long-term relational investments once these countries are ready to promote an open system of multilateral trade. In any event, it would be prudent to diversify our alliances in order to reduce our dependence on our immediate neighbour to the south, in light of its susceptibility to protectionist pressures. Given Canada's featherweight importance and its proximity to the United States, it only makes sense to avoid a confrontation we are bound to lose so that we can stand firm on key issues that are essential to our distinct existence.

From this standpoint, strategic relationships should be developed with east and south Asia (Japan, China, Indonesia and India) and with Mexico and Brazil. Of course, efforts currently under way will not bear fruit immediately, and may never do so. Another investment question has to do with our ability to play a more active role in international organizations concerned with trade, other forms of exchange, property rights, standards of environmental sustainability and privacy laws — areas that are evolving rapidly at the international level.

The uncertainty discussed here has some risky ramifications for exchange markets, a subject examined next.

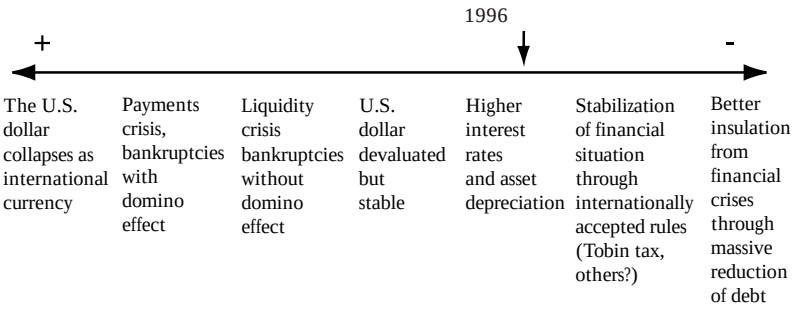
UNCERTAINTY 5: FINANCIAL UNCERTAINTIES

THE 10TH TREND DESCRIBED IN THE FIRST PART of this study was the increasing volatility of asset markets, interest rates and exchange rates. The extreme scenarios are depicted below.

At one extreme is a scenario strikingly similar to the situation in the 1930s, when a financial crisis deepened into economic depression with the rise of regional currency areas that were protectionist in nature. The scenario at the other extreme is a reduction in our vulnerability through a massive reduction in national debt. In the middle, the various types of change (interest rates, value of assets, liquidity crises, etc.) are arranged in more or less arbitrary rank and order. If even a handful of large organizations in the United States and Canada were to go bankrupt, the central banks would have to expand the cash supply, leading to a revival of inflationary pressures (which are almost nonexistent in Canada). This would in all likelihood provoke a devaluation of the dollar. Given the very active role played by central banks since the 1930s as lenders of last resort, devaluation would become all the more probable if a payments crisis were to erupt following some major bankruptcies, creating a domino effect.

FIGURE 10

SCENARIOS RANGING FROM FINANCIAL CRISIS TO STABILITY



In the beginning of part four, we discuss the need to ease budgetary constraints through debt reduction in order to allow infrastructure development. This would not only make such investment possible but also — and this is the main message of this section — reduced public debt would certainly help insulate Canada from most of the negative scenarios. It is instructive in this regard to look at the worst-case scenarios and imagine the unimaginable. In the first part, we noted the growing tendency toward financial instability. This is not only the view of financial experts; it is also the considered opinion of an internationally famed economist and one of the architects of postwar institutions, Charles Kindleberger. Similar warnings have been sounded by the neo-Keynesian Hyman Minsky[77] and by a prominent member of the current Clinton administration, Lawrence Summers, who has already been cited here. Awareness of the various aspects of financial instability highlights the importance of reducing our vulnerability. Yet since the 1987 financial crisis on Wall Street and the 1995–96 Mexican crisis, very few steps have been taken to ensure that these events do not repeat themselves.

Merely a rapid rise in interest rates would threaten pension funds, leading to an immediate depreciation in the value of their shares. At the same time, social stress would intensify, the financial system would lose credibility and social cohesion would be eroded. A steep depreciation of the U.S. dollar, even in a controlled manner, would inflict a substantial shock on our domestic markets and our exports to the United States (which remains by far our most important export market), unless the Canadian dollar is devalued in step.

None of these scenarios is desirable, but they may be inevitable. Even so, their effects can be mitigated if we reduce our vulnerability by decreasing our heavy debt load.

We do not know of any infrastructure development that would further this goal, but we are not financial experts. Most of the measures we are contemplating are associated with other policy areas. For instance, equity in the rules of the game should be re-established by taxing financial transactions (on the capital or volumes involved) at the same level as industrial activities.[78] Unless such measures are undertaken, an increasing part of our capital and talent will continue to be siphoned away from activities and investments that create jobs in industry and the services sector. In fact, infrastructure investment may be needed specifically to monitor electronic financial markets. However, we can only hope that the Bank of Canada is sufficiently motivated and equipped, and able to finance these investments itself.

Which scenarios are the most probable is a matter of opinion; optimism and pessimism do not enter into it. In any event, there are so many visible and invisible hands, both human and institutional, and so many natural factors involved in shaping the ultimate outcome that it is futile to try to predict what will happen in each of the scenarios we have identified. There are some obvious feedback loops that can be identified by looking at systemic interdependencies between the uncertainties. For example, trade wars and protectionism could make it difficult to implement environmental agreements, since some of the key natural factors would become next to impossible to control. A currency crisis accompanied by the collapse of the U.S. dollar could lead to regional protectionism. Vicious circles such as these are not easily stopped. On the other hand, the power of the emerging communications system could be harnessed to counter the environmental crisis. Further, changes can be made to the nature and direction of the impact of certain subsystems on others: while the speed of the global communications system promotes financial instability, this could be changed by putting appropriate control and taxation mechanisms in place. The existence of positive feedback loops, such as self-regulating and self-reinforcing processes, could be enough to increase or diminish the probability that some negative scenarios will come true.

THE PROBABLE REACTIONS OF ECONOMIC AND SOCIAL AGENTS TO THE VARIOUS SCENARIOS

HAVING EXAMINED THE MAJOR TRENDS AND UNCERTAINTIES, we now turn to the reactions of actors. Here we enter increasingly into the realm of speculation, based on our judgment and impressions. We shall explore what we think are the most probable reactions of the various actors to the extreme scenarios presented in the second part of the paper. We begin by identifying the groups of actors selected and then examine their reactions.

- The reactions of *consumers, families and individuals* should vary according to their education, occupation, and access to the Internet. They will be directly affected by all the uncertainties.

Various industrial activities will be affected in different ways by the uncertainties, in turn affecting different levels of infrastructure. We shall distinguish the following activities:

- The *communications sector* is a particular case, since it provides the infrastructure for the global communications system, which lies at the heart of the new emerging technological system. This sector will be affected by environmental uncertainties, by uncertainties concerning international regulation, and by financial uncertainties.
- The service industries furnish the applications and content needed to exploit the technological opportunities offered by the system. They will also be affected by financial uncertainties.
- The emerging *environmental industry* is growing rapidly. It will be affected by the extent of the environmental crisis, obviously, but also by other uncertainties.
- The *knowledge-based industries* exhibit a very wide range of needs and reactions. They will all be affected in varying degree by the regulatory and financial situation. Some of these industries will be hurt by the environmental crisis, and others will be more sensitive to problems connected with the global communications system.
- Because of their high transaction costs, the *short-life-cycle products industries* will require much more infrastructure investment in communications and training than will the *standardized-technology industries*, and will benefit much more from this investment. While both these industries will be affected by the financial and regulatory situation, the short-life-cycle products industries will be more sensitive to developments in communications and the environment.

- *The resource, energy and transportation industries* will feel the full impact of environmental uncertainties and, to a lesser degree, the uncertainties related to competing communications systems. Naturally, they will also be affected by international financial turmoil and by international trade regulation.
- The *education sector* will see its way of operating strongly affected by the outcome of rivalry between communications systems. Its objectives and priorities will be influenced by the environmental crisis. The financial situation is already having a significant impact.
- *Health care services* may be affected by distance-spanning technologies (the Internet, videophone, voice recognition systems, etc.). They have been ravaged by the financial crisis, and the environmental crisis is already making itself felt through an increasing incidence of pollution-related diseases. The other uncertainties will likely not affect health care services.
- In the first section, we noted that we awaited the emergence of *new actors and sectors* in response to environmental necessities and competition centred on transaction costs. We expect to see new kinds of organizations that are more successful at reducing transaction costs. We anticipate a resurgence of *communities*. By "community," we mean any group formed on the basis of similarity and close interaction. Similarity may be rooted in mutual trust, culture, language, interests, values and beliefs, activities, objectives — anything that reduces transaction costs within the community relative to transaction costs outside. Communities may be international or local (like Silicon Valley, Emilia Romagna and other industrial districts). The new community players are rewriting the rules of the game: they organize and regulate themselves, and they do not need or want any outside involvement. Some communities are closed, exclusive, even discriminatory, and others are open and interact with other communities; sometimes their members can even belong to more than one community at a time. Communities will likely be affected by all five uncertainties.
- The various l*evels of government* (municipal, provincial, federal, international) will be deeply affected by the financial and regulatory situations. They will also have to deal with environmental issues, but they will be relatively insulated from — or at least not much affected by — the outcome of the rivalry between communications systems, which they have no real control over, practically speaking.

Table 3 summarizes how the various actors will be affected or not affected by the outcomes of the five scenarios stemming from the uncertainties described in the second part of the paper.

TABLE 3
POSSIBLE IMPACTS OF THE OUTCOMES OF THE VARIOUS UNCERTAINTIES

Uncertainties Actors	Access to Internet	Internet interactivity	Ecological crisis	International regulations	Finances
Consumers	Little	Little	Yes	Indirect	Yes
Communications	Yes	Yes	Indirect	Yes	Yes
Services	Yes	Yes	Indirect	Yes	Yes
Knowledge-based	Little	Yes	For some	Yes	Yes
Standardized production	No	No	Yes	Yes	Yes
Short-life-cycle products	Little	No	For some	Yes	Yes
Energy-based	No	No	Yes	Yes	Yes
Education	Yes	Yes	Yes	Little	Yes
Health	Little	Yes	Little	Little	Yes
New agents	Yes	Yes	Yes	Little	Yes
Governments	Little	Little	Yes	Yes	Yes

For the actors selected, let us now consider various possible impacts and reactions associated with the most extreme scenarios, compared with the five uncertainties described in the second part of the paper. Since financial instability and crisis affect all actors, we shall begin there and follow the table in reverse order. Thus we begin by thinking about the unthinkable.

A FINANCIAL CRISIS OUT OF CONTROL

MORE THAN HALF A CENTURY OF RELATIVE ECONOMIC tranquillity (since the 1930s) has banished the spectre of recession that has haunted the generation that grew up in the affluence of the postwar years. It is useful to contemplate the consequences of the collapse of the U.S. dollar and the return of currency areas, and even the less extreme scenario of cascading bankruptcies accompanied by a payments crisis. In such a situation, the open multilateral trading system would not survive. We would be forced to return to trade zones. Since a large part of trade today (much more than in the 1930s) takes place *between* trade zones, recessions would evolve into depressions. Economic rules of conduct could be applied only in these restricted areas. In the end, only the zones most affected by global ecological damage (plus AICs) would be likely to address environmental problems, but their response would be limited by recessionary budgets. Irrespective of the outcome of the current rivalry among communications systems, there would be a drop in usage and traffic volume on the global communications system, although key international contacts would probably be maintained despite the prevailing isolationist mood.

Some provincial governments would probably go bankrupt, and the Bank of Canada would have to step in as lender of last resort. If the Bank should decline to fulfil this role for one province, the Canadian federation would probably be irreparably damaged (and would no longer have the luxury of wallowing in constitutional debate). The debt would have to be monetized, leading to a devaluation of the Canadian dollar. While this situation would provide some boost to international exports, it would generate significant inflationary pressures, since Canada would remain dependent on its imports despite international protectionist sentiment. With the lower fiscal base, education, health care, social services and pension payments would be dramatically reduced. The number of business failures, which have multiplied since the early 1990s, would increase and culminate in the collapse of several large corporations, burdening several sectors with high debt-to-equity ratios, including real estate, education, and transportation equipment.[79] All industries and services would suffer from protectionism and recession, although the traditional resource-based industries, which have the advantages of a monopoly, would be less affected. In fact, they might even be in a position to handle orders previously satisfied by imported products.[80]

There would be two groups of consumers: those who had been able to retain some viable assets and a basic income, and those who had been left des-

titute (the majority, including retired persons with no pensions). A social crisis would be inevitable, and the political system could be at risk. In such circumstances, some people would turn to the parallel black-market economy, using community-based arrangements. As contacts with the outside world diminished, communities would tend to turn inwards and become hostile to outsiders.

In this situation, investment for the future would be limited to community support for subsistence income programs — recalling the Depression or even the Soviet gulags. Governments would be asked to intervene more often but their means to do so would be more limited; there would be a real risk of authoritarianism.

That is, of course, the pessimistic scenario. Let us now examine some more optimistic prospects.

ACHIEVING RELATIVE STABILITY BY REDUCING OUR DEBT AND OUR EXPOSURE TO FINANCIAL CRISES

LET US ASSUME THAT WE FIND THE POLITICAL WILL TO ELIMINATE, or at least dramatically reduce, our debt (a number of ways to do so have been suggested; see part four of the paper). This would insulate us from a potential financial crisis. Assume also that mechanisms to ensure financial stability are found and put in place at the international level, eliminating the chance of uncontrolled financial crises such as that of October 1987 or the 1994–95 Mexican crisis. A significant reduction in our debt load, if accompanied by a reduction in the individual tax burden proportional to the decline in the cost of servicing the debt, would stimulate economic recovery, foster growth, provide employment for most of the labour force, and free up funds for infrastructure investment. It would then be possible to address ecological problems and to equip ourselves for the learning-based economy.

Even though governments would have restored order to their finances and gained credibility, they would still be monitored to head off any return to the days of profligate borrowing. This would be necessary because governments would have increased capacity to intervene, even though there would be less need to do so. Commitments to pensions, health care and social services would be met in a lower-pressure atmosphere. There would be a higher level of trust in society and institutions, which would facilitate collaboration and problem resolution. The knowledge-based industries, particularly services, communications and the environmental protection industry, would experience strong growth. Since innovative areas of strong growth have high transaction costs, communities would flourish. Given the high level of trust, communities would be stimulated by outside contacts without incurring any risk, as long as these communities remained open and receptive to interaction with other groups. In these circumstances, it would be possible and logical to make infrastructure investments, even on a unilateral basis, to clean up and restore the environment.

Investment in education would also be practical, perhaps promoting interactivity not only among researchers, but also between students and teachers.

The preceding outcomes condition the options available under subsequent scenarios. Let us consider the example of the open multilateral trade system; if an out-of-control exchange rate crisis were to occur, that system would be impossible to maintain. On the other hand, the multilateral trade system might collapse even without an out-of-control financial crisis, although protectionism would be more easily reversed. In this case, the depression should be less severe, unemployment lower, cuts to social programs less drastic, etc. Another extreme case would be a return to worldwide protectionism, but with Canada and its provinces protected from the effects by having eliminated their debt. In this case, infrastructure investments would be possible, but would lose effectiveness by focusing on traditional, non-competitive, energy-intensive or resource-based activities. As we saw, an uncontrolled financial and monetary crisis is very likely to trigger the collapse of the open multilateral trade system (without the reverse necessarily being true). But let us not dwell on such a pessimistic scenario. Instead, we shall examine the more positive prospects for the regulation of international trade (obviously, a positive outcome is in no way guaranteed, even in a stable international financial climate).

EXTENDING THE OPEN MULTILATERAL TRADE SYSTEM TO THE LEARNING-BASED ECONOMY

IMAGINE THAT TRADE LIBERALIZATION can be broadened to include services (particularly knowledge-based services) as well as more generally to include knowledge exchange. This would encourage international co-operation to solve environmental problems. In particular, freer sharing of AICs' knowledge with developing countries should allow them to reduce their investments by directing them toward environmentally sustainable technologies. In addition, this co-operation could be extended to development of new technologies and experimentation with them, and could reduce the fixed and operating costs associated with these alternative technologies. International co-operation would create a demand for a more interactive, efficient and inexpensive international communications system. The capacity, user-friendliness, applications and content of this communications system would be improved, allowing the system to reach and serve more users.[81]

Even if both an uncontrolled financial and monetary crisis and the collapse of the open multilateral trade system are avoided, there is no guarantee that international environmental agreements will be implemented. The world ecological system (biosphere, hydrosphere, lithosphere and atmosphere) evolves largely independently of human action, even though it can be strongly affected by it. Even if the outcomes of financial and trading uncertainties are positive, there is still a risk of a grave environmental crisis.

EMERGENCE OF A NEW ENVIRONMENTAL CRISIS

ECOLOGICAL VICIOUS CIRCLES APPEAR UNPREDICTABLY. They may well heighten tensions between the advanced industrialized countries and the newly industrialized and developing countries. The latter group will increase the pressure on the developed world for international aid, and the industrialized countries will put pressure on the poorer nations to use clean technologies (almost always new technologies). These pressures would have repercussions (that can be overcome) on the international trade system and on the financial system. International research and co-operation would immediately be called for, which would heighten awareness that "we are all in the same leaky boat." The pressure for co-operative research at the international level would make it essential to have a more efficient, totally interactive system for international communications with greater support capacity.

Consumers in certain regions would be more affected than others. For example, global warming would probably hit coastal cities more severely than inland tropical cities, while acid rain would most strongly affect northern regions. As occurred with the Love Canal, environmental disasters must be expected, wiping out the assets of an affected region and triggering mass outmigration; entire communities may be affected. Unable to meet their own needs, they would be dependent on outside assistance. Public resources would necessarily be involved. As with natural disasters — the recent Saguenay flood comes to mind — human solidarity will not allow financial constraints to get in the way. When money is necessary and must be found, other expenses must be put off or funds for assistance monetized. Similar to epidemics, such events put stress on the health care system and on the industrial sectors that must respond to the problem.

In the event that new ecological vicious circles emerge that threaten human survival, the extent and timing of the problem are crucial. What is the time frame for action to control or reverse the problem, if this is indeed possible? What impact will initiatives to reverse the situation have? Each problem has to be responded to differently. That is why basic investment in multidisciplinary infrastructure for ecological research, environmental monitoring, education and regulation is so important.

ENVIRONMENTAL SUSTAINABILITY THROUGH IMPLEMENTATION OF INTERNATIONAL AGREEMENTS

IN THE PRECEDING SECTION, we mentioned the results of simulations showing that the objectives of the Brundtland Report on sustainable development are unlikely to be achievable, given the current pace of change and efforts already undertaken to this end. As an act of faith, let us assume that these objectives are met. This would leave the same level of pressure on the trading system as now, so that the demands made on research, health care, public funds, and the

various industries and services involved would remain modest. Consumers would be reassured. Overall, this scenario does not teach us much; even though it is rather unlikely, it merely leaves us with the status quo.

Let us examine the most probable (and most instructive) of the favourable outcomes. Imagine that currently endorsed environmental reforms prove inadequate to ensure sustainable economic growth. This would lead to extensive industrial change, particularly in energy-intensive industries involving natural-resource exploitation, processing and transportation. The replacement of fossil and nuclear fuels by renewable energy sources would in all likelihood accelerate. In particular, short inter-city air travel, which causes noise and air pollution and is also overcrowded, would be replaced by electric light-rail systems. Pollution levels in urban areas would probably necessitate that some percentage of vehicles become electric-powered (as is already the case in California with the Clean Air Act). There are at least three reasons to believe that the time has come for this conversion. First, the almost byzantine complexity of internal combustion engines means that each R&D dollar invested to improve their fuel efficiency has less marginal value. Second, the main impediment to the electric car is the battery, and some practical new solutions are now available. Last, as a result of rapid urbanization (and the phenomenon of the suburbs), 90 percent of trips last under an hour, so that the independent range of electric vehicles is no longer a competitive barrier.

The above developments will necessitate extensive infrastructure investment. High-speed trains would require new rails. Electric vehicles would require a new maintenance and service system. Most of these costs would be borne by industry and consumers. Canada has the technical know-how to make this transition right now, but it is questionable whether the political will yet exists to push North America to make this technological transformation.

We shall now look at the uncertainties associated with the global communications system in general and the Internet in particular (which is still really at the prototype stage). While we consider access and capacity separately from interactivity, remember that smooth and efficient interactivity is impossible with an inadequate support capacity. We examine here one negative and one positive scenario.

LIMITED ACCESS TIME AND HIGH ACCESS COST: TOWARD A PASSIVE-SPECTATOR SYSTEM

THE INTERNET IS ALREADY EXPERIENCING CONGESTION. Surfing and interactivity are subject to a response lag, which increases the pressure on server capacity. With public funds becoming scarcer, private industry should become involved in the development of server capacity. But currently the industry concentrates on providing unidirectional services, where the user is a passive spectator. We cannot predict today what applications will be economically viable (after

eliminating the "free-rider" effect). With the number of users doubling each year, it is conceivable that users' on-line time may be rationed or that high rates will be imposed to discourage heavy use and limit access for some users.

Should this occur, the usefulness of the system for research would be limited, affecting research in ecology and other areas concerned with international governance. The growth in the speed of international financial transactions would also be affected, even though transactions were virtually instantaneous even before the introduction of the Internet and before service firms started investing in communications systems. The saturation of the Internet would slow the creation and transfer of knowledge, hamper the dynamics of a positive-sum game, and increase transaction costs in the learning-based economy.

Moreover, the "telespectator" role of the consumer would become more firmly entrenched. Given a high unemployment rate (as under the negative scenario discussed earlier), the time spent living passively and vicariously in an on-screen virtual-reality world would increase. Knowledge-based industries, services, education and training would expand less quickly. On the other hand, the media would enjoy a lucrative market with the freedom to set rates. Communities would have little chance to create public forums to foster interaction. Governments would play the role of regulators in a monopolistic context. The new system could be used as a means to exert social control over a fragmented populace of passive spectators shut in their homes. Governments and corporations alike might be tempted to flirt with authoritarianism.

Greater opportunity for direct human interaction at the international level: toward the global village

This utopian dream has fascinated many people. However, these visions have always relied on non-existent technologies to shape the layout and design of the new technical and organizational systems. Unfortunately, these visions, particularly those put forward by engineers and technocrats, are often fixated on the distant future without precisely envisaging the stages and paths by which to arrive there. Such visionary proposals do counterbalance the short-sighted perspectives of financial players, who focus on current technology and ignore the possible effects of investment in technical knowledge that cannot immediately turn a profit in the marketplace. An understanding of the preconditions for possible changes can be gained by combining these two visions.

Any expansion of international human interaction from a voice-based medium (the telephone) to a medium that carries text, images and eventually multimedia content would promote democracy and the learning-based economy, which are inherently interactive. Interactivity would require a substantial increase in server capacity; with the number of users doubling annually, simply preserving the current level of interactivity will require an increase in system capacity. To allow more space for human interactivity, the medium must not be overwhelmed by advertising in all its forms.

Imagine that at least a few global villages manage to grow and prosper. With direct, real-time interactivity, the speed of interaction on research projects would increase, aiding in particular multidisciplinary research oriented toward problem solving. Health care and ecology, among other fields, would benefit from these advances. In terms of disseminating research results, the impact would be restricted to unidirectional access to scientific journals over the Internet. The impact is minimal because research results are disseminated through a closed, controlled system.[82]

The impact would be much greater if the interactive communications system eventually includes a visual dimension (as in videophone, video-conferencing and multimedia). Adding a visual dimension to long-distance human interactivity would facilitate active learning at all levels of the education system, and would open up new horizons in the health care system.

Students in one area, aided by an instructor, facilitator or tutor, would be able to attend lectures and participate in question periods with eminent foreign professors.[83] The primary and secondary education systems would be required to instil better computer-literacy skills. In the medical field, doctors would be able to observe patients' symptoms as they experienced them. The time lapse between the appearance of the symptoms and the prescribing of treatment would diminish significantly. Health care costs, particularly hospital costs, could thus be reduced. The supplier-customer relationship in short-life-cycle product industries would be supported and facilitated in the areas of planning, design and testing of products, as well as for customized production to suit the special needs of clients.[84] Most of the knowledge-based industries would ultimately benefit from this technology.

Communities would benefit enormously from such a system, particularly if their members are geographically scattered. If the members of a community preferred to meet in the same physical location, the interactive medium could provide a public forum for those unable to be present because of distance. The system would create a kind of "virtual meeting place." Interaction among communities would also be enhanced. On the other hand, interaction of this kind would only be possible by keeping the number of forum participants relatively small through some kind of representation (internal to the community to guard against unwanted intrusion).[85] This suggests that these new forms of governance would rely more on smaller units. Top-heavy, hierarchically structured bureaucratic organizations (governments in particular) would play a less important role. If the principle of subsidiarity holds, a number of organizational and regulatory functions would devolve upon the groups concerned. Several levels of government may find their role reduced to simply co-ordinating relations among the various communities in order to foster consensus or clear majorities on matters pertaining to general welfare.

Obviously, the positive scenarios outlined above all depict the best possible outcomes, while the negative scenarios describe the absolute worst. The reality will fall somewhere between these two extremes. But where exactly?

Will it be closer to the best of worlds ... or to a modest utopia? Will we avoid the worst-case scenarios? These are the questions everyone would like to see answered. To a certain, limited degree we can influence the shape of the future, particularly through infrastructure development. That is the topic of the next section.

Controllable Variables That Should Be Subject To Public Policy

Here we shall discuss only those variables over which the various levels of government in Canada can exercise control. Infrastructure development cannot be considered separately from other policy instruments. For example, regulation and tax incentives can often substitute for costly infrastructure investments, making it possible to achieve the same outcome at lower cost. A policy framework will be proposed (see Figure 11) in which infrastructure becomes an instrument of both demand and supply policy, affecting economic activity, growth, welfare and well-being.

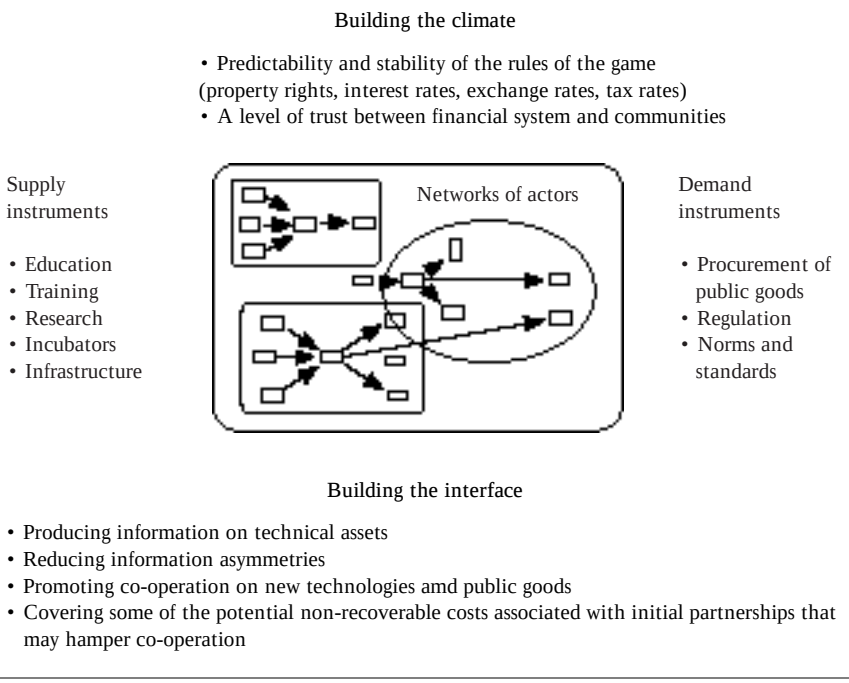
This policy framework is based on the following premise: the creation of new wealth and new knowledge occurs through networks of agents working together toward a common objective on a concrete project. In an economy with high transaction costs, depending on the project, agents working co-operatively utilize the trust and communications facilities that already exist among communities (metropolitan areas, industrial complexes), or else they construct new networks on the basis of existing ones. There are a number of things governments can do to foster this process: they can guarantee a stable financial climate — assuming their debt load is not too onerous — or they can finance the supply of public goods (including infrastructure), stimulate demand (particularly through infrastructure projects), and develop the interface between agents when markets are not equal to the task (including organizing joint infrastructure projects). Just as economic choices must be evaluated in terms of their opportunity cost, all policy instruments must be assessed against their alternatives.[86]

What is the place of infrastructure in this policy approach? The state of infrastructure affects the conditions or climate in which economic transactions are carried out. Infrastructure projects influence demand. They may also enhance the supply of inputs. But, as we shall argue later, the main means available to public authorities to encourage infrastructure development is establishing policies to develop the relational interface among agents and to build bridges between new collaborators. Public services should aim to promote co-operation.

A word of warning to the reader, who may support one or another of our suggestions regarding infrastructure development without necessarily agreeing with our reasons. We shall make recommendations for infrastructure development, which will be highlighted in boxes. These recommendations will be grouped according to the extent that they meet four objectives for the 21st century: fostering participation in the learning-based economy in order to guarantee continued wealth creation; building trust in order to reduce transaction costs; maintaining and improving Canadians' quality of life; and repositioning Canada internationally in response to the shift in economic power and global priorities.[87] We shall end by proposing some general principles for deciding who

FIGURE 11

POLICY FRAMEWORK FOR A TRANSACTION-INTENSIVE ECONOMY THAT RESULTS IN A POSITIVE-SUM GAME



should finance these infrastructure investments, how governments should be involved (if they should be at all), and how fast and how far these investments should be pursued.

We begin by establishing a precondition. Up to now, infrastructure investment has been growing in this country, at least in absolute terms (see Figure 1-A). This does not necessarily mean that infrastructure itself has expanded, because the effectiveness of investment can vary. Are we collectively rich enough to undertake such collective investment? If the answer is no,

FIGURE 12

RATIO OF NET DEBT TO GDP AT FACTOR COST OF FEDERAL, PROVINCIAL AND MUNICIPAL GOVERNMENTS, 1977-95

then the entire question is moot, and we must find alternative sources of investment funds and other ways to make infrastructure more efficient. Looking at the ratio of net debt to gross domestic product over time (see Figure 12), it is clear that we cannot continue to live beyond our means; if we do, financing new infrastructure development will make the threat of financial disaster more likely to come true.

THE PRECONDITION: REDUCING OUR BUDGETARY CONSTRAINT

IN ANY DECISION, the economic calculations begin with this accounting question. At the present time, our lack of funds represents a major constraint.

Lenders are generally favourable to infrastructure investment, because it serves to increase the value of assets. There is no shortage of funds on financial markets. As a borrower, Canada is less risky in terms of its debt load than Rwanda or Bosnia, perhaps even than Italy (although Italy has recently managed to gain control democratically of its political crisis and has started constitutional reform, something that Canada has not managed to do). Assuming constitutional debate finds a peaceful solution and does not dissolve into confrontation, Canada should continue to be a good prospect as a borrower.

Financing infrastructure development through new borrowing, however, is dangerously short-sighted. Incurring higher debt to finance infrastructure would increase our vulnerability to financial crises, make the economic climate even more uncertain and jeopardize past commitments to citizens and immigrants regarding health care universality, minimum income (through pensions,

unemployment insurance and social assistance), education and culture. If these commitments are called into question, all levels of government agree that there is a real risk of "the meltdown of the social glue"[88] (and so of an increase in transaction costs). The idea of more borrowing to finance infrastructure development ignores current problems; it is like sticking one's head in the sand, and it would push the country toward an impasse.

While we need infrastructure investment to prepare for future generations, we should not borrow to do so. We must find the bulk of the funds internally, by getting our financial house in order. This is one of those rare points on which Canadians agree: the debt problem is a top priority. But the solutions so far offered are too timid and only address current deficits, that is, what is being added to the debt. The only concrete success so far is a slowdown in the rate of increase of the current budget deficits. The accumulated debt load continues to rise. We estimate that the total public debt in Canada is already a multiple of the country's total assets.

The boldest strategies so far offered are *to maintain constant the nominal debt* and *to gradually reduce the deficit*. Both these scenarios assume that Canada will emerge from the difficulties via significant and sustained growth — something that is far from certain. Neither of these strategies directly targets the accumulated debt. All these strategies assume that the days of job-creating economic growth (in other words, growth that is more than simply financial) will return and will outweigh any recessions. Yet Canada has been unable to achieve sustained growth even as the U.S. economy continues to post strong growth. Thus these assumptions seem unrealistic. Given that Canada's external debt is growing more rapidly than its GDP, these solutions assume that the country can generate much higher trade surpluses in the future than it does presently.[89]

Since the 1970s, the world (except for Asia) has been mired in a long-lasting recession, although there have been brief periods of growth in some of the AICs and some more sustained periods of growth in the NICs. The countries at the centre of the last long period of economic growth no longer have the internal structural dynamics needed to generate strong and sustained growth. While politicians and economists are loath to accept this diagnosis, even though it at least explains the behaviour of our economies over the past 20 years, they agree that it is dangerous "to put all our eggs into one basket" by betting exclusively on rapid and sustained economic growth to create future jobs. A better guarantee for the future would be a much more substantial reduction in our accumulated debt.

Even if the current deficit were to be eliminated and the accumulated debt were to be stabilized at its current level, growth-based strategies would leave retired people vulnerable to a sizeable devaluation in their assets in the event of a financial crisis. The health care system — a cornerstone of the Canadian identity and something that Canadians wish to preserve at all cost —

as well as other social services would be drastically reduced and no new investment in infrastructure would be possible.

Accordingly, we must investigate more radical solutions to reduce or eliminate the accumulated debt of Canada's federal, provincial and municipal governments in order to free up money to invest in infrastructure development. Let us look at what funds would be forthcoming under various proposals.

1. In a working paper,[90] Raymond Théorêt and Gilles St-Amant propose transferring the federal debt to ordinary Canadians, who would assume the full cost of the public debt and would show more responsibility. This method also has the merit of freeing the provinces from the shackles of the federal debt. The current creditors of the federal government would have to finance the increased borrowing needs of individuals. Were this solution implemented, the anticipated worsening in government finances over the next few years would be headed off, perhaps even reversed. What's more, Canada's public accounts would start to show budget surpluses. Income taxes could then be lowered, providing a boost for economic activity. Each person would contribute according to his or her means. This contribution would take the form of a monthly payment similar to an insurance premium for the preservation of public services (such as universal health care). The federal government's capacity to borrow to finance infrastructure development would gradually grow.

2. At the Quebec economic summit in March 1996, Norbert Rodrigue, chair of the Conseil de la santé et du bien-être, along with Jean-Pierre Bélanger and Paul Fecteau, presented a proposal to reduce Quebec's debt.[91] Inspired by a Manitoba initiative, it called for the creation of a "Quebec Heritage Fund" to pay off the debt of the government of Quebec. The objective would be to collect some $60 billion over the course of 30 years, after which time the debt could be paid off in its entirety. This fund would be created by legislation and built up through special tax contributions graduated according to taxpayers' ability to pay. The fund would be managed by the Caisse de dépôt et placement du Québec. The end result would be an upgrading in Quebec's credit rating, according to the Minister of Finance. The borrowing capacity of the government for infrastructure development would probably increase after the 30 years had passed, and Quebec's capacity to self-finance these investments would also increase, while taxpayers' disposable incomes would decline.[92]

3. In an article entitled "Privatisation rétroactive des RÉER : une solution aux problèmes de nos gouvernements," published in the December 1995 issue of *Revue Gestion*,[93] Luc Vallée suggested repaying one seventh of the federal debt out of income tax deductions granted under

TABLE 4

	Federal or provincial debt?	Who will pay?	How?	Basis of method	Main advantages	Main disadvantages	Ability to fund infrastructure development
Théorêt St-Amant	Federal.	All Canadians.	Monthly payment similar to an insurance premium to preserve public services.	Various scenarios for percentage of debt reimbursement and interest rates are used to obtain a monthly payment over 25 years.	• Public debt better managed; • Monthly payment similar to an insurance premium; • Eventual reduction of individual income taxes; • Canadians made more accountable; • Should promote economic growth; • Commitment of government not to increase debt and to reduce spending.	• Substantially more debt for households; • Social consensus difficult to obtain.	Gradual for the public sector and eventually for households as well.

TABLE 4 (CONT'D)

	Federal or provincial debt?	Who will pay?	How?	Basis of method	Main advantages	Main disadvantages	Ability to fund infrastructure development
Rodrigue Bélanger Fecteau	Provincial.	All Quebec residents.	Annual tax contribution.	Three scenarios for annual contribution and contribution growth are used to obtain various debt-to-GDP ratios over 30 years.	• Compared with direct reduction of borrowings and debt (as in Alberta and B.C.), this proposal allows investment in high-yield securities. • A fund managed by the CDPQ would be high profile and its performance easy to monitor. • Since the fund would be managed by an agency distinct from government, citizens would have more confidence in it. • It would be easier for them to control debt reduction. • This approach could lead to an improvement of perhaps four levels in the Quebec government's credit rating, with a drop in financing costs of up to 35 basis points.	• The direct reduction of spending and debt, in contrast to the fund method, produces an immediate and rapid fall in current debt, which translates into lower borrowing needs. • This method offers savings in management and operational costs, whereas the fund method carries extra costs and requires a greater tax effort. • Another significant disadvantage of the funds approach is that it could lead to uncertainty about yields on predominantly international securities, not to mention the incompatibility between the role of governments and this essentially speculative measure.	• Immediate improvement in capacity to self-finance public investment. • After 30 years, an improvement in borrowing capacity. • Reduced investment capabilities for individuals.

TABLE 4 (CONT'D)

	Federal or provincial debt?	Who will pay?	How?	Basis of method	Main advantages	Main disadvantages	Ability to fund infrastructure development
Luc Vallée	Federal.	RRSP holders.	Tax deductions on income generated from non-deductible payments.	A reduction in the federal debt of $100 billion and an annual decrease in budget deficit of $7.5 billion.	According to Luc Vallée: • Would reduce taxpayers' deductions. • An equitable measure, in contrast to abolishing RRSPs or capital gains exemptions, which are unfair to those who have not taken advantage of them. • Would reduce debt and eliminate provincial deficits. • Would improve the credit ratings of Canada and the provinces. • Would reduce investors' fears of a resurgence of inflation. • Would allow long-term interest rates to fall further. • Would reduce the current-account deficit, reducing our dependence on foreign capital and reassuring investors.	According to Jean Lanctôt: • Lack of synchronization with registered employer pension plans. • Lower tax rate at retirement than at the time the deduction is claimed. • Does not take into account people's retirement planning. • Runs counter to the goal of encouraging people to take responsibility for retirement planning. • Privatization could have unforeseen negative consequences on retirement incomes. • Making the measure retroactive is unfair. • Financial markets would be destabilized. •Risk that governments would use "fresh" money instead of reducing spending.	• Immediate increase in the federal government's borrowing capacity. • Then, gradual improvement through reduction in borrowing requirements.

the RRSP program. He proposed making the measure retroactive in order to utilize all deductions plus accumulated interest held in RRSPs since their creation. (A number of objections to this proposal were raised by Jean Lanctôt[94] in the March 1996 issue of *Revue Gestion*.) Yet even reducing the debt outright by $100 billion would leave the federal government with a far higher debt-to-GDP ratio than that imposed by the European Community on its members,[95] although it would improve the government's ability to borrow to finance infrastructure development.

There is no point in discussing future public investment in infrastructure unless funds for such investments are freed up one way or another. The three solutions mentioned here — the only ones, to our knowledge, that directly address the accumulated debt — may not even be enough. It may be that the only course is shock therapy, an expression currently in vogue at the International Monetary Fund and the World Bank.[96]

In addition to our inherited debt problem, we also need to take a long, hard look at the institutional framework or the rules of the game that have permitted, even encouraged, the development of this heavy mortgage on our collective future. A number of possibilities should be examined, including financial reform and modifications to the Bank Act. In particular, the legislation does not favour the creation and development of business banks — investment-oriented banks that are able to undertake long-term infrastructure investment projects. Having examined our precondition, we shall now make some concrete infrastructure investment proposals based on four selected objectives.

OBJECTIVE 1: TO INCREASE OUR PARTICIPATION IN THE LEARNING-BASED ECONOMY

OUR CAPACITY TO ABSORB AND ASSIMILATE NEW KNOWLEDGE basically depends on our educational attainment and training. Economists call the accumulated stock of knowledge human capital, and they have found that sustained growth and development depend to a large extent on a high and rising level of human capital.

According to developmental psychologists, a large part of human knowledge is acquired in the first five years of life. Yet we still have no education system in place for preschoolers. Day care centres employ underpaid staff who, although they may be qualified as day care technicians (when they're qualified at all), are rarely trained as educators. All too often, children are left to their own devices to develop their abilities. The experience of at least two countries is pertinent in this regard. In France and China, children learn to read, count and develop a broad range of skills (gross and fine motor, musical, spatial, social and reflective) before they reach school age.

- A preschool education system for young children (aged 2 or 3 to nursery school).
- Provincial institutions for training preschool educators.

These two initiatives are complementary. The success and relative usefulness of the first depends on the second. The impact would be far-reaching: children who learned to read in preschool and Grade 1 could learn faster; the primary school system and its teachers would be able to raise the level of their programs; new jobs for specialized educators would be created; at least one new institution would be created in every province[97]; all children aged two to three would benefit from the same education, regardless of their family's income, educational attainment and culture. (We shall see later that an educational infrastructure initiative such as this should be co-ordinated with an urban renewal program. Preschool institutions must be located in residential areas close to both single- and two-parent families, so that both home and school settings reinforce the incentive to learn.)

The second weak link in our education and training system is at the secondary level. This is not a matter of infrastructure; there are already enough buildings (which are often underused), and enough teachers. However, secondary schools do not offer complete environments for life and learning, with integrated activities aimed at the multidimensional development of adolescents. The problem clearly lies in the curriculum, pedagogy and design of secondary programs, and in teachers' low social status and lack of power within the community. To address these problems, excellence programs need to be developed, tested in pilot projects, and then implemented following evaluation, adjustment and social choice.

- Evaluate and implement programs to raise the quality and performance of secondary education in order to reduce drop-out rates and eliminate functional illiteracy.
- Evaluate and implement programs of excellence in order to increase the skills and basic knowledge of secondary teachers and to enhance their social standing.

Again, the two investment objectives noted above are complementary. One of the benefits would be to create several successful examples showing how the secondary education system can be improved, and the development of both adolescents and teachers enhanced.

The third weak link in our education system — and the authors as, respectively, teacher and student would like to stress this point — is the lack of pedagogical training and, more important, professional development for college and university professors. Right now, there is nothing. University professors are automatically assumed to be experts in pedagogy; it is as if a music lover who had listened to opera all his life were suddenly sent on stage to sing a complete

opera! We shall not go here into the self-defeating nature of the university incentive system, nor the possible improvements in teaching quality.[98] Provincial governments could offer grants conditional on the reform of these incentives and recruitment practices. Universities are being increasingly called upon to broaden their functions (training, instilling knowledge, advanced research, resolution of social problems).[99] But it is not obvious that a single institution can fulfil all these functions simultaneously. Perhaps the time has come to redesign our institutions. Infrastructure investment is clearly not the best tool for the purpose — at least not until a comprehensive review has been undertaken.

To gain access to knowledge and to reposition ourselves internationally (specifically, to penetrate the new Asian markets) we must train the next generation to be multilingual, particularly in Asian languages (first Mandarin, the most important language of Asia, but also Japanese, Korean, and Malay) as well as Spanish and Portuguese.

- Establish training institutions for modern languages.
- Establish two institutions for training language teachers.

Private language schools only meet part of the need for multilingual training, and only in a superficial way. Their rates are so high and their courses so short that for many young people learning a foreign language remains an impossible dream. All universities should have their own language schools to facilitate contact with other cultures, make it possible to carry out research and pursue studies in other countries, and in short to develop the skills needed to interact with these countries. Universities should not relinquish this area to the private sector (after all, it is quite lucrative). We believe that the reason they are doing so today is the university incentive system (we offer this hypothesis as language students). For example, if publishing an article on China garners more academic recognition than teaching Mandarin, then everything associated with this foreign culture will have greater priority than training in its difficult language. The wisest course would probably be to set up independent language training institutes, like professional schools. At the same time, at least two institutions for language teacher training should be founded, with an emphasis on language pedagogy. One would be for Anglophone students, the other for Francophones. Both the language teaching and language teacher training institutes could be set up in collaboration with similar organizations in other countries. This would facilitate immersion programs, teacher exchanges, and so on. The Canadian International Development Agency (CIDA) could assume some of the responsibility and costs associated with such a project.

As we noted earlier, at present the three levels of education do not inculcate basic computer skills. We feel that simply installing large numbers of computers in schools is not productive. It would be better to develop ways to use computers and the Internet in classrooms, and to integrate these technologies

into pedagogical and professional development programs. Infrastructure investment in research, development, testing and evaluation to demonstrate to students the unique possibilities offered by computer technology would probably achieve the desired aims at essentially the same cost.

- Invest in research, experimental development and evaluation of software and Internet technologies for pedagogical and professional development programs, with the aim of developing useful applications.

In our opinion, what is limiting the use of the Internet is, first, a lack of content and applications and, second, a lack of functional computer skills. At this stage, we do not need more experiments, because the necessary skills undoubtedly already exist in Canada. But the fact that the various levels of government are spending large sums of money on computers indicates that infrastructure investment priorities need to be reviewed.

Knowledge grows with greater openness to the world, and scientific research requires international interaction. The Natural Sciences and Engineering Research Council (NSERC) has now discontinued its special financing for international programs involving international consortiums. Other programs allow researchers to pursue similar activities should they wish to do so. In other words, no special incentive was judged necessary to promote the international character of research. However, we must ensure that part of the Internet can support international networks by providing real-time human interaction; this is more a question of regulation[100] than of infrastructure development, in our opinion. Public investment should not be used to promote interactivity until the possibilities of using regulatory instruments to this end have been exhausted. Software performance must be improved, however. Compatibility of computers and software is in the public interest, since this facilitates communication among people. And the development of better hardware and software must be parallelled by the development of gateways to link new and existing facilities so as not to squander the benefits of past investment.

- Experimental development of “intelligent” tools facilitating searches, the dissemination of information and human interaction on the Internet in order to promote the participation of students, teachers and researchers in international research networks.

The most appropriate policy instrument here is regulation. A substantial part of the costs could be assumed by the software industry, with public agencies, scientific establishments and universities as their clients. Perhaps in this particular case, public funds could be used to help develop and launch the process, leaving the marketing to the private sector.

Similarly, in the area of technology, there is no shortage of data bases for keeping abreast of technological progress (on the Internet and elsewhere). What is lacking is the software to consult these data bases. They are still hard to use, user-unfriendly and rather inefficient. While large corporations may have the funds to acquire effective tools, small business and aspiring entrepreneurs are generally left out. Much of this information is already available through expert networks. These communities of experts could organize themselves into self-supporting technical consultation groups, offering small firms preferential rates partly financed by governments. Here again, the initial investment would be on an experimental basis with a limited number of client-users, in order to develop the necessary tools and to reduce the non-recoverable costs of organizations responsible for delivering these services. Canada, it must be noted, fulfils this role less well than Japan, Brazil or France ... which may lead to an eventual technological gap.

- In co-operation with industrial associations, establish user-friendly and "intelligent" technology monitoring systems in order to allow small and medium-sized businesses and individuals (who are potential entrepreneurs) to keep abreast with the latest technological developments and to disseminate information on their own projects.

We have seen that it is the lack of useful applications that is limiting the use of the Internet. Even after adequate application technologies are developed for this purpose, an access problem may develop. By that time, however, guaranteed access to the system may be a thing of the past. When applications are available for all segments of the population, access may make the difference between participation in or exclusion from the learning-based economy. Potential access may be improved by establishing standards for computer performance and, especially, for systems compatibility. Suppliers of new systems (including software) must try to preserve the value of legacy systems by providing gateways to link the data bases of yesterday to the systems of tomorrow.

Regulation may help bring this about. New-system suppliers, too, will benefit from most of the externalities offered by such gateways. The CRTC has a central role to play in this regard; it needs to take these considerations into account as well as those related to infrastructure development to guarantee physical access, functional computer access, linguistic access and interactivity. The establishment of regulatory compatibility standards is thus a way to maintain flexibility and preserve future options. Compatibility standards between systems also aim to support and preserve network externalities as well as earlier investment by the agents so as to reap the full benefit of these externalities. These considerations become particularly important given current uncertainty about the global communications system. Two oligopolistic groups (the telephone companies and the cable companies) are vying for the privilege of setting the standards. Governments are not in a position to assess which system

would be better. The public interest (and the network externalities) would be better served by inter-system compatibility and gateways. Public infrastructure investment has no role to play in this regard, in our opinion, and it cannot support the existence of competing systems. Arrayed against consortiums such as British Telecom–MCA–Nippon Electric, any Canadian initiative is doomed to failure.

Yet infrastructure investment in the Internet, even on a modest scale, will be crucial. During the period of system rivalry, public institutions will have only a narrow window of opportunity to act and acquire information. Moreover, opportunities for acting and for acquiring information may not coincide. This means that system rivalry must be closely monitored.

- Finance research on the development of system architecture; manage issues of access, performance, applications, privacy, rights and ethics raised by the Internet and the global communications system, with the aim of opening up more channels for information and more opportunities for public institutions to act effectively.

Investment of this kind can be considered a kind of technology monitoring, but it also seeks to protect the public interest. While a broad spectrum of users will play an important part in the technology monitoring, at least one thrust of the initiative must focus exclusively on public policies and regulation.

Such infrastructure development links participation in the learning-based economy with building the trust needed to bring down transaction costs. Interactivity is a particularly promising avenue for reducing transaction costs, not only for international networks but also for communities whose members are physically distant from one another. Some of these communities (industrial, professional, for-profit organizations, etc.) have the means to finance their own tools, while others (non-profit organizations, etc.) do not. Some may be in a position to assume the costs of operating and upgrading existing systems, but most do not have the resources for developing and testing such tools. Providing these communities with the necessary means will serve the public interest by helping to speed up the learning process and to build a climate of trust.

- Develop experimental “intelligent” software designed to facilitate interactive exchange, with the aim of creating public forums, guiding communities and fostering dialogue between community members.

OBJECTIVE 2: TO ESTABLISH AND MAINTAIN A CLIMATE OF TRUST

A CLIMATE OF TRUST COULD HELP REDUCE TRANSACTION COSTS, maintain a stable institutional framework, and increase the possibilities of interactive learning and co-operation, to facilitate joint creation of new products, new processes and new technological knowledge.

We have already discussed the importance of maintaining a climate of trust in our existing institutions in order to guarantee the respect of past commitments. Universal access to health care provides a good illustration of the difference between Canadian and U.S. values. Recent surveys reveal how important these values are to Canadians: they are considered a priority that outweighs even deficit reduction. And these values are shared by all Canadians, including Quebec sovereignists, Aboriginal people and advocates of centralized federalism — as well as those who favour less extreme constitutional reform options, of course. If this historic commitment is reneged upon, Canadians may lose confidence in their political institutions. A part of the country's social glue will deteriorate — as will Canada's cultural distinctiveness within North America. The resulting climate of mistrust will drastically elevate transaction costs. In our view, governments are "playing with fire" by tampering, consciously or unconsciously, with universality. All efforts to instil a climate of trust will come to naught if we remove the guarantee of universal health care or established rights to retirement pensions, unemployment insurance and education.

In our discussion of the previous objective, we noted the importance of promoting and strengthening democratic governance within communities while fostering interaction among communities. Constructing gateways and making modest investments to promote the use of the Internet furthers these objectives. These are relational investments. In our policy framework, the expanding role of *infrastructure* is accompanied by the development of *interfaces*. In addition to investment aimed at renewing and reorienting education and training, a significant share of investment is i*nstitutional and relational*, because there is a risk that communities, despite their advantages in terms of transaction-cost competitiveness, could slide into an unhealthy inwardness. It is thus important to put mechanisms in place to allow actors from different communities to interact; this is what we mean by interfaces. Relational investments of this kind are likely to be non-recoverable costs. Public financing may thus be called for to ensure that this factor does not prevent these projects from proceeding, and to reduce potential friction between existing communities, and between such communities and new groups of actors. Once these relationships are established, co-operation is possible with little or no non-recoverable costs.

This approach relies not only on the vertical disintegration of government functions (those vestiges of "Big Brother" that are increasingly criticized by citizens) but also on acceptance of the *principle of subsidiarity*, according to which governing should be performed at the lowest level, by the unit closest to

the base, following its own processes of self-management.[101] The current pre-election rhetoric makes passing reference to *subsidiarity*, albeit in a somewhat diluted version. According to Gordon Gibson:

> *It is thus not correct to see subsidiarity as being a principle applicable only to governments. In fact, the first test for any proposed government activity is whether government should be in the particular business at all.*[102]

In the original meaning of the term, governance includes business and public affairs. Many communities are capable of self-governance and are eager for it. In order to downsize administrations in Canada, therefore, a general devolution of functions must take place wherever possible. Without such an undertaking, all efforts by the various levels of government to encourage joint ventures between communities or governments in order to build a climate of trust will simply not be credible.

If the conditions laid out here are met, there are a number of joint projects that can help to build (or rebuild) a climate of trust. Before discussing these projects, we shall look at another important institutional and relational investment that is needed in a world of technological change where the impacts of artifacts can sometimes turn out to be negative.

- In urban neighbourhoods and towns, set up special forums where the various technical alternatives can be weighed by the citizens who will be affected by these choices.

Much of the mistrust and apathy that citizens feel toward today's political processes stems from the fact that they have no part in most of the decisions that affect their day-to-day material lives. For them, the democratic process is not real. For example, the decision to build an incinerator, nuclear station, landfill site and so on is generally not debated during political campaigns. By the time citizens learn about these projects in the press, they sense that the decisions are already made. And these are decisions that directly affect their lives. To help them transcend the instinctive "not in my backyard" reaction, citizens should be encouraged to examine all sides of the alternatives and to participate in the decision-making process.

A clarification is in order. This is not simply a matter of giving communities the right to block projects but of inviting them to participate in the start-up and design phases of the projects, to help identify the needs and define the priorities. In this way the project benefits from the backing of the entire community. The traditional approach of regulation, with mandatory public hearings based on the adversarial principle, should be replaced by institutions that allow *ex ante* consultation and co-operation.

Our governments' failures reflect the fact that in our democracies, the descendants of the Age of Enlightenment, rights related to technical choices

are not clearly defined. These are residual rights. At the same time, we face a legal battle over rights and privileges, one that pits users, clients, local actors (including citizens), promoters and the various levels of government against each other. All our institutions and levels of government set up ad hoc commissions (with their very high transactions costs) to seek out compromise. We suggest that the current institutional crisis provides an opportunity to make democracy more concrete and to integrate citizens into the evaluation and decision-making process for technological infrastructure projects, particularly projects that concern the general quality of life and the environment.

As Mark Roseland suggests, these issues should be dealt with at the local level.[103] Federal and provincial commissions of inquiry — such as the Berger Commission — are too slow to react and too far removed from the concerns of citizens. A number of recent experiments are instructive in this regard. For example, Montreal's Bureau des audiences publiques en environnement (BAPE) co-ordinated a weekend evening television program and public forum on waste recycling. This type of public forum should be made a permanent institution at the municipal level. It should be supplemented by a petition mechanism to allow a certain percentage of citizens to force social assessment of the technical options before a decision is taken. Ultimately, citizens could have the power to require that a particular decision be put to a referendum.

An institution of this kind would serve to integrate citizens into the conception and design, the choice and the implementation of majority decisions. Building bridges between the various communities will involve some high transaction costs, because transaction costs among communities are always high. No technological infrastructure today involves a single community. As an institution for interface, the public forum will help build an atmosphere of understanding and trust among communities. These institutions could look into local issues or examine larger projects.

We shall now examine some collective initiatives that can help build a climate of trust. We shall restrict our attention to projects that are already under way, involving various municipalities or levels of government.

Objective 3: To improve our quality of life and our environment

Among major infrastructure projects, the most important are clearly those that make it possible to maintain and improve our quality of life while tackling some of Canada's environmental problems.

- Establish the infrastructure needed to gradually replace fossil fuel–powered urban transit with electric transportation.
- Put in place an interurban electric-rail system to replace the noisy and polluting aircraft-based system for short-distance travel.
- Extend urban recycling and reuse programs.
- Restore the multiple uses of water resources (lakes and rivers).

TABLE 5

Activities	Problems	Functions
Research	Water pollution	Clean-up
Monitoring and follow-up	CO_2	Recycling
Development	Dioxides (nitrogen, etc.)	Reuse
Experimentation	Hazardous waste	Repair
Testing	Deforestation	Recovery
Demonstration	Desertification	Conversion
Evaluation	Soil depletion	Replacement
Discussion	etc.	etc.
Choice		
Investment		
Operation		
Training		
Education		

The above-noted infrastructure projects are only examples; many other projects would also be worthwhile. They should all be evaluated according to their costs. Their relative priority will vary from one community to another. Each project combines an activity, a function and a specific sustainable development problem.

Each of these projects is necessarily joint. The number of shareholders, levels of government, industrial firms, financial institutions and community groups involved will vary. The experience of meeting goals and fulfilling mutual commitments (even if only partially) will help build capital and develop trust between persons in different organizations or communities, which then can be utilized for future projects. Some of these projects will bring new participants into the labour market.[104] The management of new projects could be gradually ceded to a new institution (unless a suitable one already exists), which would eventually assume complete responsibility for operating the infrastructure, once it is in place and self-sufficient.

Note that the rationale behind these projects was laid out in the previous two parts of this paper. All of these projects are aimed at cleaning up the environment, converting older polluting technologies into ecologically sustainable ones, and improving our quality of life (Objective 3). Bringing them to fruition would benefit all parties concerned.

Projects to improve environmental infrastructure have multiple benefits. The environmental industry is one of the few (along with telecommunications) that can boast consistent growth. It is a new, high-growth industry where Canada is rapidly establishing its reputation. It also has an important advantage over other high-growth industries: it includes not only several knowledge-intensive sectors (control technology, nuclear waste disposal, research into fluorocar-

bon substitutes, etc.) but also labour-intensive activities. It is a sector of job creation. Its growth transcends the dichotomy between an R&D-intensive sector with high growth and a stagnant, marginalized sector that perpetuates poverty.

Improving our quality of life is not limited to eliminating pollution. Most Canadians live in cities or large urbanized areas. These locations are experiencing the dangerous "doughnut hole" syndrome: the city core deteriorates and slides into poverty and criminal activity, and once these forces have seized the centre, they expand outward, eventually reaching the suburbs. This syndrome is not as common in Canada as it is in the United States, where some city centres resemble bombed-out European cities after the Second World War.

It has been suggested that the disintegration of the family lies behind this social deterioration. But that phenomenon is as much a symptom as a cause. The modern nuclear family no longer enjoys a safety net in the form of an extended family or a local community. It is these local communities and urban neighbourhoods that must be rebuilt, by systematically equipping them with facilities for preschool education, social assistance and retirement. Examples like the city of Verdun show how community initiatives can reverse the effects of poverty. And the municipal, provincial and federal governments must allow, if not encourage, the development of neighbourhood facilities to support communities' economic growth.

Canada enjoys a relative advantage over the rest of North America in the quality of its urban life. We must redouble our efforts to maintain and improve the viability of our city centres — the hearts of our cities. Some of the relevant policies here do not require new infrastructure. For instance, suburbanites who use city-centre facilities should contribute to their maintenance and renewal. Automobiles that travel daily from suburb to city centre could be systematically recorded and taxed, without tolls, like the system used for rolling stock for over 10 years.

The changing population structure generates new housing needs. Given the rising proportion of retired persons and the possibility of delivering health care and social services at a distance, it is only logical to leave retirees in their communities and to decentralize health-care delivery mechanisms. The growing proportion of single-parent families is transforming housing needs. Lastly, an increasing number of independent working couples are seeking the integration of their home and working environments. One of the best ways to counter the spread of gangrene in large urban centres and to build or restore a climate of trust is the renewal of small neighbourhoods with their own public areas.

Urban infrastructure in city centres:
Experiment with:

- new forms of housing;
- environmentally sound reconstruction;

- decentralized siting of retirement homes, health care facilities and social services within users' own neighbourhoods;
- neighbourhood public areas.

These initiatives would help attract external investment from knowledge-intensive firms. Such investment capital is now less attracted by the availability of production inputs than by the quality of urban life and amenities for employees, as well as the suitability of transportation, science, technology and education infrastructure. Several Canadian cities present distinctive advantages in this regard within North America.

Another cautionary note must be sounded here. The key to improving the quality of life is reducing social alienation, which is manifested in our society by the high incidence of suicide, unemployment and long-term social assistance, television addiction, drug abuse and crime, particularly family violence. Chronic unemployment leads to intellectual, emotional and physical stagnation, creating an underclass of marginalized and excluded people. Accordingly, we must turn our attention to the problems associated with creating stimulating jobs, with education and with the financing of public institutions.

Objective 4: To reposition Canada

We have stressed the importance of creating modern foreign language institutes in order to benefit from the burgeoning economic growth of the Asian and Latin American NICs. Canada must reposition itself in our evolving world, not simply in geographical terms, but in a much more fundamental way.

When the United States was the main promoter of the open multilateral trade system, Canada profited handsomely from its efforts. This is less and less true now. Even from a strictly intellectual point of view, most U.S. thinkers (with the possible exception of Paul Krugman) who deplore the new protectionism championed by the U.S. Department of Commerce are foreigners residing in the United States (for example, J. Bhagwati and A. Dixit). If Canada is to play a more independent role by defending and extending the open multilateral trade system, it must make its own investments and it must encourage capable intellectuals to articulate the underlying rationale for this international policy thrust. At the same time, new avenues are emerging for international relations, having to do with the exchange of knowledge, ecology, the private sector, cultural rights and the politics of identity, as well as military balance in the absence of hegemony, the continental shift in the focus of the world economy, etc. These avenues must be explored in order to find firm foundations for the existence (or lack) of mutual gains and global welfare — foundations on which to build international policies. To play an independent role in the world, Canada needs interdisciplinary centres of excellence that can attract the world's best researchers as well as the most brilliant young minds, in order to

generate the critical intellectual mass needed to explore the future of international relations.

- Establish interdisciplinary centres of excellence associated with universities, with a mandate to study international relations issues.

The Centre for Human Rights in Montreal, set up by the previous federal government with Ed Broadbent as founding director, demonstrates the usefulness of an independent, multidisciplinary research group exploring policy solutions to problems in order to provide support for foreign policy.

The foregoing points target what we feel are the key areas for infrastructure development. It is not meant to be a comprehensive or prioritized list. In addition, the cost implications of these proposals have not been assessed. Our aim, as requested, is to stimulate debate and discussion about long-term perspectives. We would like to conclude by addressing the following points: Who should assume the costs of infrastructure development? What form should governments' commitments to public infrastructure investment take? And how urgent are these investments?

WHO SHOULD BEAR THE COSTS?

WHO SHOULD FINANCE AND ADMINISTER which new infrastructure projects? In our opinion, infrastructure development should be the responsibility of those groups, either public or private, that benefit from the results. In accordance with the principle of subsidiarity, management should be provided by the authority closest to the user. If a group of potential users (an industrial association, a group of municipalities, etc.) has specific infrastructure needs, it should raise the funds and make the investment itself without straining the public purse. Only when absolutely every facet of society will have unfettered access to the infrastructure should public funding be considered. When infrastructure development by a particular group of actors benefits society as a whole but the sponsoring group cannot profit monetarily from the wider benefit, the group does not take this aspect into account in its investment decisions and will underinvest; in that case, government involvement may be warranted. Responsibility for the project should devolve on the level of government closest to the citizens concerned. This means that the lowest level of government would have the social taxation powers needed to carry out projects requiring public funds, just as it would be responsible for ensuring that projects receive public approval through public hearings, and for social evaluation of the technologies involved.

In the event that the government cannot or will not invest in infrastructure development, the private sector must take over. In the 19th and early 20th centuries, most infrastructure development was made by public-private part-

nerships. It was only in the last 50 years or so that government took over most of the responsibility for infrastructure development and investment.

There are exceptions, however. In southeast Nigeria, for example, there is a flourishing industrial district called Nnewy. Because the generals in power divert virtually all public funds, industries are left to themselves to build the roads and sewer systems they need. If private infrastructure investment can work in a developing nation, then it should work in industrially advanced countries as well.

As vertical disintegration proceeds in current government functions, some responsibilities could be assumed by private interests (as suggested by Gordon Gibson). For example, professional training (accounting, specialized management, engineering, etc.) that serves only one occupation or group of industries should be financed by professional or industrial associations. Only that share of education that has an impact on society as a whole should be publicly funded, such as general education, research, basic science and general engineering. For example, it is clear that introductory training in chemical engineering and all basic research in this field should be financed from the public purse, but the chemical industry is quite capable (and in a better position) to finance specific training in applied research, both in universities and within companies.[105] Even if by some miracle our governments eliminate all their debt and so are in a position to finance these activities, it would be neither logical nor efficient for public funds to be used for this purpose. Use of public money should be limited to helping launch specialized training programs (like Montreal's Centre de calcul appliqué).

The public arena is not limited to public administration and government. Coalitions, associations and alliances, with the support of the public authorities, can do much of what governments used to do but can no longer. Does this mean that the public sector no longer has a role to play? On the contrary, it should foster co-operation on infrastructure projects, provide the catalyst for the formation of coalitions, alliances and consortiums, work to reduce transaction costs between new partners, etc.; it should assign public employees to these tasks, and should establish the relational capital of trust among agents. Without this kind of relational investment in human capital and trust capital, infrastructure projects will never get off the ground.

- Support and encourage relational investment in order to lower the initial transaction costs of possible collaboration.
- Build relational capital in order to establish a climate of trust conducive to co-operative ventures.

Institutional investment of this kind should rely on existing public resources. It should involve no additional spending, but should be based on using resources more efficiently. Such interfaces or bridges can be constructed

by governments at the request of private firms or on the model of a policy to protect public goods.

This approach calls into question the current policies of Canadian governments, which deliberately stand back from the process of wealth creation to act instead as the final arbiter of the public good. Public services should have a pivotal role to play as catalysts or convenors, skilled in creating new solutions to common problems.

If we cannot evolve beyond the current institutional paradigm — confrontation followed by government intervention — we shall inevitably suffer the effects of underinvestment and wasted energy. It is curious, for example, that while Canada is the North American leader in high-speed rail technology, we have not managed — largely because of intergovernment rivalry — to construct a rapid-rail service linking our two main cities.

WHAT SHOULD BE THE CONTRIBUTION OF PUBLIC FINANCES?

IN THE PAST, virtually all infrastructure development was indivisible and massive, involving projects such as railways, airports, dams, etc. But in the age of miniaturization and knowledge-based products, this is no longer true. Economically efficient infrastructure investment takes place in cycles. Public funding may only be necessary to prime the pump, with further investment coming from private interests. The role of public money is thus twofold: initiating and nurturing the process.

Investments should be short-term; in both planning and execution, they should be mainly experimental. After a few years, the results should be evaluated jointly by the primary users and potential beneficiaries. If the parties involved decide not to financially commit to see the project through to completion, the project should be abandoned. Because infrastructure projects represent long-term options for future profit-making activities, the probability of users' abandoning their initial investment is very low.[106] Periodic evaluation of costs over the entire life cycle of the infrastructure, including its eventual disposal, can lead to the abandonment of a project that involves negative externalities. In a world undergoing rapid technological change, where adaptability has become the crux of the process, public funds can no longer be committed decades in advance. The public sector must be able to re-assess its choices ... and change its mind.

HOW QUICKLY SHOULD THESE INVESTMENTS BE MADE?

WE HAVE STRESSED THAT THE MOST URGENT NEED is not infrastructure development but bringing order to our public finances. Given this priority, obviously some projects are more important than others. Some are in fact urgent because a system is degrading rapidly, and the longer it is postponed, the more difficult and costly will be the solution. In our view, there are three areas of urgency:

1. The most pressing area for infrastructure development is the preschool system and the need to improve secondary-school education and training.
2. Given their rapid deterioration, it is urgent to address the problems of city centres and their environmental problems (such as water pollution).
3. One area of infrastructure development that must be addressed immediately (even if it must be abandoned should international standards be developed) is research into architectures and standards for the Internet and the global communications system as a whole. Once the standards are determined, there will be no further point for investment in this area.

There are a number of investment areas that are important today and will remain so in the future, such as the establishment of foreign language teaching institutions. Other types of investment that are impossible today because of budgetary constraints will still be worth pursuing tomorrow, even though it would be better to begin immediately.

We hope that this text will serve as a catalyst for reaction and discussion.

NOTES

1 This paper was originally written in the summer of 1996.

2 For a summary of recent debate on this issue, see John F. Helliwell, "Infrastructure and the Economy: Evidence and Implications," *in Infrastructure and Competitiveness*, Kingston: John Deutsch Institute for the Study of Economic Policy, 1993, pp. 451-83.

3 Robert Heilbroner. "Seize the Day." *The New York Review of Books*, Vol. XXXVIII, No. 2, February 15, 1990, pp. 30-31.

4 Politicians responsible for infrastructure development are often no longer active in politics when the impact of the investment becomes visible. Politicians wishing to make their mark on history find it easier to erect a monument in their own names.

5 Nikolai Kondratieff, "The World Economy and Its Cycles During and After the War" (Russian), *The Long Wave Cycle*, New York: Richard and Snyder, 1984 (1922c); see also Christopher Freeman, *Long Wave Theory*, Edward Elgar, 1996.

6 Given that the focus of our infrastructure development favours education and institutions over transportation and communications, this is not necessarily true. The effects persist in the long term.

7 Chris DeBresson, "Technological Innovation and Long Wave Theory: Two Pieces of the Puzzle." *Journal of Evolutionary Economics*, Vol. 1, pp. 241-72. Reprinted in Christopher Freeman, *Long Wave Theory*, Edward Elgar, 1996.

8 Peter Wylie, "Infrastructure and Economic Performance: Comment," in I*nfrastructure and Competitiveness*. Kingston: John Deutsch Institute for the Study of Economic Policy, 1993, pp. 205-10.

9 Christian DeBresson, *Economic Interdependence and Innovative Activity*. Edward Elgar, July 1996, Ch. 1, pp. 3-15.

10 The term "learning-based economy," in our view, reflects better than "knowledge-based economy" the intrinsic cumulative dynamics of the phenomenon.

11 *Science, Technology, Industry: The Knowledge-Based Economy*, Paris: OECD, 1996.

12 World Bank, *World Development Report, Infrastructure for Development*, New York: Oxford University Press, 1994; Gregory Tassey, *Technology Infrastructure and Competitive Position*, Dordrecht: Kluwer Academic Publishers, 1992.

13 We distinguish between welfare and "well-being" following the example of Armatya Sen, an economist specializing in social choices and development. In his book *The Standard of Living* (Cambridge: Cambridge University Press, 1987), Sen argues, for example, that a Latin American peasant with no land and no income has less welfare than a young black living in a U.S. inner-city ghetto; however, the same peasant has better well-being than the young black in terms of life expectancy, suicide rate, probability of violent death, exposure to crime and drug addiction, risk of imprisonment and rate of unemployment.

14 United Nations Development Programme (UNDP), *Human Development Report 1995*, Paris: Economica, 1996.

15 UNDP. *Human Development Report 1995*. Paris: Economica, 1996.

16 A.K. Sen. *Poverty and Famines: an Essay on Entitlement and Deprivation*. New York: Oxford University Press, 1981.

17 We are aware that this perspective is completely at odds with current political rhetoric. What we must demand — and promise — is not new jobs, but better jobs for a better quality of life, and for all citizens.

18 There is another factor that could provide the necessary support for strong growth: a massive wave of immigration into Canada. However, this would require a fundamental change in Canadians' policies and attitudes.

19 It took more than a century for glorious Albion to accept the end of its economic hegemony, and British politicians wasted enormous effort and resources in refusing to recognize the inevitable.

20 British universities retained their international reputation long after the economic decline of the United Kingdom.

21 Because of the structure of economic advantage and status symbols, professions such as law and finance have become more attractive than engineering, which is no longer the ticket up the social ladder that it once was.

22 Robert Heilbroner. "Seize the Day." *The New York Review of Books*. Vol. XXXVIII, No. 2, February 15, 1990, pp. 30-31.

23 Within NAFTA, Canada has an advantage because large areas of the United States have become nothing more than reservoirs of cheap, unschooled labour, while Canada still ranks relatively higher in terms of wages, with higher educational attainment levels.

24 On the terms *sustainable development and sustainability*, see Jean-Guy Vaillancourt, "Penser et concrétiser le développement durable," *Ecodecision*, Vol. 15, winter 1995, pp. 24-29.

25 In 1991, Canada emitted 118.1 million tonnes of CO2 from mobile sources, 148.6 from energy production and 97.3 from industrial activity, making the country the sixth, fifth and fifth largest emitter in the world in these categories, respectively (UNDP, *Human Development Report 1995*, Paris: Economica, 1996, p. 231).

26 Canada emitted 5 billion tonnes of NO2 and SO2 (UNDP, *Human Development Report 1995*, Paris: Economica, 1996, p. 231).

27 UNDP, *Human Development Report 1995*, Paris: Economica, 1996, p. 231.

28 In 1991, Canada produced 1.3 million tonnes of nuclear waste and 6.08 million tonnes of other hazardous waste (UNDP, *Human Development Report 1995*, Paris: Economica, 1996, p. 231).

29 Canada is fortunate enough to rank third in the world (behind Iceland and New Zealand) in terms of renewable water resources per capita: 106 000 cubic metres per year (UNDP, *Human Development Report 1995*, Paris: Economica, 1996, p. 231).

30 Canada recycles only 20 percent of the paper and cardboard it consumes, and 12 percent of the glass: this is one of the worst performances among the 20 industrialized countries supplying this information (UNDP, *Human Development Report 1995*, Paris: Economica, 1996, p. 231).

31 UNDP, *Human Development Report 1995*, Paris: Economica, 1996, p. 21.

32 Jaddish Baghwati in *The World Trading Systems at Risk* and Paul Krugman in *Pop Internationalism* have recently argued that treating competition strictly as a zero-sum game is superficial and mercantilist. Through mutual co-operation to liberalize goods trade, countries increase their mutual welfare. The liberal economic system is essentially co-operative, based on a recognition of the relative differences and advantages of each party. In this way, a larger quantity of goods can be produced and consumed. This is a positive result of co-operation governed by trade regulations.

33 Human interaction is the cornerstone of a learning-based economy. This has important implications for public policy regarding the Internet. Note, however, that

"human interaction" should not be confused with "interaction with a computer program."

34 The best known zero-sum game, because of its mathematical interest, is the prisoner's dilemma. In the case of two accomplices who are imprisoned and isolated from each other, should they co-operate with the police and denounce each other? When discussing learning and knowledge creation, however, the stag game model shown in Table 2 is a better analogy. The only difference in these two zero-sum games is the order in which the disadvantaged actor's benefits are classified. In the latter case, by repeating this game, the actors learn to maximize their benefits and rapidly move toward a co-operative model (more often than in the prisoner's dilemma model).

35 DeBresson, C. "Les entrepreneurs n'innovent pas (seuls); seuls des réseaux d'entrepreneurs peuvent innover." Montreal: McGill University, Association canadienne-française pour l'avancement des sciences, May 1996.

36 Lundvall, B-Å. *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*. London: Pinter, 1992.

37 Tassey, Gregory. *Technology Infrastructure and Competitive Position*. Dordrecht: Kluwer Academic Publishers, 1992.

38 Adapted from DeBresson and Amesse, "Networks of Innovators: An Introduction to the Issue," *Research Policy*, 1991.

39 Douglas C. North, "Transaction Costs, Institutions and Economic Performance." San Francisco: International Center for Economic Growth, May 1992. J. Wallis and D. North, "Measuring the Transaction Sector in the American Economy, 1870-1970," in *Long Term Factors in American Economic Growth*, ed. S. Engerman and R. Gallman, Chicago: University of Chicago Press, 1986.

40 Francis Fukuyama. *Trust: The Social Virtues and the Creation of Prosperity*. Penguin Books, 1995.

41 In this regard, the recent tendency (following the patriation of the Constitution in 1981) to give more influence to the judiciary and hence to lawyers favours legal action over compromise. This increases transaction costs in Canada.

42 It should be noted that the economic objective of reducing transaction costs poses the danger of making a community narrow-minded or turned in on itself. We shall discuss this possibility as a potential difficulty later.

43 Anna-Lee Saxenian. *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*. Cambridge: Harvard University Press, 1994.

44 C. DeBresson and J. Lampel. "Bombardier's Mass Production of the Snowmobile: The Canadian Exception?" *Scientia Canadensis*, Vol. 29, 1985, pp. 133-49.

45 Derek J. de Solla Price. *Little Science, Big Science*. New York: Columbia University Press, 1963. Although this trend has not been systematically monitored since this work was published, there is no doubt that it is proceeding as described.

46 François Chesnais. *La mondialisation du capital*. Paris: Syros, 1994.

47 C. P. Kindleberger. *Manias, Panics and Crashes: A History of Financial Crisis*. New York, Basic Books, 1978, revised edition, 1989. A financial crisis may be defined as follows: "A sharp, brief, ultra-cyclical deterioration of all or most of a group of financial indicators — short term interest rates, asset prices (stock, real estate, land) prices, commercial insolvencies and failures of financial institutions." R. Goldsmith, "Comment on Minsky," in *Financial Crisis: Theory, History and Policy*. Edited by C.P. Kindleberger and J.-P. Laffargue. New York: Cambridge University Press, 1982. See also François Chesnais (ed.), *La mondialisation financière: genèse, coûts et enjeux*. Paris: Syros, 1996.

48 This paper was written during the summer of 1996, more than one year before the financial crisis of late October 1997.

49 R. Koo. *Testimony before the Joint Economic Committee*. Cited by Lawrence Summers, "Planning for the Next Financial Crisis," in *The Risk of Economic Crisis*. Edited by M. Feldstein following NBER Conference. Chicago: University of Chicago Press, 1991, p. 159.

50 L. H. Summers. "Planning for the Next Financial Crisis," in *The Risk of Economic Crisis*. Edited by M. Feldstein following NBER Conference. Chicago: University of Chicago Press, 1991.

51 In 1991, Lawrence Summers felt (op. cit., p. 157), "The payments system has probably become more fragile than before" (i.e., than in October 1987).

52 Summers, op. cit., p. 155.

53 John Chant and Stephen Easton. "Corporate Debt and its Macroeconomic Consequences," in *Deficits and Debts in the Canadian Economy*. Edited by Richard Harris. Kingston: John Deutsch Institute for the Study of Economic Policy, 1993, pp. 145-76.

54 Robin Richardson, speaking on behalf of the Canadian Taxpayers Federation, noted that each of the 10 Canadian provinces qualifies as a severely indebted country under the World Bank's definition. Richard Harris (ed.), *Deficits and Debts in the Canadian Economy*. Kingston: John Deutsch Institute for the Study of Economic Policy, 1993, p. 95.

55 H.V. Nelles, *The Politics of Development: Forest, Mines and Hydro-Electric Power in Ontario*, 1849-1941, Macmillan Canada, 1974; K. Hamilton, "Canadian Industrial Energy Consumption and External Trade," in *Technology and National Competitiveness: Oligopoly, Technological Innovation, and International Competition*, edited by Jorge Niosi, Montreal and Kingston: McGill-Queen's University Press, 1991.

56 Given that these uncertainties are all related to situations with no existing precedent, it would be inappropriate and entirely subjective to assign risk factors and probabilities to them.

57 On the subject of technological snobbism and fetishism, see Christian DeBresson, *Comprendre le changement technique*, Presses des universités d'Ottawa et de Bruxelles, 1993, Ch. 5, pp. 95-108, as well as *Understanding Technological Change*, Montreal: Black Rose Books, 1987, Ch. 11, pp. 133-39.

58 A recent Statistics Canada publication indicates that only one family in four has a home computer. Only a third of these have a modem, and only one in five of this limited group uses the Internet. See Jeffrey Frank, "Preparing for the Information Highway: Information Technology in Canadian Households." *Canadian Social Trends*. Statistics Canada, 1994-95, http://www.statcan.ca/Documents/english/SocTrends/infotech.htm.
A survey by Andersen Consulting reports more optimistic results: one consumer in three uses the Internet at home or at work, and the number of users is doubling each year. On the other hand, two thirds of users spend only a few hours a month on the Internet (study reported in MatInternet, July 1996, http://www.matin.qc.ca).

59 OECD. *The OECD Jobs Strategy: Technology, Productivity and Job Creation, Volume 1: Highlights; Volume 2: Analytical Report*. Paris: July 1996.

60 Such a vicarious existence as a pure spectator recalls how Lewis Mumford, the historian of technology and urban development, described the lifestyles of decadent Romans: 100 days of annual leave spent at the Coliseum soaking up stimulation, rev-

elling in violence and losing all sense of social cohesion. See *The City in History*. New York: Harcourt Brace, 1961, pp. 222-35.

61 If the network is congested, interaction is only possible with a time delay; it becomes essentially a form of electronic mail. Obviously, this diminishes the usefulness and value of Internet service.

62 In order to preserve their efficiency and avoid information overload, these communities must rely on mediation. Global villages can create public forums and forge their own forms of governance. But not all subjects and activities are well suited to interactive forums.

63 See Paul David's discussion in "Blind Giants, Narrow Windows and Angry Orphans" on the dilemma facing public institutions that have to deal with competing systems. We suggest that publicly funded research on the possible use of the Internet and on related ethical and political issues be carried out to widen the window of opportunity where public authorities can exercise a useful influence.

64 Paul David. "The Economics of QWERTY." *American Economic Review I*, 75:2 (1985):332-37.

65 Some of the most useful contributions to technology policy come from the Experimental Technology Incentives Programme (ETIP) of the Department of Commerce at the National Institute of Standards and Technology (NITS). See G. Bell, J.-E. Aubert, C. DeBresson, and P. Dubarle. *Policies to Stimulate Industrial Innovation*. Paris: OECD, 1978. Some of this experience is reflected in a book by the former head of its Policy Research Division — Gregory Tassey, *Technology Infrastructure and Competitive Position*. Boston: Kluwer Academic Publishers, 1992. The Canada Standards Association, a self-financing body that enjoys an excellent international reputation, may be called on to play a role in these experiments and pilot projects.

66 Faye Duchin and Glen-Marie Lange. *The Future of the Environment*. *Ecological Economics and Technological Change*. New York: Oxford University Press, 1994.

67 See Thornstein Veblen, *The Vested Interests and the Common Man*, New York: Capricorn Books, 1969; also DeBresson 1987, Ch. 15, and 1993, Ch. 20.

68 Mark Roseland, Research Director at the School of Resource and Environmental Management, Simon Fraser University, argues, "[Trans.] To a very large extent, the environmental crisis is a crisis of creativity. The only way to successfully meet the countless challenges posed by sustainable development in the communities is to encourage social innovation and local initiative.... Downstream initiatives require upstream leadership." *La Revue de la Table ronde nationale sur l'environnement et l'économie*, spring 1994, pp. 3 and 10.

69 For example, the Uruguay Round's Trade-Related Intellectual Property Rights Agreement is biased; instead of being based on the mutual and dynamic gains of knowledge sharing (see Trend 5 in the first part of the paper), it is based on the static gains from price reductions, which are known to account for no more than 1 percent of the gains.

70 The implementation of the TRIPs agreement and patent law is somewhat problematic on this point, since it appears unlikely to have any real consequences (fortunately).

71 If foreign patent rights had been compensated at least by a mandatory licensing clause after a certain number of years, as originally proposed by the European Commission, the restrictive influence of TRIPs on the flow of technical knowledge would have been mitigated. See J. Baghwati. *Protectionism*. Cambridge: MIT Press, 1989.

72 W.J. Baumol. *Entrepreneurship, Management and the Structure of Payoffs*. Cambridge: MIT Press, 1993.

73 The GATT allowed for generous provisions for the temporary protection of fledgling industries and for the social adjustment of NICs undergoing trade liberalization.

74 Jagdish Bhagwati. *The World Trading System at Risk*. Princeton: Princeton University Press, 1991, particularly Ch. 4.

75 The legal commission of the Organization of American States recently condemned this legislation as contrary to international law. This declaration was unanimous (including the U.S. representative).

76 The previous enforcer, the United Kingdom, had the advantage that its domestic market was not large enough to be a tool for potential reprisals. Despite this weakness, the unilateral end to the pound's convertibility in 1931 was enough to revive rampant protectionism and to plunge the world into recession (Hilgert; Svennilson).

77 Hyman Minsky. *Can "It" Happen Again: Essays on Instability and Finance*. New York: M.E. Sharpe, 1982.

78 The financial establishment can certainly live and prosper under a Tobin tax; it would face only a minimal level of taxation. On the other hand, this tax will not reduce the sector's lead in profits over industry and services.

79 For a discussion on the financial vulnerability of the corporate world, see John F. Chant and Stephen T. Easton, "Corporate Debt and its Macroeconomic Consequences," in *Deficits and Debt in the Canadian Economy*. Edited by Richard G. Harris. Kingston: John Deutsch Institute for the Study of Economic Policy, 1993, pp. 145-76.

80 The demand for newly protected resources would certainly increase if the demand for these products in the zone remained higher than pre-depression domestic production. This would mean that demand was almost completely satisfied by imports from outside the trade bloc prior to the depression. This happened with rubber after the Japanese invasion of Indochina and Malaysia, with the result that an innovative substitute — synthetic rubber — appeared and created a flourishing new industry in Canada.

81 How to achieve these objectives (through economic incentives, regulation, strategic policies, etc.) will be discussed in the next section.

82 William D. Garvey. *Communication: The Essence of Science*. New York: Pergamon Press, 1979.

83 Subjects do not lend themselves equally well to distance learning. The subject must be sufficiently open-ended to benefit from interaction over long distances. It would be difficult to teach the solution of complex technical or mathematical problems with this medium, for example, except perhaps to gifted students.

84 The aeronautic equipment industry benefits from this type of interaction in its international collaborations, but it does not yet enjoy direct visual links.

85 In the case of the Internet chat feature, mediation is provided by senior users known as "operators," who are nominated by at least two incumbent operators. Operators have the technical means to bar from the discussion group any party whom they judge to be abusing the privilege.

86 DeBresson developed this framework for policy analysis and this approach while working at the science department of the OECD in the mid-1970s. See G. Bell, J.-E. Aubert, C. DeBresson, and P. Dubarle. *Policies to Stimulate Industrial Innovation*.

Paris: OECD, 1978 (three volumes). This model is consistent with the "diamond" model offered by Michael Porter in *The Competitive Advantages of Nations* (1991).

87 Entrepreneurs invest in innovations when they perceive an opportunity, but which innovation projects they choose depends on what they judge possible and advantageous for the future. The choice of a collective investment in public infrastructure depends on the vision of the body making the decision for the community. Objective factors may impose constraints on our freedom, but the choice among the remaining options depends on subjective preferences linked to citizens' personal values. Our aim is to explicitly lay out our vision, the strategic choices involved, and possible long-term investment projects in order to encourage debate on the future.

88 An evocative expression coined by Douglas North.

89 Michael B. Devereux. "Provincial Budget Deficits and the Debt Crisis of Canada," in Richard G. Harris, *Deficits and Debts in the Canadian Economy*. Kingston: John Deutsch Institute for the Study of Economic Policy, 1993, p. 82.

90 Raymond Théorêt and Gilles St-Amant. "Une solution radicale pour régler le problème de la dette publique au Canada: la transférer aux Canadiens!" March 1994. Théorêt, St-Amant and Jean Canonne. "La meilleure méthode pour libérer les provinces de la dette fédérale: la transférer de façon équitable à l'ensemble des Canadiens." Centre de recherche en gestion, Université du Québec à Montréal, February 1995.

91 Quebec Ministry of Finance. "Le Fonds de remboursement de la dette." Document 22, Series: Tax and Financing of Public Services. Québec: Les publications du Québec, 1996.

92 The three proposals are compared in Table 4. Infrastructure development is primarily a provincial responsibility. Only the Rodrigue, Bélanger, and Fecteau proposal takes account of this fact, but it takes 30 years to increase borrowing capacity to finance new infrastructure. All proposals assume additional taxation but all upgrade the capacities that reduce to some extent taxpayers' own ability to invest.

93 Luc Vallée. "Privatisation rétroactive des REER : une solution aux problèmes de nos gouvernements." *Revue Gestion*, Vol. 20, No. 4, pp. 10-11, December 1995. See also *Revue Gestion*, Vol. 21, No. 1, pp. 12-13, March 1996 and 2, pp. 12-13, June 1996.

94 Jean Lanctôt is chair of the adult education centre of the École des Hautes Études Commerciales.

95 According to an article by Rodrigue Tremblay published in *Le Devoir* (August 27, 1996, p. A7), "[Trans.] In order to join the future European Monetary Union, a country's total public debt must not exceed 60 percent of its gross domestic product, and its budget deficit must not exceed 3 percent of GDP."

96 The approach proposed by Joseph Schumpeter to eliminate Austria's debt after the First World War entailed a one-time tax on assets; this is not applicable to the Canadian case because governments have accumulated a public debt that represents a multiple of all public and private assets in Canada.

97 We believe it would be better to innovate outside of existing structures — in this case, outside the current education programs (teacher training) offered in colleges and universities. The idea is to avoid imposing on the new institutions the bureaucratic lethargy and regulations common to existing large and complex organizations.

98 College and university professors are recruited for a specific purpose — to instil knowledge and teach the latest techniques — but are evaluated on the basis of its necessary complement (advanced research). They are then rewarded for their perfor-

mance in research by lighter teaching duties — for which they were hired in the first place.

99 Michael Gibbons, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott and Martin Trow. *The New Production of Knowledge — The Dynamics of Science and Research in Contemporary Societies*. London: Sage Publications, 1994.

100 At the present time, human interaction in real time is taking a back seat to deferred interaction because of server congestion. The public interest would be served by reserving part of network capacity for real-time interaction, which would make the Internet the text equivalent — and soon the visual equivalent — of the telephone. Deferred interaction, however, is little better than fax technology (which can be operated over the Internet, by the way). How can we reduce the congestion and guarantee that researchers and communities as a whole have ready access to this tool? There are a number of policy instruments at our disposal: make it a pay service (to end the "free-rider" phenomenon), make for-profit industries pay, invite the private sector to cover all their server-related financial needs, reserve part of server capacity (if possible) exclusively for real-time interaction, etc.

101 In any confederation based on subsidiarity, when a community is not self-sufficient, external assistance must be forthcoming in order to encourage the community to regain self-sufficiency.

102 Gordon Gibson. "A Sensible Solution for Saving Canada." *Fraser Forum*, June 1996, p. 12.

103 Mark Roseland. "Initiative en amont, leadership en aval." *La Revue de la Table ronde nationale sur l'environnement et l'économie*, spring 1994, pp. 3 and 10.

104 The recent aid project for the residents of the flood-stricken Saguenay that involved unemployed persons is interesting. Given recent reforms to unemployment insurance and welfare, it is essential for the unemployed to be able to choose from among a variety of solutions: community service, infrastructure projects and training.

105 The traditional economic approach, which assumes that firms are in competition as isolated entities with no interest in the group, leads to the (we think overhasty) conclusion that firms will not invest sufficiently in specialized training because they fear that their competitors might benefit. For this reason, public funds are required for specialized training. In our opinion, this theory underestimates the intelligence of company managers, who know well that their own firms' health depends in part on the health of the industry. In our approach, we consider that firms, rather than being isolated, belong to networks that compete with each other, and that the benefits of innovation and of creation of new technical knowledge are shared — or will never see the light of day (see note 35).

106 In finance, an interesting and originally unexpected phenomenon has been observed re non-recoverable costs. Investors are reluctant or even completely unwilling to abandon initial investment decisions, even if it means "throwing good money after bad" (at least from their perspective).

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Infrastructure and Competitiveness, in collaboration with the John Deutsch Institute, Jack Mintz and Ross S. Preston eds., 1994.

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Is Canada Missing the "Technology Boat"? Evidence from Patent Data

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September 1999

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Abstract

Canada has been lagging in terms of productivity growth in recent years. A possible cause might be poor performance in R&D and technical change. This paper is an attempt to shed light on this issue, by examining innovation in Canada for the past 30 years with the aid of highly detailed patent data. I use for that purpose all Canadian patents taken in the US (over 45,000), as well as US patents and patents from other countries for comparative purposes. Canadian patenting is highly correlated with lagged R&D, and with worldwide developments in technology as reflected in total US patenting. Canada stands mid-way among the G7 in terms of patents per capita and patents/R&D, but in recent years it has been overtaken by a group of "High Tech" countries – Finland, Israel and Taiwan, with South Korea closing-in fast. The technological composition of Canadian innovations is rather out of step with the rest of the world, with the share of traditional fields still very high in Canada, whereas the upcoming field of Computers and Communications has grown less in Canada than elsewhere. Given that Computers and Communications is the dominant "General Purpose Technology" of the present era, weakness in this field may impinge on the performance of the whole economy. Another source of weakness lies in the patterns of ownership on the intellectual property represented by patents: less than 50% of Canadian patents are owned by Canadian corporations, a much lower percentage than all other G7 countries. In terms of the relative "quality" of Canadian innovations as measured by the number of citations received, it is significantly lower than the quality of patents awarded to US inventors, particularly in Computers (but not in Communications), and in Medical Instrumentation (but not in Drugs).

Key words: Patents, Canadian economy, Productivity.

J.E.L. Classification: 03, 034, 053, 057

I. Introduction

Canada stands out as a highly advanced economy in terms of income per capita as well as various measures of quality of life, and yet in recent years it has stalled and even lost ground relative to other countries (particularly the US) in terms of productivity and growth (see e.g. Trefler, 1999). This seemingly incongruent predicament has elicited a great deal of attention, and motivated research aimed at understanding the sources of the current "malady". One of the possible lines of inquiry in this respect is to investigate the performance of the Canadian economy in terms of R&D, innovation and technical change. After all, these are the key factors that have traditionally propelled productivity growth in the industrialized world.

This paper is an attempt to shed light on the innovative performance of Canada with the aid of highly detailed patent data, drawn from all patents granted in the US to Canadian inventors, and to US patents granted to other countries. I shall address questions such as: How does Canada fare vis a vis other countries in terms of patenting activity? What is the technological composition of its innovations? Who actually owns the intellectual property rights, and to what extent can the Canadian economy expect to benefit from the innovations done by Canadian inventors? How do Canadian innovations compare to those of other countries in terms of their "importance" as reflected in patent citations? In addressing these questions we hope not only to shed light on the case of Canada, but also to demonstrate the power of this type of data for studying innovation in great detail and, in particular, for examining in a comparative fashion the innovative performance of countries and regions.

Why the focus on Canadian patents in the US? Several reasons account for that. First, according to Rafiquzzaman and Whewell (1998), "Canada has one of the lowest propensities to file patents at home of any of the major industrialized countries, with only 6.6% of national patent applications originating from residents in 1992" (p. 5). Thus, a natural place to look for the outcomes of innovative activity in Canada is in the patenting abroad by Canadians. The lion share of patent applications abroad has traditionally gone to the US (well over half for most of the period studied), due primarily to the high level

of economic integration between Canada and the US.[1] Second, even though Canadian patenting in other G7 countries has increased significantly over the years (see Rafiquzzaman and Whewell, Table 2), it is often the case that patents are sought first and foremost in the US, where the standards for patentability are more stringent that in most European countries. Thus, one can hopefully learn a great deal about innovation in Canada by analyzing the Canadian patents granted in the US. From the mid 1960s through 1997 Canada-based inventors received over 45,000 patents in the US. This is a large (absolute) number, and it placed Canada as the 5th largest foreign recipient of US patents.

Adam Jaffe and I have developed in recent years a methodological approach that allows one to study innovation in great detail with the aid of patent data, and not just to rely on patent counts.[2] In particular, building both on detailed information contained in patents and on patent citations, we can compute for each individual patent quantitative indicators of notions such as the "importance", "generality", and "originality" of patents (see Trajtenberg, Jaffe and Henderson, 1997). We can also trace the "spillovers" stemming from each patent, and analyze their geographical and temporal patterns (e.g. are spillovers geographically localized? See Jaffe, Henderson and Trajtenberg, 1993). Moreover, we have constructed a large data bank containing information on all US patents granted from 1965 to 1996,[3] that allows us to compute this sort of measures for any subset of patents. This is a powerful capability that greatly enhances our ability to do empirical research in the area of the Economics of Technical Change.

The paper is organized as follows: Beginning with a concise discussion of the data in section II, we then examine in sections III and IV the main trends in Canadian patenting, both in itself and in comparison to two groups of countries, the other G7, and a "reference group of countries" consisting of Finland, Israel, South Korea and Taiwan. Section V deals with the technological composition of Canadian innovations, relative to

[1] However, this percentage has been dropping in recent years: it stood at 62% in 1978, and dropped to 49% in 1992.

[2] Rebecca Henderson of MIT also participated in the initial stages of this endeavor, and Bronwyn Hall of Berkeley and Oxford has been involved in it for the past few years.

that of other countries. In section VI we look at the distribution of Canadian assignees, thus addressing the issue of who controls the rights to the intellectual property embedded in these patents, and hence who can expect to benefit from it. Section VII undertakes to examine the relative "importance" or "quality" of Canadian patents vis a vis patents granted to US inventors, in terms of citations received. Finally, Section VIII summarizes the main points and attempts to draw policy implications.

II. Data

A patent is a temporary monopoly awarded to inventors for the commercial use of a newly invented device. For a patent to be granted, the innovation must be non-trivial, meaning that it would not appear obvious to a skilled practitioner of the relevant technology, and it must be useful, meaning that it has potential commercial value. If a patent is granted, an extensive public document is created. The front page of a patent contains detailed information about the invention, the inventor, the assignee, and the technological antecedents of the invention, all of which can be accessed in computerized form (see Figures 1 and 2).

These extremely detailed and rich data have, however, two important limitations: first, the range of *patentable* innovations constitutes just a sub-set of all research outcomes, and second, patenting is a *strategic* decision and hence not all *patentable* innovations are actually *patented*. As to the first limitation, consider an hypothetical distribution of research outcomes, ranging from the most applied on the left to the most basic on the right. Clearly, neither end of the continuum is patentable: Maxwell's equations could not be patented since they do not constitute a device (ideas cannot be patented). On the other hand, a marginally better mousetrap is not patentable either, because the innovation has to be non-trivial. Thus, our measures would not capture purely scientific advances devoid of immediate applicability, as well as run-of-the-mill technological improvements that are too trite to pass for discrete, codifiable innovations.

[3] With the assistance of Michael Fogarty and his team at Case Western University.

Figure 1

United States Patent **5,946,313**
Allan, et. al. **Aug. 31, 1999**

Mechanism for multiplexing ATM AAL5 virtual circuits over ethernet

Abstract
The invention provides for a E-Mux and a method for encapsulating/segmenting ATM cells into/from an Ethernet frame at the boundary between an ATM and an Ethernet network. An Ethernet end-station on the E-Mux is addressed using multiple MAC level identifiers, which are dynamically assigned according to the ATM virtual circuits which terminate on that end station, and have only transitory significance on the Ethernet. A unique ATM OUI identifies the frames carrying ATM-traffic.

Inventors: **Allan; David Ian** (Ottawa, CA); **Casey; Liam M.** (Ottawa, CA); **Robert; Andre J.** (Woodlawn, CA).
Assignee: **Northern Telecom Limited** (Montreal, CA).
Appl. No.: **821,145**
Filed: **Mar. 20, 1997**
Intl. Cl. : **H04Q 11/04**
Current U.S. Cl.: **370/397**; 370/401
Field of Search: **370**/397, 395, 398, 401, 471, 473, 474

References Cited | **[Referenced By]**

U.S. Patent Documents

5,457,681	Oct., 1995	Gaddis et al.	**370**/56
5,490,140	Feb., 1996	Abensour et al.	**370**/397
5,490,141	Feb., 1996	Lai et al.	**370**/397
5,732,071	Mar., 1998	Saito et al.	**370**/401

The second limitation is rooted in the fact that it may be optimal for inventors *not* to apply for patents even though their innovations would satisfy the criteria for patentability. For example, until 1980 universities in the USA could not collect royalties for the use of patents derived from federally funded research. This limitation greatly reduced the incentive to patent results from such research, which constitutes about 90% of all university research in the USA. Firms, on the other hand, may elect not to patent and rely instead on secrecy to protect their property rights.[4] Thus, patentability requirements and incentives to refrain from patenting limit the scope of analysis based on patent data. It is widely believed that these limitations are not too severe, but that remains an open empirical issue.

Figure 2

United States Patent **5,941,683**
Ridyard, et. al. **Aug. 24, 1999**

Gas turbine engine support structure

Abstract

A bearing support structure for a gas turbine engine comprises an annular array of stator vanes and a radially inner bearing support portion which are interconnected by an annular array of radially extending U-shaped cross-section parts. The U-shaped cross-section parts are interconnected at their radially outer extents and are arranged so that adjacent parts are open in generally opposite axial directions. Such a bearing support structure can carry service pipes with good accessibility and be produced by casting, thereby reducing its cost.

Inventors: **Ridyard; Philip** (Mississauga, CA); **Foster; Alan G** (Derby, GB).
Assignee: **Rolls-Royce plc** (London, GB).
Appl. No.: **25,109**
Filed: **Feb. 17, 1998**
Intl. Cl. : **F01D 25/16**
Current U.S. Cl.: **415/142**; 415/209.2; 415/209.3; 415/209.4; 415/210.1; 416/244.A
Field of Search: **415**/142, 209.2, 209.3, 209.4, 210.1; **416**/244 A, 245 R; **60**/226.1

References Cited | [Referenced By]

U.S. Patent Documents

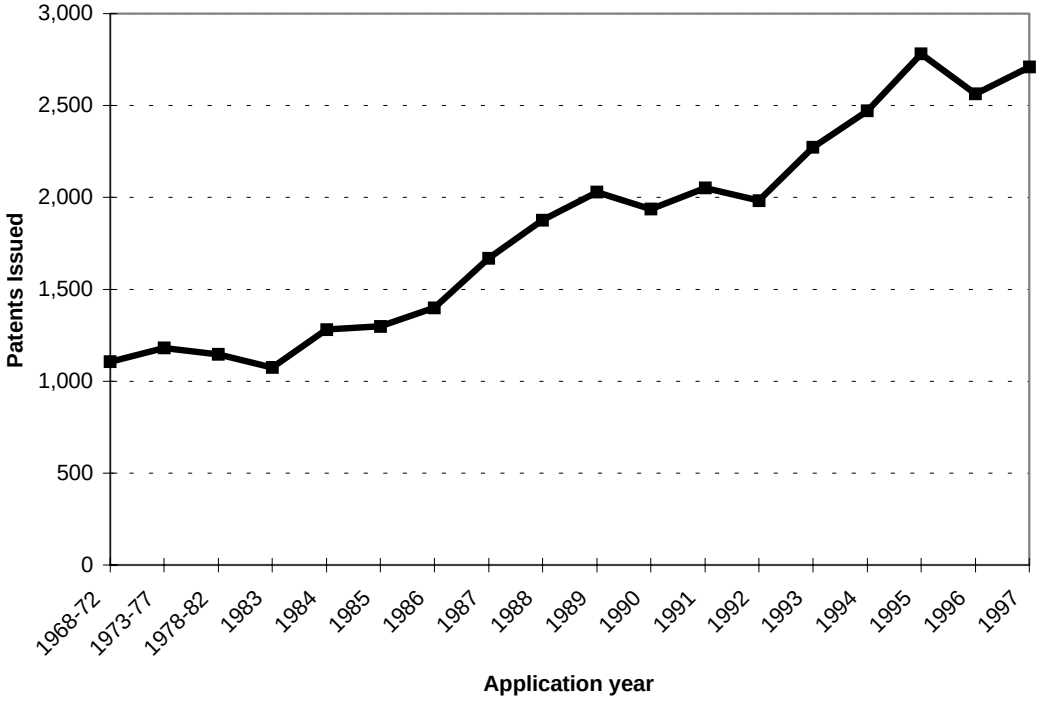
4,979,872	Dec., 1990	Myers et al.	**415**/142
4,987,736	Jan., 1991	Ciokajlo et al.	**60**/39.31

Our working hypothesis here is that, whereas these limitations may affect ***level*** comparisons across fields/industries and perhaps also across countries ***at a point in time***, they do not affect the analysis of trends and changes over time. In other words, if we observe for example a surge in the *share* of US patents in the field of Computers and Communications and a concomitant decline in the share of Chemicals, it is hard to believe that these changes are due to underlying changes in the relative propensity to patent in these two sectors. Rather, the assumption is that these trends reflect true changes in the amount of innovation done in those fields.

[4] There is a large variance across industries in the reliance on patents versus secrecy: see Levin et al, 1987.

The data that we use here were assembled from various sources. First, from our own massive data bank, which consists as said of all US patents and their citations, granted form 1965 through 1996, I extracted the following subsets: (1) All patents granted during that period to Canada, and to a random sample of 1/50 of US patents; (2) for all those patents I added all the patent citations that they received over the same period; (3) patent counts by application year for all the comparison countries (the other G7 and the 4 countries in the reference group). Second, I updated the patent counts with data extracted from the US Patent Office site in the Internet (see Notes to Appendix 1). Third, I extracted from the same site data on "raw applications" for all these countries, and added data on population for the comparison countries and Canada, data on R&D for the G7, and a variety of other data from the NSF and other sources.

Figure 3
Canadian Patents in the US - 1968-1997



III. Basic facts about Canadian patenting in the US

Figure 3 shows the number of successful Canadian patent applications in the US over time, starting in 1968. Patenting was essentially flat for the first 15 years and then started to climb up, but not in a smooth way: the number of patents grew fast during the 1986-89 period, and then again in 1992-95, with stagnant periods in between. We have to be careful with the timing though: patent applications reflect (successful) R&D conducted ***prior*** to the filing date, with lags varying greatly by sector. Thus, the number of patents in a particular year should be attributed to investments in R&D carried out in the previous 2-3 years at least, and in some sectors (such as pharmaceuticals) further back (see Figure 4).

What accounts for the observed path of Canadian patenting over time? I shall not attempt to conduct here an in-depth analysis of such trajectory (that is beyond the scope of the present study), but rather I'll content myself with examining the most salient factors. First of all, there is the input side, namely R&D: the more resources a country devotes to research and other forms of inventive activity, the more we would expect to see innovative outputs, and certainly patents among them. I shall use for these purposes *real*, *non-defense* R&D spending, as reported by the National Science Foundation (NSF, 1998).[5] Second, there are fluctuations in world-wide patenting quite likely reflecting changes in technological opportunities (and perhaps also in patenting practices), that may influence patenting by Canadian inventors. Moreover, given the proximity to the US, Canadian patenting patterns may be particularly sensitive to patenting by US inventors (they account for about ½ of all US patents). In order to ascertain the importance of these factors, I run simple regressions of the yearly number of Canadian patents as dependent variable, with lagged R&D and patents by US inventors as regressors, all in logs.[6]

[5] There are of course other indicators such as number of scientists and engineers in R&D, business sector R&D, etc. I have chosen real non-defense R&D primarily for reasons of data availability and consistency across countries.

[6] I experimented with various lags for R&D (recall that this is non-defense Canadian R&D), and the best fit obtains for a lag of 2 years. However, the results using a 3-year lag are very similar.

	Dep. Var: log(Canadian patents) – 1981 - 97				
Regressors *(in logs)*	**(1)**	**(2)***	**(3)**	**(4)***	**(5)** ***1981-95****
constant	4.36 (27.8)	-3.51 (-1.49)	0.88 (0.44)	-0.36 (-0.18)	1.94 (2.15)
R&D lagged 2 years	1.62 (20.3)		1.02 (2.92)	0.67 (1.8)	1.32 (3.3)
Patents to US inventors		1.02 (4.74)	0.43 (1.75)	0.61 (2.43)	0.28 (1.04)
AR(1)		0.64 (2.37)		0.16 (0.56)	
Obs	15	16	15	14	13
R^2	0.969	0.966	0.976	0.975	0.976
DW	1.88	2.34	1.61	2.08	1.98

t-statistics in parenthesis
* *Corrected for serial correlation.*
*** The patent figures for 1996 and 1997 are preliminary estimates, hence this run.*

As we can see, the pair-wise correlations between Canadian patents and *each* of the regressors are very high. When put together in the regression lagged R&D prevails in some of the runs, but the data are too sparse and too collinear to be able to reach definite conclusions. That is, on the one hand the behavior over time of Canadian patent applications resembles that of patenting by US inventors, apparently responding to global economic and technological forces. On the other hand, Canadian patents follow very closely the amount of resources devoted in Canada to civilian R&D. Of course, it could be that expenditures on R&D in Canada respond to the same underlying global forces that drive total patenting (e.g. technological opportunities), and hence a more elaborate model would treat R&D as endogenous. Regardless of the "race" between regressors, the fact is that innovative output in Canada, as reflected in the number of patent applications in the US, seems to be highly responsive to civilian R&D performed 2-3 years earlier. Thus, fluctuations in the level of R&D resources invested do manifest themselves after a while in the number of patented innovations produced.

Beyond the statistical analysis, a closer look at the series, and in particular at the *growth rates* of patents and of R&D, reveals a number of discrete periods along the time trajectory, which seem to follow a 3-year cyclical pattern:

Period	Growth rate of patents	Growth rate of R&D (3-year lag)
1968 - 83	~ 0%	na
1983 - 86	9.2%	4.4%*
1986 - 89	13.2%	7.6%
1989 - 92	-0.7%	1.5%
1992 - 95	6.4%	4.2%

*Computed for 1981-83 only

The correspondence between the two series is quite striking (recall Figure 4), and raises questions about the "political cycle" that may have induced the observed fluctuations in R&D spending.

IV. International Comparisons

Whereas the detailed analysis of Canadian patenting is revealing in itself, we resort to international comparisons in order to put in perspective the overall level and trend over time in Canadian patenting. We have chosen for that purpose two groups of countries:

1. ***The (other) G7***: France, Germany, Italy, Japan, UK and USA.
2. A ***"Reference Group":*** Finland, Israel, South Korea and Taiwan.

The Reference Group consists of countries that have fast-growing High Tech sectors, which have turned pivotal for their economic performance and in particular for growth. Thus, they provide a benchmark in terms of patenting in economies that are geared towards innovation as they try to catch up with the richer G7-type countries.

Appendix 1 contains detailed patent figures for each country, Figures 5-6 show the time patterns of patents per capita for Canada versus each of the above groups of

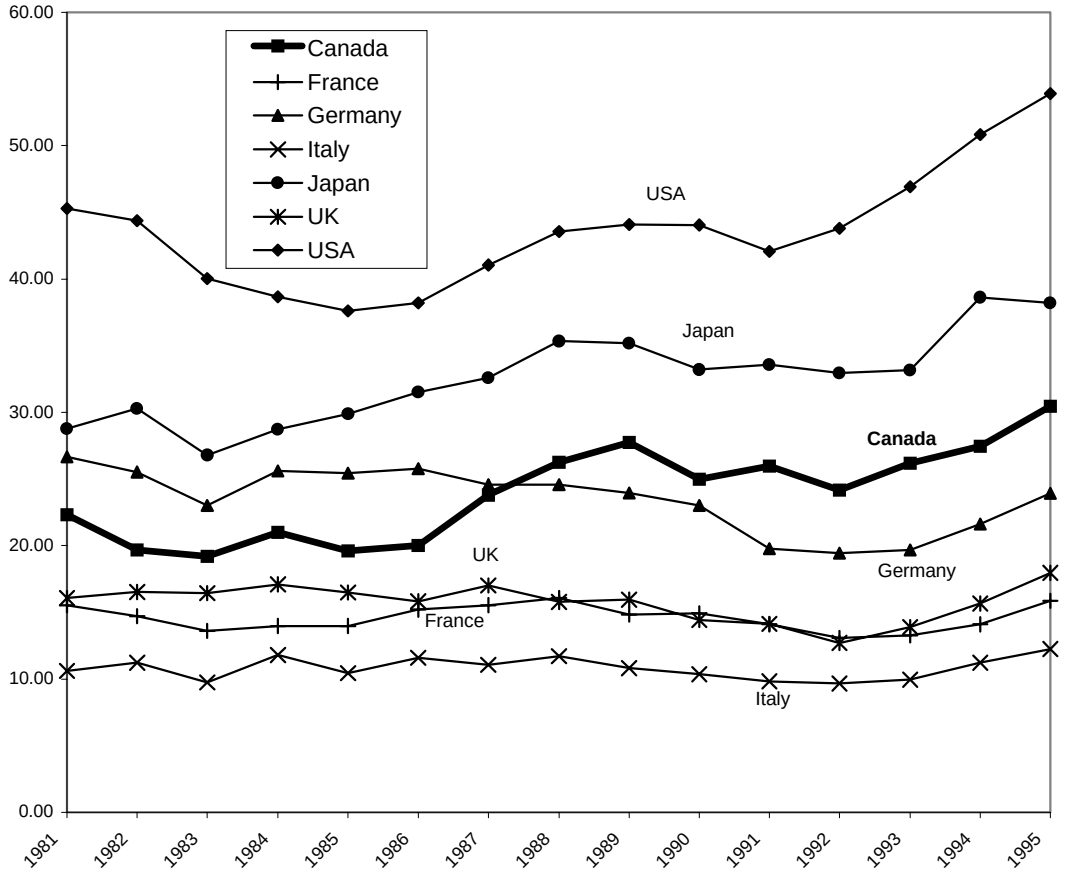
countries,[7] and Figure 7 does the same in terms of patents/R&D, for the G7 only.[8] As the figures reveal, Canada holds a respectable mid-place vis a vis the G7, both in terms of patents per capita and in terms of patents per R&D dollars: it lies well below the US and Japan, nearly on par with Germany (higher in terms of patents/R&D), and above France, the UK and Italy. In the early seventies Canada was even ahead of Japan, but then Japan took off and is now closing in even on the US. Notice that 1983 proved to be a turning point for ***all*** of the largest countries at the same time (USA, Japan, Germany, and to a lesser extent also for Canada); this is an interesting fact in itself, that remains to be explained.

The comparison with the Reference Group shows a very clear picture: Canada was well ahead of the four countries in the group throughout the seventies, but in the course of the eighties Israel and Finland caught up, surpassing Canada by the mid nineties. Taiwan experienced a meteoric rise since the early eighties, bursting ahead of the pack by 1997. South Korea is climbing up extremely fast as well, and will probably surpass Canada by 2,000. It is thus clear that the countries in the Reference Group are experiencing much faster rates of innovation than Canada, reflecting for the most part conscious policies of encouragement of Industrial R&D and of the High Tech sector.

Table 1 summarizes the main statistics for all these countries, including their "success rates" and growth rates in patenting, over the whole period (1968-97) and for the past 5 years. The picture that emerges is mixed: on the one hand Canada experienced healthy growth rates in patenting, as compared to the other G7 countries: for the past 30 years it was second only to Japan, and for the past 5 years it has the highest growth rate among the G7. On the other hand it still stands mid-way in terms of patents per capita (compared again to the other G7), and second to last in the absolute number of patents. In order to improve its standing in those terms Canadian patenting would have to growth significantly faster than present rates. The reference group offers a good perspective in

[7] We chose to normalize the number of patents by population, simply because this is a widely available and accurate statistic that provides a consistent scale factor.

Figure 7
Patents/ Non-Defense R&D - G7
(patents per 100M$ R&D)



that respect: notice that their growth rates in the past five years have been 2 to 5 times faster than Canada's!

Table 1 reveals also that Canada has a relative weakness in terms of "success rates", that is, the proportion of patent applications that result in patent grants: it stands second to last vis a vis the other G7 countries (only the UK has a worse record), and below 3 of the 4 countries in the Reference Group (only Taiwan is lower). To understand the implications of these differences, if Canada were able to reach the average of the G7 countries ahead of it (61%) from the present 55%, that would represent an increase of about 11% in the annual number of patents granted. This would be like an increase in the productivity of the R&D process, rather than an increase in the overall level of resources devoted to inventive activity.

[8] The R&D data for the countries in the reference group are spotty and less reliable.

Table 1
Canada, the G7 and the Reference Group:
Basic Patent Statistics – 1967 - 97

Country	Patents per Year		Patents per Capita		Success Rate		Annual Growth Rate	
	1967-97	***1992-97***	**1967-97**	***1992-97***	**1967-97**	***1992-97***	**1967-97**	***1992-97***
Canada	1,552	*2,560*	6.2	*8.6*	56%	*55%*	3.6%	*6.4%*
Other G7:								
France	2,466	*3,138*	4.6	*5.4*	66%	*63%*	2.2%	*1.9%*
Germany	6,422	*7,732*	9.9	*9.5*	65%	*63%*	2.6%	*3.8%*
Italy	959	*1,323*	1.7	*2.3*	59%	*58%*	3.2%	*1.9%*
Japan	13,515	*25,474*	11.8	*20.3*	65%	*61%*	8.6%	*3.8%*
UK	2,603	*2,814*	4.5	*4.8*	55%	*51%*	0.2%	*5.4%*
USA	47,153	*67,478*	19.8	*25.6*	62%	*59%*	1.7%	*5.2%*
The Reference Group:								
Finland	223	*490*	4.7	*9.6*	57%	*58%*	9.1%	*12.0%*
Israel	232	*564*	5.2	*10.0*	54%	*56%*	10.0%	*12.9%*
South Korea	472	*2,159*	1.1	*4.8*	61%	*62%*	34.3%*	*29.5%*
Taiwan	602	*2,291*	3.1	*10.7*	44%	*47%*	24.9%*	*19.7%*

* For South Korea and Taiwan the average growth rates are for the last 20 years.

It is important to note that in the present context the *absolute* number of patents remains key (similarly to the absolute level of R&D expenditures, rather than its ratio to GDP). In order to establish a viable, self-sustaining High Tech sector, a country has to achieve a critical mass in terms of pertinent infrastructure, skills development, managerial experience, testing facilities, marketing and communication channels, financial institutions, etc. Similarly, it is clear by now that spillovers, and in particular ***regional*** spillovers, are extremely important in fueling the growth of this sector. Once again, the amount of spillovers generated, and the ability to capture external spillovers is a function

of ***absolute***, not relative size. If we take the number of patents as indicative of the absolute size of the innovative sector, Canada still has a long way to go, considering that it stands below all of the other G7 countries except for Italy, and that by 1997 Taiwan and South Korea have already moved ahead of Canada (see Appendix 1).

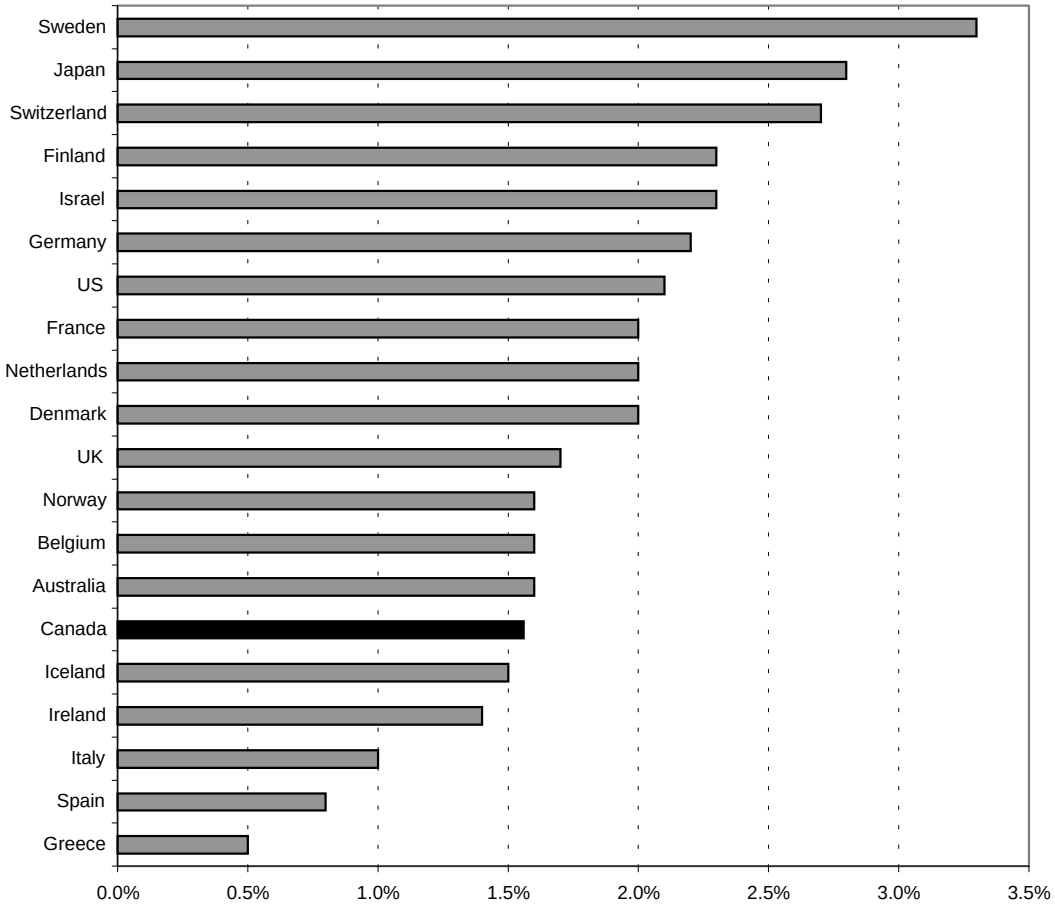
Recall from the discussion in section 3 that there is a tight relationship between R&D spending in Canada and patenting. Comparing Canada to OECD countries in terms of R&D/GDP ratios, and in terms of R&D per capita (see Figures 8a and 8b), we can see that Canada devotes relatively few resources to R&D.[9] Thus, it is quite clear that the somewhat precarious standing of Canada in terms of innovative outputs reflects to a large extent its weak commitment to R&D. Moreover, the implication of a ***low*** R&D/GDP ratio is even more problematic for Canada, considering once again that in this area the ***absolute*** amount of resources is what counts, and that Canada's economy is much smaller than the leading G7 countries. Thus, Canada's GNP in 1997 was 38% that of France, 25% that of Germany, 12% that of Japan, and 8% that of the US. These (much larger) countries devoted 2.0 – 2.8% of GDP to civilian R&D, as opposed to 1.5% for Canada.

V. The Technological Composition of Canadian Patented Innovations

The US Patent Office has developed over the years a very elaborate classification system by which it assigns patents to technological categories. It consists of over 400 main patent classes, and over 150,000 patent subclasses. The main patent classes have been traditionally aggregated into 4 fields: chemical, mechanical, electrical and other. We have developed recently a new classification scheme, by which we assigned these 400 patent classes into 35 technological "sub-categories", and these in turn are aggregated into 6 categories: Computers and Communications, Electrical and Electronics, Drugs and Medical, Chemical, Mechanical and Others. This classification allows one to study in detail the technological composition of the flow of patented innovations. In particular,

[9] Other indicators such as number of researchers per worker (47/10,000 in Canada) provide further evidence to that effect.

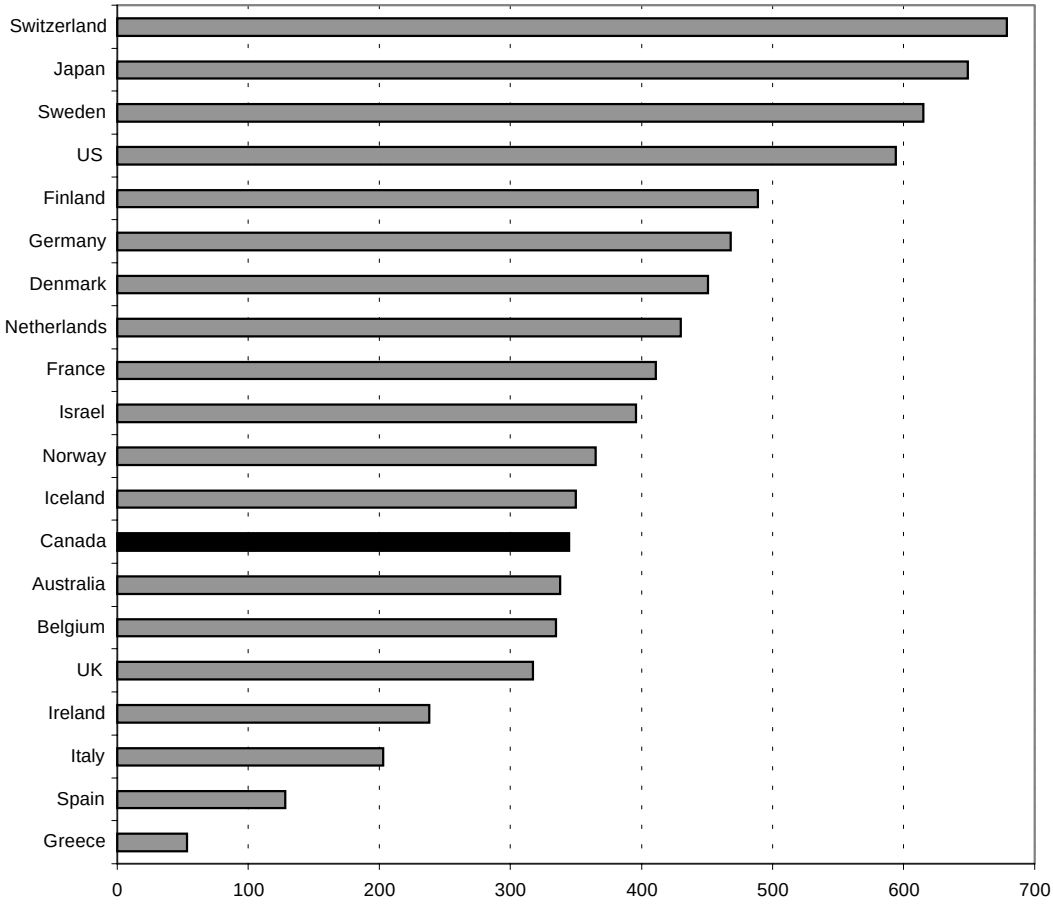
Figure 8a
Civilian R&D as % of GDP in 1996
OECD Countries



one can compare the technological portfolio of any country with world-wide trends, which is what I intend to do here with respect to Canada.

Figure 9 shows the distribution of patents by these six technological categories over time for all US patents, and Figure 10 does the same for patents granted to Canadian inventors (appendix 2 shows these distributions for patents granted to US inventors, and to non-US inventors). Figure 9 is supposed to reflect the main trends in worldwide, cutting-edge technology. The pattern is quite clear: for the first decade or so (i.e. 1967 ~

Figure 8b
Civilian R&D Per capita in (PPP) dollars 1996
OECD Countries

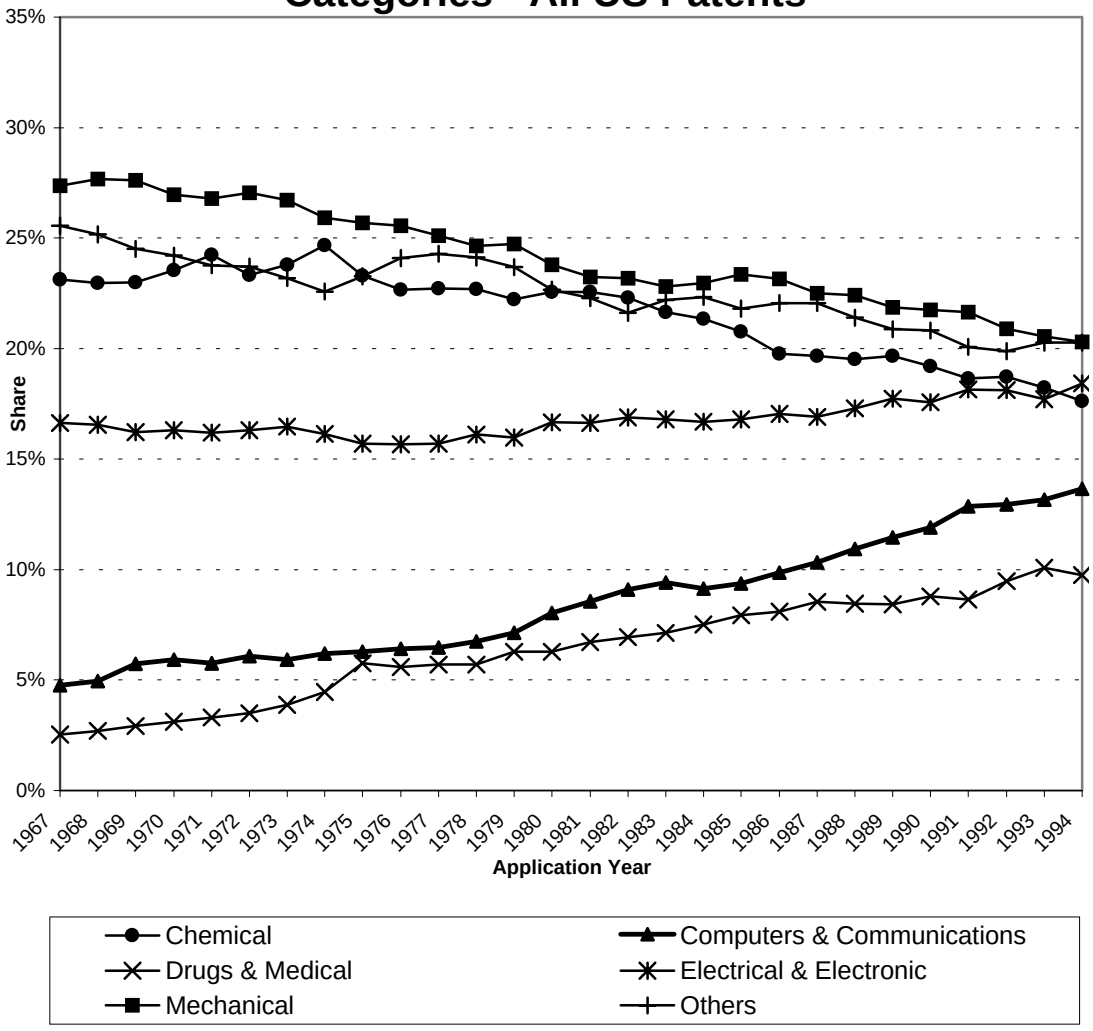


1978) there is little change - just a slow decline in Mechanical patents,[10] and a concomitant small increase in the share of Drugs and Medical. The three traditional fields (Mechanical, Chemical and Others) stand highest throughout this initial period, with shares of about 25% each. Both Drugs and Medical and Computers and Communications accounted for a very small fraction back then: 3% – 6% each.

Starting in 1979 this mostly static picture changes quite dramatically: all three traditional fields lose ground, whereas Computers and Communications (C&C) surges forward doubling its share (from 7% in 1979 to 14% in 1994), and Drugs and Medical

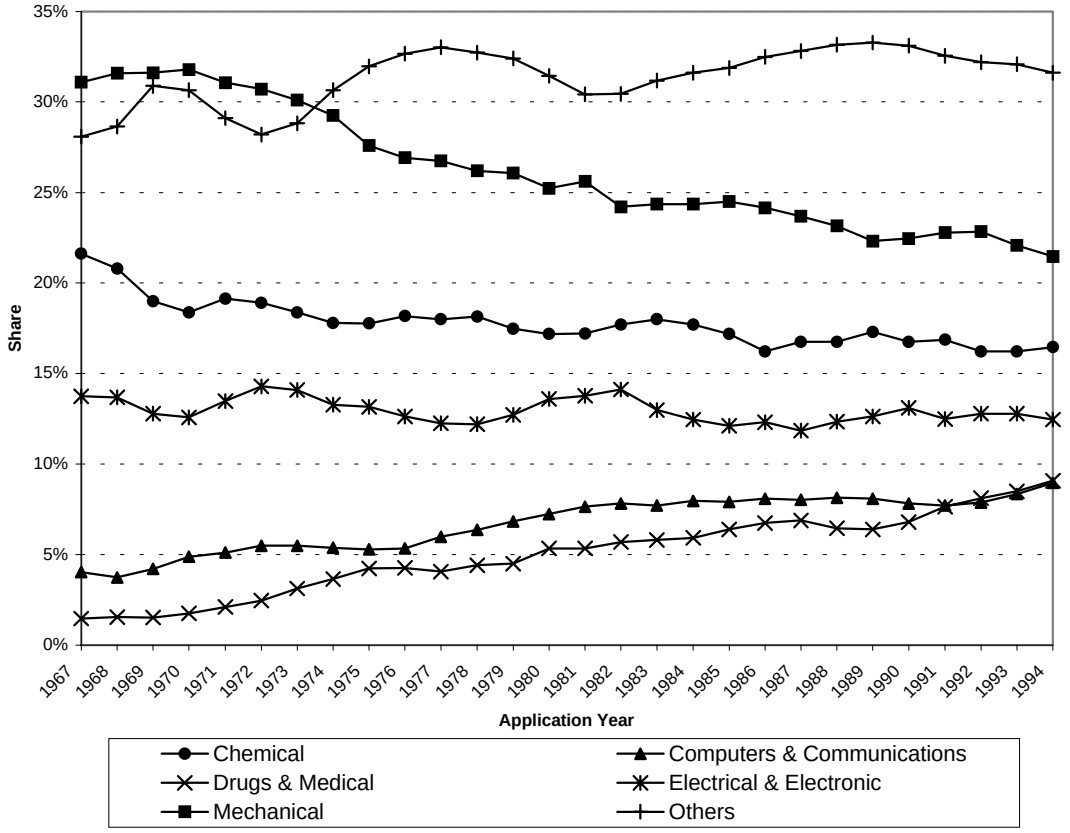
also increases rapidly from 6 to 10% (12% in the US). As to Electrical and Electronics, it increases slightly during this period, from 16% to 18%. It is important to remark that these changes in shares are all the more significant in view of the fact that there has been an equally dramatic increase in the ***number*** of patents issued (starting in about 1983). Thus for example, the actual number of patents in C&C experienced a ***threefold*** increase worldwide in 1979-94, whereas the total number of patents increased just by 54%.

Figure 9
Distribution of Patents by Technology Categories - All US Patents



[10] There is also a slight decline in Chemical patents for non-US inventors – see appendix 2.

Figure 10
Distribution of Patents by Technological Categories - Canadian Inventors



It is clear that these figures faithfully capture the crucial technological development of the last two decades, namely, the advent of Computers and Communications as the dominant "General Purpose Technology" (GPT) of our era.[11] As to Drugs and Medical, it would seem that its rise is demand driven, following the continuous increase in the share of GDP devoted to healthcare in industrialized nations, and in the US in particular. Moreover, current developments in Biotechnology may well turn this field into one of the dominant General Purpose Technologies of the next century. General Purpose Technologies play the role of "engines of growth", and thus their importance goes far beyond their weight as a sector. As the General Purpose Technology improves and spreads throughout the economy, it prompts complementary advances in user sectors, bringing about generalized productivity gains. A thriving, innovative

[11] See Bresnahan and Trajtenberg (1995) and Helpman and Trajtenberg (1998) for discussion of the notion of "General Purpose Technologies", and an analysis of their implication for growth.

General Purpose Technology sector (in this case C&C) is thus a crucial factor determining the growth potential of advanced economies.

Figure 11 compares the technological composition of all US patents with that of Canadian inventors, for the period 1980-94. The picture that emerges is quite disturbing: Essentially Canada seems to be "missing the boat" in terms of the prevailing General Purpose Technology, Computers and Communications, and instead it continues to innovate in traditional fields. Thus, the share of C&C patents in Canada barely changed during this period (from 7% to 9%), as opposed to the ***doubling*** of the C&C share for all patents (from the same initial base of 7% to 14%). It is also worrisome that the share of Electrical and Electronics (E&E), that stood at 18% for all patents by 1994, was only 12% for Canadian patents. This category embeds both mature E&E fields, but also newer semiconductor technologies, which are important in themselves and also support the C&C sector. Taken together, C&C and E&E accounted for a third of all patents by 1994, whereas in Canada they made just 21%.

Figure 11
Distribution of Patents by Technological Categories - 19

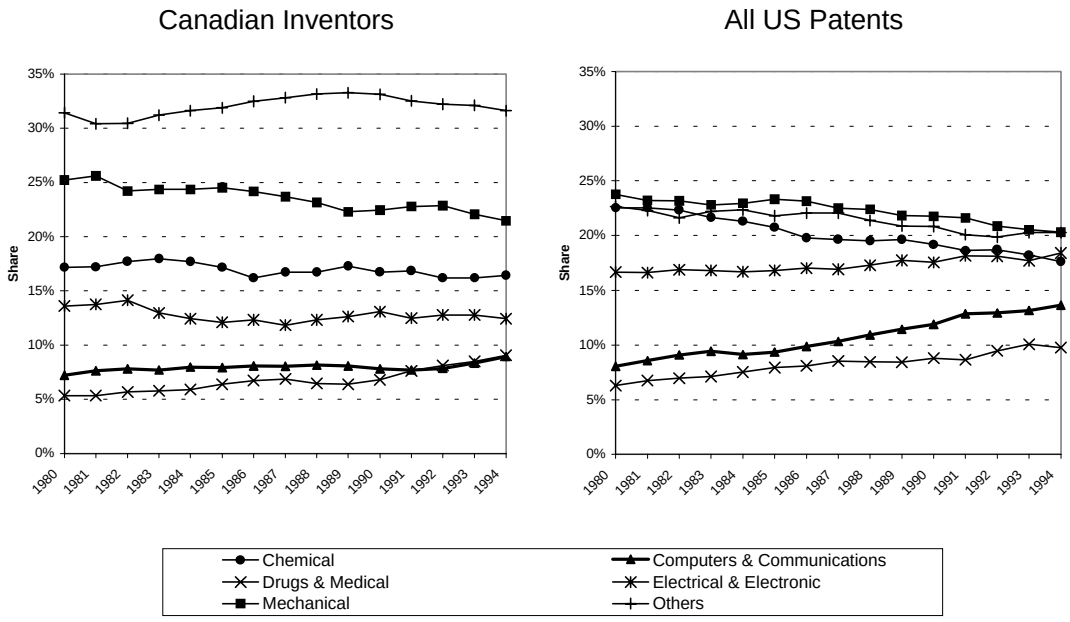


Table 2

Top Canadian Technological Sub-Categories * Canada vs. US 1987-96

Technological Sub Category	Number of Canadian Patents	Canada Rank	USA Rank
Mat. Proc & Handling	1303	1	4
Communications	1090	2	1
Transportation	796	***3***	8
Furniture,House Fixtures	745	***4***	14
Agriculture,Husbandry,Food	719	***5***	15
Drugs	596	6	5
Metal Working	566	7	11
Measuring & Testing	548	8	9
Earth Working & Wells	528	***9***	18
Receptacles	525	10	12
Motors & Engines + Parts	498	11	13
Electrical Devices	483	12	10
Surgery & Med Inst.	470	13	***3***
Power Systems	466	14	***7***
Computer Hardware & Software	405	15	***2***
Resins	383	16	***6***
Liquid Purification or Separation	337	17	26
Amusement Devices	336	18	21
Heating	328	19	27
Apparel & Textile	307	20	25

* Excluding Miscellaneous in each Technological Category

The flip side of Canada's disadvantage in C&C and in E&E is the high shares of two of the three traditional patent categories: Others, which accounts for almost 1/3 of all Canadian patents (versus 20% worldwide), and to a lesser extent Mechanical (the third field, Chemical, is actually lower in Canada that in the rest of the world). In order to look more in detail into this matter, Table 2 shows the top 20 technological sub-categories for Canadian patents granted during 1991-96, and compares their ranking with that of the patents granted to US inventors during the same period.[12] The most glaring differences are as follows. Canadian inventors patent relatively ***much more*** (once again, in terms of ranking) than US inventors in the following fields:

- Transportation *(rank 3 in Canada, 8 in the US)*
- Furniture and House Fixtures *(rank 4 in Canada, 14 in the US)*
- Agriculture, Husbandry and Food *(rank 5 in Canada, 15 in the US)*
- Earth Working and Wells *(rank 9 in Canada, 18 in the US)*

Canadians patent ***much less*** than their US counterparts in:

- Computer Hardware and Software *(rank 2 in the US, 15 in Canada)*
- Surgery and Medical Instrumentation *(rank 3 in the US, 13 in Canada)*
- Resins *(rank 6 in the US, 16 in Canada)*
- Power Systems *(rank 7 in the US, 14 in Canada)*

Thus, the differences in the share of Computers and Communications are due not to Communications (in that sub-category Canadian patents rank almost as high as US patents), but to Computer Hardware and Software, where the disparity is very large.[13] Likewise, the (much smaller) difference in Drugs and Medical is due to Medical Instrumentation, not to Drugs.[14]

Why is the divergence in the technological composition of Canadian patents an issue?

One could argue that the technological composition of Canadian patents reflects a series of well-grounded economic factors, and hence that its divergence vis a vis other

[12] The table excludes the "miscellaneous" sub-categories from each of the main categories (i.e. there is a miscellaneous sub-category in Computers and Communications, in Chemical, Mechanical, etc.).
[13] In fact, the number of Canadian patents in Communications was 2.6 times the number in Computers (2,156 versus 816), whereas for US inventors the factor was just of 1.3.

countries does not necessarily carry normative implications. That may well be the case, and indeed the top technological sub-categories seem to correlate to some extent with some notion of comparative advantage, relative size of sectors, idiosyncratic technological needs, etc.

The problem is that Computers and Communications (or, more generally, Information Technology, IT), the area where Canadian patents are lagging the most in relative terms, is not just a field like any other, but as said before it is the dominant General Purpose Technology (GPT) of our times. Of course, not every country needs to excel technologically in the prevalent GPT in order to benefit from it. Information Technologies are spreading rapidly and becoming a powerful economic force all over the industrialized world (and to a lesser degree also in less developed countries), and not just in those countries that are innovators in that field. However, in order for an economy to be able to reap the economy-wide benefits and tap the full potential of a GPT for growth, it *does* need to innovate in it. That is so not so much because the innovations per se are going to impact growth, but because by innovating in the GPT area, a country ***develops and enhances its capabilities to harness the GPT for growth***.

The argument here echoes the notion of "absorptive capacity" in the context of basic research (see Cohen and Levinthal, 1989). This notion was raised *inter alia* as a response to the puzzle - why do for-profit firms engage in basic research, given that they cannot appropriate most of the returns from such research? The answer is that in order for those firms to be able to benefit from the basic research done elsewhere (e.g. in academia), they need to engage in such activity themselves. Thus, the scientists working at Xerox's PARC serve *inter alia* as a bridge between worldwide advances in science, and the particular technological needs (or opportunities) at Xerox. The world of IT moves too fast for an economy to be able to adopt a passive stance and still benefit from it. Only those that are in the race themselves can hope to cope with the speed of advances of the leading runners.

[14] Canadian inventors took more patents in Drugs than in Medical instrumentation (942 versus 781, with an additional 371 in Biotech), whereas the opposite was true for US inventors.

It is important to emphasize that the problem lies as said with ***Computers Hardware and Software***, not with ***Communications***. As we shall see in Section VII, this view is reinforced when examining the "quality" of Canadian patents relative to US patents: in Computers there is a big gap in the quality of Canadian patents in favor of US patents, in Communications the gap is much smaller (see Figure 13).

VI. Who Owns What? A View at the Distribution of Canadian Patents Assignees

By way of introduction, we need to describe the different "players" related to any given patent. First there are the inventors, that is, those individuals directly responsible for carrying out the innovation embedded in the patent. Second there is the assignee, that is, the legal entity (corporation, government agency, university, etc.) that owns the patent rights, assigned to it by the inventor(s). However, there are individual inventors that work on their own and have not yet assigned the rights of the patent to a legal entity at the time of issue, in which case the patent is classified as "unassigned".[15] For most patents the inventors are typically employees of a firm, in which case the assignee is the firm itself.

According to the conventions of the US Patent Office, the "nationality" of a patent is determined by the address (at the time of application) of the ***first inventor***. That is, if a patent has many inventors and they are located in a variety of countries, the location of the first inventor listed on the patent determines to which country it is deemed to belong. Likewise, if the assignee is located in a country different from that of the first inventor, it is once again the location of the latter that determines the nationality of the patent. Notice for example that the patent displayed in Figure 2 is regarded as Canadian even though there is a second inventor that is not, and the assignee is Rolls Royce, UK.[16]

The data that we have presented so far (e.g. number of patents by countries) were compiled according to this convention: Canadian patents are those for which the address

[15] In a small number of cases the patent is "assigned to individual, that is, the inventor herself may appear as the legal entity that owns the patent rights.

[16] Clearly, this convention is completely inconsequential for anything but the compilation of statistics about international patenting activity.

of the first inventor was in Canada, regardless of the identity and location of the assignees or of the other inventors, and similarly for the other countries. The important question now is, who actually owns the rights to these inventions? Keeping in mind that for patents labeled "Canadian" it was indeed Canadian scientists and engineers that were responsible for the "innovative act" that led to these patents,[17,18] the question is: which entity, commercial or otherwise, is in a position to reap the economic benefits from these inventions?

At the upper level of aggregation there are 3 possibilities: (*i*) That there is no assignee (i.e. the inventor herself retains the rights to the patent), and hence it is not clear if and when the patent will be commercially exploited; (*ii*) that the assignee is also Canadian, that is, that the location of the entity owning the rights to the patent is in Canada; (*iii*) that the assignee is foreign. Even the seemingly sharp distinction between (*ii*) and (*iii*) is not quite as clear. There are on the one hand Canadian corporations that have established subsidiaries or otherwise related firms in other countries, and they may choose to assign the patents (done is Canada) to their "foreign" subsidiaries (but in fact we should regard them as Canadian). On the other hand, there are multinational corporations that have established subsidiaries in Canada, and some may choose to assign the locally produced patents to the Canadian subsidiary, even though the multinational retains effective control over the property rights.

The distinction between these 3 categories, unassigned, Canadian ("local") and foreign, is then telling of the extent to which the country can expect to benefit from "its" patents. The unassigned patents may of course find their way to successful commercial applications (and many do), but they typically face much higher uncertainty than corporate assignees that own from the start the patents issued to their employees.

[17] At least in part, since as said patents classified as "Canadian" may include also other inventors located in different countries.

[18] The reason we have to be careful with the wording here is as follows: suppose that an Canadian scientist goes to a sabbatical to MIT in Cambridge, MA, and carries out a project in a lab there that results in a patented invention (there are quite a few of these in the data). Such a patent would be labeled as Canadian, but the assignee would be MIT. Now, the invention was made possible not only by the ideas and efforts of the Canadian scientist, but also by the facilities, physical and otherwise, of the host institution. The end result is no doubt a function of both.

Moreover, corporations are in a better position to capture internally the spillovers generated by those innovations. Thus, the higher is the percentage of unassigned patents, the less would be the economic potential of a given stock of patents. The distinction between foreign and local assignees is presumably informative of the probability that the *local economy* would be the prime beneficiary of the new knowledge embedded in the patent. One can draw various scenarios whereby foreign ownership may be as good if not better in that respect than local ownership of the patent rights (e.g. the foreign multinational offers marketing channels for the innovation that would be inaccessible to local firms). Still, we are rapidly moving in many technological areas to an era where the prime asset is the effective control of intellectual property, and presumably that is correlated with the ownership of patent rights. However, we do not need to take a strong stand in this respect, only to agree that this distinction is informative and quite likely important for understanding the potential value for a country of its stock of patents.

Table 3 shows the distribution between unassigned, "local" and foreign assignees, for Canada, the G7 and the Reference Group.[19] As we can see, the percentage of local assignees in Canada is much lower than that of all other G7 countries, due primarily to a high share of unassigned patents. As to the Reference Group, Finland and South Korea have much higher shares of local assignees than Canada, Israel a slightly higher share, and Taiwan a lower one. Taiwan has indeed a very low percentage of local assignees (due to an extremely high share of unassigned, 64%!), whereas South Korea has an extremely high share of them (topped only by Japan). These differences are clearly related to the industrial organization of these countries: Taiwan has a very large number of small enterprises, and an extremely high rate of turnover of firms, whereas South Korea is dominated by huge, stable *chaebol* (this is a topic worth of further investigation). The contrast between the latest figures (for 1998) and those for the whole period 1976-98 reveal that the G7 countries are quite stable, whereas the countries in the Reference Group increased the share of local assignees, particularly Taiwan and South Korea.

[19] These figures do not come from the same database as those presented so far: (1) The number of patents assigned to a country in table 3 include all patents in which ***any*** of the inventors resides in that country; (2) the period covered in table 3 is 1976-98 for granted patents, as opposed to 1968-97 for applied patents in all

Table 3
Distribution of Assignee Types – International Comparison 1976-98

	Number of Patents				Percentages		
Country	**Unassigned**	**Foreign**	**Local**	**Total**	**Unassigned**	**Foreign**	**Local***
Canada	15,756	8,614	21,175	45,545	**35%**	**19%**	**46%** ***(50%)***
Other G7							
France	6,567	8,883	49,500	64,950	10%	14%	76% (*75%)*
Germany	13,147	17,060	117,660	147,867	9%	12%	80% *(77%)*
Italy	3,957	3,904	19,293	27,154	15%	14%	71% *(72%)*
Japan	9,003	6,950	341,854	357,807	3%	2%	96% *(95%)*
UK	5,812	15,698	37,693	59,203	10%	27%	64% *na*
USA	296,191	19,546	887,308	1,203,045	25%	2%	74% *(76%)*
Reference Group							
Israel	1,815	1,807	3,443	7,065	26%	26%	49% (*52%)*
Finland	834	422	4,739	5,995	14%	7%	79% *(81%)*
South Korea	1,154	531	10,666	12,351	9%	4%	86% *(92%)*
Taiwan	13,296	991	6,362	20,649	64%	5%	31% *(44%)*

* Numbers in parenthesis: the percentages for 1998.

What characterizes Canada vis a vis other countries is that ***both*** the shares of unassigned and of foreign are relatively high: the percentage of unassigned in Canada is the second highest (after Taiwan), and the percentage of foreign is the third highest (after

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other tables. Both are due to limitations of the search capabilities in the Internet site of the US Patent Office.

the UK and Israel). Thus, there is reason for concern in this respect, in that a full half of Canadian inventions may not fully benefit the Canadian economy, either because they are done by individuals that may have a hard time commercializing them, or because they are owned by foreign assignees.

VII. The Relative "Importance" of Canadian Patents

Simple patent counts are a very imperfect measure of innovative activity, simply because patents vary a great deal in their technological and economic "importance" or "value", and the distribution of such values is extremely skewed. Recent research has shown that patent citations can effectively play the role of proxies for the "importance" of patents, as well as providing a way of tracing spillovers (see Trajtenberg, 1990, and Henderson, Jaffe and Trajtenberg, 1998). By citations I mean the references to previous patents that appear in the front page of each patent (see Figures 1 and 2).

Patent citations serve an important legal function, since they delimit the scope of the property rights awarded by the patent. Thus, if patent 2 cites patent 1, it implies that patent 1 represents a piece of previously existing knowledge upon which patent 2 builds, and over which 2 cannot have a claim. The applicant has a legal duty to disclose any knowledge of the prior art, but the decision regarding which patents to cite ultimately rests with the patent examiner, who is supposed to be an expert in the area and hence to be able to identify relevant prior art that the applicant misses or conceals.[20]

I use data on patent citations here in order to examine the "quality" of Canadian patents vis a vis patents awarded to US inventors. That is, I ask to what extent Canadian patents are more or less frequently cited than US patents, controlling for various effects, and analyze how these differences vary over technological categories. Thus, I regress the number of citations received by each patent on control variables (dummies for 5 technological classes as well as for grant years), and a dummy for the US. The sign and

[20]Because of the role of the examiner and the legal significance of patent citations, there is reason to believe that patent citations are less likely to be contaminated by extraneous motives in the decision of what to cite than other bibliographic data such as citations in the scientific literature. Moreover, bibliometric data

magnitude of this latter coefficient is telling of the extent to which Canadian patents receive more or less citations on average than US patents, controlling for technological composition and age of patents. The results for the benchmark regression are as follows:[21]

Number of obs = 95473
F(6, 95433) = 387.46
Prob > F = 0.0000
R-squared = 0.1194
Adj R-squared = 0.1190
Root MSE = 5.0802

	Coefficient	**Std. Error**	**t-statistic**
constant	3.143	0.035	90.496
US dummy	***0.614***	0.033	18.403
Dummies for Tech Categories:			
Chemical	0.217	0.049	4.467
Drugs&Medical	2.003	0.077	26.165
Comp&Comm	2.145	0.068	31.376
Mechanical	-0.258	0.045	-5.685
Elec&Electronics	0.296	0.053	5.605

gyear F(33,95433) = 337.883 0.000
(34 categories)

Thus, US patents are "better" than Canadian patents by about 20% (the coefficient of 0.614 for the US divided by the constant term of 3.14). Table 4 presents the results of the analysis for each technological category, and Figure 12 shows them graphically. The columns represent, in percentages, the extent to which Canadian patents received lower citation rates than US patents, e.g. in Drugs and Medicine the average number of citations received by Canadian patents was 4.41 (see Table 4), whereas the average for US patents was 4.4+1.2=5.6. Thus, the "disadvantage" of Canadian patents was 4.4/5.6 – 1 = -22%. As can be seen in Figure 12, the biggest disadvantage of Canadian patents vis a vis the US resides in Drugs and Medical and in Computers and Communications; the smallest in

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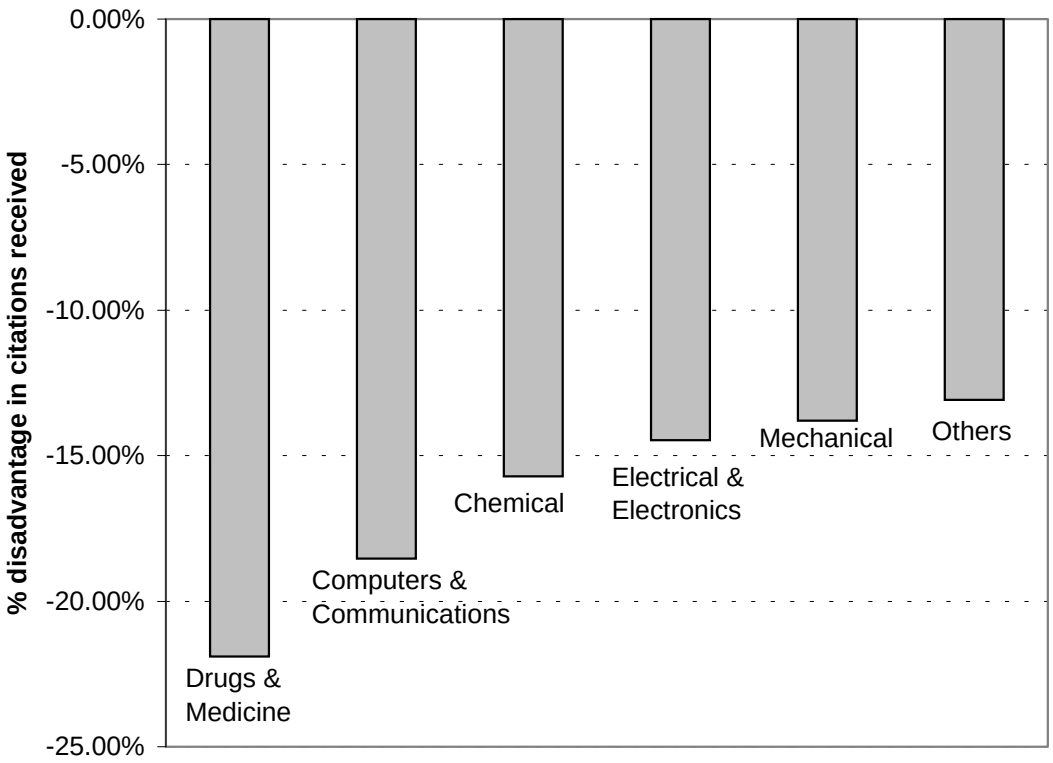
are of limited value in tracing the *economic* impact of scientific results, since they are not linked to economic agents or decisions.

[21] The data for these regressions consist of all Canadian patents, as well as a sample of 1/50 of patents awarded to US inventors.

Figure 12
Relative "Importance" of Canadian vs. US Patents
by Technological Category



Mechanical and Others. Once again, this is quite worrisome: the former two are the leading technologies of our time, the latter two are declining traditional fields.

However, a closer look at Computers and Communications reveals a wide disparity between the two components (see Table 4 and Figure 13): in Communications the disadvantage was just of -9.5% whereas in Computers it stands at –19%. That is, Canada suffers from a large gap in the "quality" of patents in ***Computers*** vis a vis the US, but in ***Communications*** the disadvantage is much smaller, and in fact it is even lower than in Mechanical and Others, the two traditional fields with the least disadvantage. This is good news, recalling that the rank of patents in Communications (in terms of absolute numbers) is almost as high in Canada as it is in the US. That is, Canadians inventors patent a great deal in Communications, and these patents are of relatively high "quality" – still below that of US patents in the same field, but only by a small factor. Thus, the problem that we have identified earlier on in terms of the relatively low share of

Canadian patents in the dominant GPT of our time, Computers and Communications, is first and foremost a problem in Computers, not in Communications.

Table 4
Regressions by Technological Categories

	Chemical	Computers & Communications	Drugs & Medical	Electrical & Electronic	Mechanical	Others
Constant	3.44 *(55.2)*	4.75 *(37.6)*	4.41 *(26.3)*	3.45 *(55.1)*	3.02 *(79.5)*	3.23 *(93.3)*
US Dummy	0.64 *(7.7)*	1.08 *(6.5)*	1.24 *(5.6)*	0.58 *(7.1)*	0.48 *(8.9)*	0.49 *(9.6)*
R^2	0.086	0.178	0.139	0.14	0.095	0.123
# of obs.	18,511	7,020	5,372	14,105	23,353	27,090
Canadian disadvantage	-15.7%	-18.5%	-21.9%	-14.5%	-13.8%	-13.1%

Sub-Categories within Computers and Communications

	Computers & Communications	Computers	Communications
Constant	4.75 *(37.6)*	5.16 *(19.1)*	4.71 *(35.3)*
US. Dummy	1.08 *(6.5)*	1.2 *(3.7)*	0.49 *(2.6)*
R^2	0.178	0.225	0.156
# of obs.	7,020	2,767	4,253
Canadian disadvantage	-18.5%	-18.9%	-9.5%

Sub-Categories within Drugs and Medical

	Drugs & Medical*	Medical Instrumentation	Drugs	Bio Tech
Constant	4.41 *(26.3)*	6.08 *(19.4)*	3.29 *(13.8)*	2.71 *(9.6)*
US Dummy	1.24 *(5.6)*	2.02 *(5.1)*	0.3 *(0.9)*	0.62 *(1.6)*
R^2	0.139	0.218	0.082	0.246
# of obs.	5,372	2,081	2,020	767
Canadian disadvantage	-21.9%	-25.0%	-8.3%	-18.7%

* includes, besides the three subcategories shown, a "misc." category

t-statistics in parenthesis

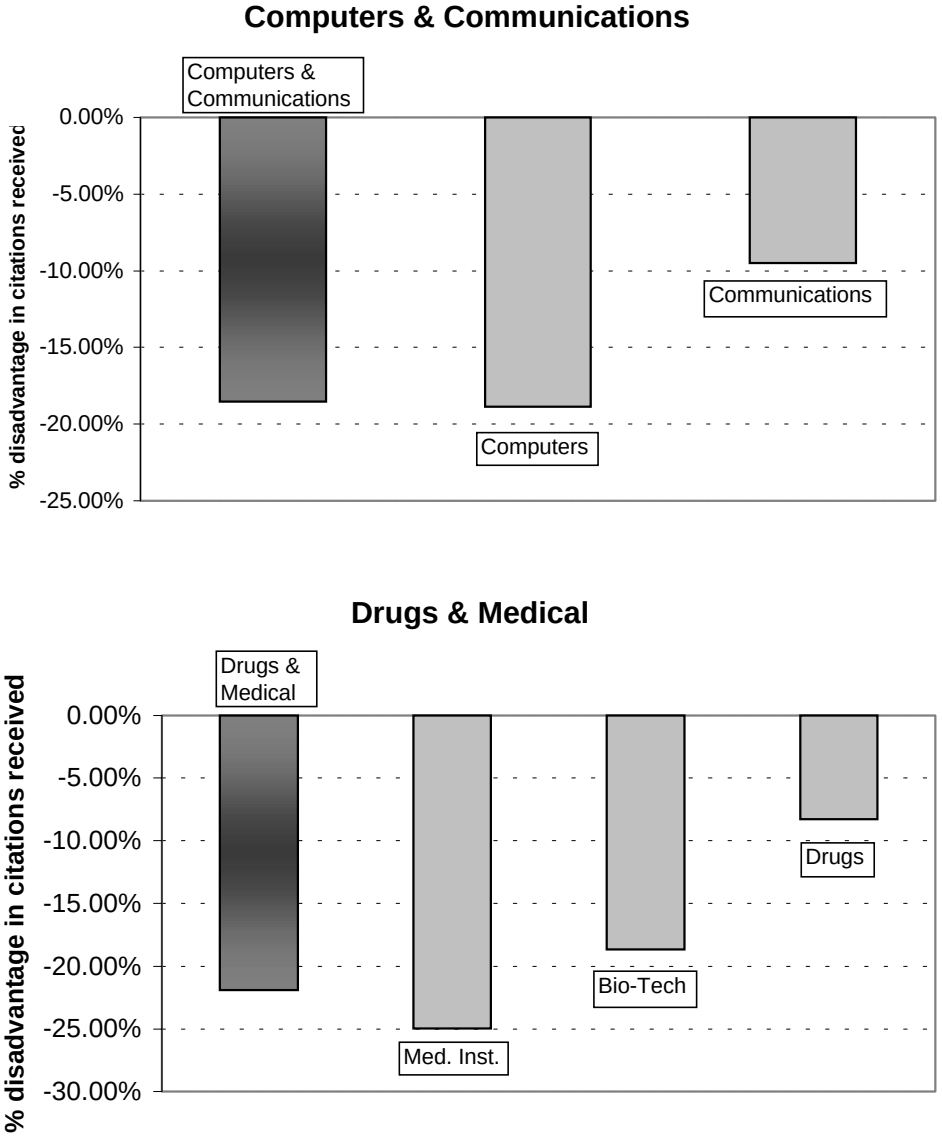
Likewise, a detailed examination of the "quality" of patents in Drugs and Medical reveals that the disadvantage of Canadian patents vis a vis the US lies primarily in Medical Instrumentation (see again Table 4 and Figure 13). In Drugs the gap with the US is much smaller (-8.3%) and not quite significant from a statistical point of view. As said before, Canadian inventors took more patents in Drugs than in Medical Instrumentation (the opposite is true for US inventors), and hence here again the news are good in that sense.

VIII. Concluding Remarks and Policy Implications

Before summing up, it is important to emphasize once again that the forgoing analysis was conducted entirely on the basis of data contained in Canadian and other patents issued by the US Patent Office. Clearly, not all Canadian innovations are reflected in those patents (the same is true for the comparison countries), and hence the results should be qualified accordingly. However, there is reason to believe that Canadian patents issued in the US are indeed representative of the main technological trends and patterns in Canada. That is so both because of the large number of such patents relative to domestic patent applications, and because of fragmentary supporting evidence from other sources on some of the findings (such as the good standing of the field of Communications in Canada).

The picture that emerges from the forgoing analysis is mixed at best, and points at a series of weaknesses in Canadian innovative performance:

Figure 13
Relative "Importance" of Canadian vs. US Patents
Selected Sub Categories



1. In terms of relative measures of innovative outputs such as patents per capita and patents/R&D ratios, Canada stands mid way vis a vis the other G7 countries, but it

has been overtaken in recent years by a group of countries geared towards the High Tech sector (Finland, Israel, Taiwan, with South Korea closing-in).

2. Canada stands well below the other G7 (except for Italy) in terms of the relative amount of resources devoted to innovation, with a R&D/GDP ratio of 1.5%, as opposed to 2.0-2.8% for Germany, Japan and the US.
3. Because of the importance of indivisibilities and critical mass in this area, what ultimately counts is both the absolute amount of R&D, and the absolute number of patents received. Thus, the medium to poor showing in the ***relative*** measures mean a very poor standing in ***absolute*** terms, and carry potentially serious implications for economic performance.
4. Canadian patenting is highly correlated with lagged R&D spending in Canada as well as with worldwide trends in patenting. The latter are exogenous but the amount of resources devoted to R&D is not. Thus, a current policy shift in favor of R&D spending may boost innovative outputs in 2-3 years.
5. The "rate of success" of Canadian patent applications in the US is low relative both to the other G7 and to the Reference Group. It is not clear what accounts for the gap - insufficient selectivity, poor overall "quality" of the applications, procedural difficulties, etc. It is worth examining this area more in detail, since an increase in the success rate may act like a productivity boost to the innovation process.
6. The technological composition of Canadian patents is out of step with the rest of the world: in Canada two of the three traditional fields (Mechanical and Others) still comprise the lion share of patents, whereas the fields of Computers and Communications (C&C) and of Electrical and Electronics are well below the world mark.
7. Close examination reveals that the problem lies with Computers (Hardware and Software), and not with Communications. This is true also in terms of the "quality" of Canadian patents in these fields, vis a vis US patents.
8. The lagging of Canadian innovation in Computers may have dire consequences for the economic performance of the economy as a whole, since C&C constitute the leading "General Purpose Technology" of our times.

9. The patterns of ownership of Canadian patents are also troubling: less than half of Canadian patents are owned by Canadian assignees, 35% are unassigned (the second highest % among the G7), and 19% are owned by foreign assignees. Thus, half of Canadian inventions may not fully benefit the Canadian economy, either because they are done by individuals that may have a hard time commercializing them, or because they are owned by foreign assignees.
10. There is a significant gap of about 20% in the "quality" or "importance" of Canadian patents versus patents of US inventors, as measured by the number of citations received. The largest disadvantage was in Drugs and Medical (-22%) and in Computers and Communications (-19%), whereas in two of the traditional fields Canadian patents exhibited the least disadvantage. A close-up look reveals that the quality gap resides first and foremost in Computers, not in Communications, and in Medical Instrumentation, not in Drugs.

Clearly, there is a great deal of room for improvements both in the rate and in direction of innovative activity in Canada. According to most indicators, Canada does possess the human capital and the infrastructure needed to benefit from and innovate successfully in cutting edge technologies. Whether or not it will do so depends as much on allocative decisions (e.g. R&D spending) as on institutional factors affecting innovation and entrepreneurship. Both are to some extent within the realm of economic policy.

References

Bresnahan, T. and M. Trajtenberg, "General Purpose Technologies - Engines of Growth?" Journal of Econometrics, January 1995, 65(1), pp. 83-108.

Cohen, W. and D.A. Levinthal, "Innovation and Learning: The Two Faces of R&D". Economic Journal, 99(397), September 1989, pp. 569-96).

Helpman, E. and M. Trajtenberg, "A Time to Sow and a Time to Reap: Growth Based on General Purpose Technologies". In Helpman, E. (ed.), General Purpose Technologies and Economic Growth. Cambridge: MIT Press, 1998, pp. 55-83.

Henderson, R., Jaffe, A. and M. Trajtenberg, "Universities as a Source of Commercial Technology: A Detailed Analysis of University Patenting 1965-1988". Review of Economics and Statistics, February 1998, Vol LXXX (1), pp. 119-127.

Jaffe, A., Henderson, R. and M. Trajtenberg, "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations". Quarterly Journal of Economics, August 1993, pp. 577-598.

Levin, R., A. Klevorick, R.R. Nelson, and S.G. Winter, "Appropriating the Returns from Industrial Research and Development," Brookings Papers on Economic Activity, 1987, *3*, 783-820.

National Science Foundation, Science and Technology Data Book, Washington D.C. NSF 1996.

Rafiquzzaman, Mohammed, and Lori Whewell, "Recent Jumps in Patenting Activities: Comparative Innovative Performance of Major Industrial Countries, Patterns and Explanations." Industry Canada Research Publications Program, Working Paper # 27, December 1998.

Trajtenberg, M. "A Penny for Your Quotes: Patent Citations and the Value of Innovations". The Rand Journal of Economics, Spring 1990, 21(1), 172-187.

Trajtenberg, M., Henderson H. and Jaffe, A. and, "University versus Corporate Patents: A Window on the Basicness of Invention." Economics of Innovation and New Technology, 1997, 5 (1), pp. 19-50.

Trefler, Dan, "Canada's Lagging Productivity". Canadian Institute of Advanced Research, ECWP-125, May 1999.

US Patent Office, Internet Site: http://www.uspto.gov/

Appendix 1
Issued Patents by Application Year 1968-97

Country	1968-72	1973-77	1978-82	1983-87	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997
Canada	1,106	1,180	1,147	1,345	1,876	2,029	1,938	2,052	1,984	2,274	2,472	2,781	2,564	2,709
France	1,929	2,164	2,199	2,397	2,940	2,925	3,051	2,980	2,926	2,926	3,062	3,449	3,035	3,220
Germany	4,874	5,745	6,167	6,660	7,621	7,759	7,504	6,920	6,966	6,775	7,431	8,180	7,869	8,403
Italy	660	718	819	971	1,267	1,232	1,283	1,250	1,267	1,184	1,268	1,415	1,356	1,393
Japan	4,062	6,385	9,359	13,979	19,866	21,650	22,104	22,811	22,714	22,066	25,352	26,659	25,906	27,386
UK	2,764	2,709	2,357	2,429	2,704	2,811	2,594	2,341	2,265	2,474	2,819	3,086	2,743	2,946
USA	45,150	41,894	38,222	37,990	46,968	50,190	53,266	53,790	56,690	59,264	65,384	74,610	64,947	73,182
Finland	70	103	143	212	262	310	350	352	329	361	460	503	544	580
Israel	58	102	137	211	281	318	325	316	355	422	578	605	566	650
South Korea	4	9	20	74	205	409	510	795	906	1,026	1,587	2,029	2,851	3,302
Taiwan	1	33	87	279	557	725	932	1,116	1,260	1,567	1,908	2,197	2,688	3,097

See Notes in following page.

Notes to Appendix 1
Sources of Data on Yearly Patent Counts by Countries

The difficulty in obtaining accurate patent counts by ***application year*** stems from the lag between application and grant, that causes truncation in the figures for recent years. That is, we have the complete figures for patents by grant year up to 1998, but not by application year. However, one can estimate these figures relying on the previous percentage of "successful" applications (since we do have the number of raw applications for recent years) and other data. In particular, the figures showed in Appendix 1 (and used throughout the paper) were compiled and/or estimated as follows:

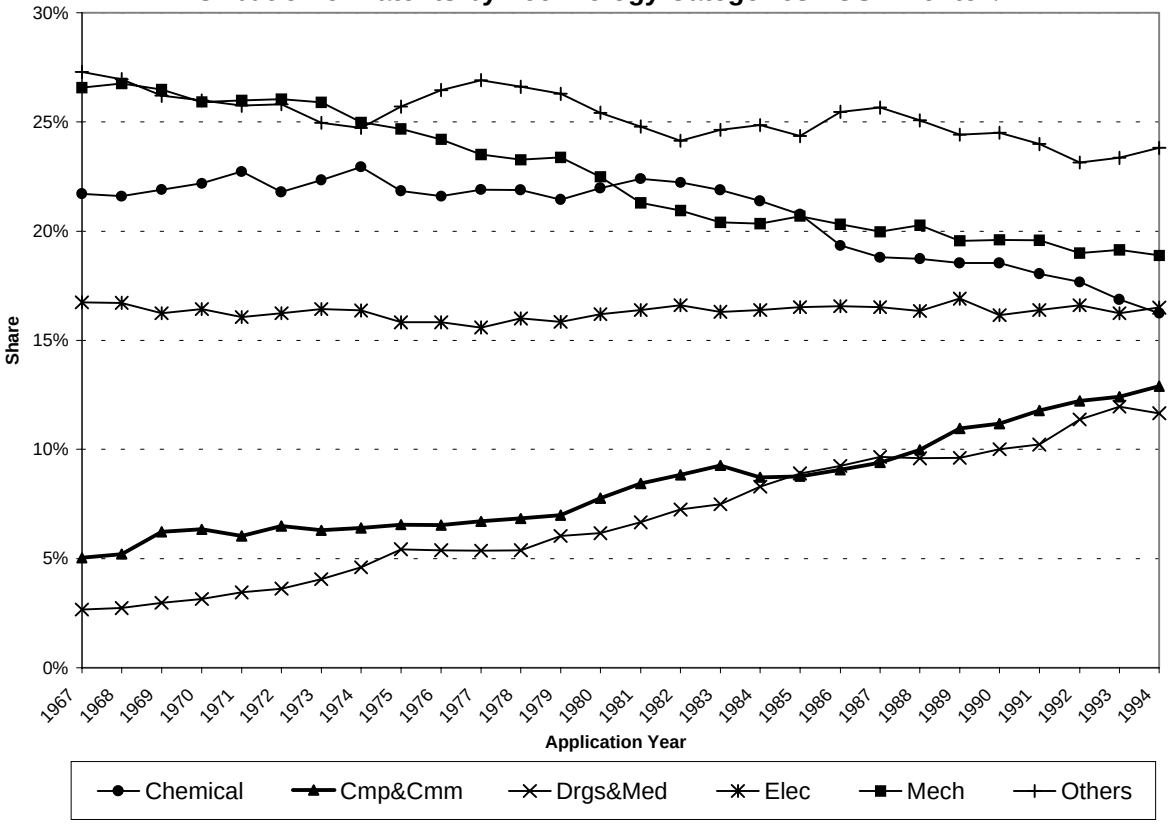
- Up to 1989: from our data file.
- For 1990-94: taken from the latest TAF-USPTO report as given there. These figures are based upon patents granted up to the end of 1998, but since over 99% of patents are examined by the forth year after application, these figures may be regarded as essentially complete.
- For 1995: (patents applied in '95 and granted up to '98)/(ratio of '95 patents whose examination was completed by '98=0.98).
- For 1996, average of the following two estimates: (*i*) (patents applied in '96 and granted up to '98)/(ratio of '96 patents whose examination was completed by '98=0.84); (*ii*) (number of raw applications in '96)*("national success ratio": percentage of patents applied for in '94 and '95 that were eventually granted, out of raw applications in those years).
- For 1997: (number of patent applications filed in '97)*(estimated national success ratio for '96). The later was computed as: (estimated number of patents granted in '96)/(number of applications in '96).

Appendix 2
Total *non-defense* R&D expenditures in G7 Countries
(in constant 1992 billion $)

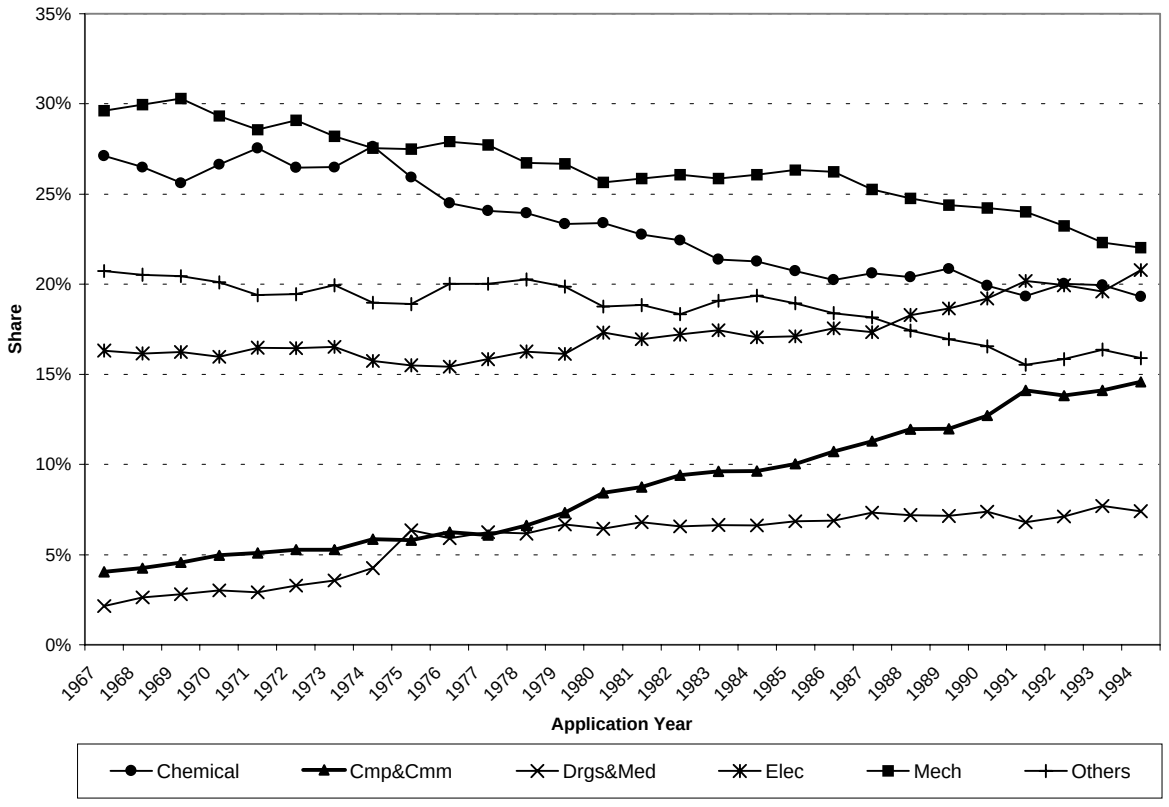
Country	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Canada	5.15	5.56	5.61	6.11	6.62	6.99	7.02	7.14	7.31	7.75	7.90	8.21	8.68	9.00	9.13
France	13.38	14.46	15.24	16.14	16.87	16.97	17.51	18.32	19.70	20.48	21.15	22.42	22.03	21.73	21.72
Germany	22.95	23.69	24.05	24.70	27.07	27.96	29.92	31.03	32.37	32.58	35.04	35.84	34.45	34.35	34.22
Italy	6.77	7.06	7.45	8.01	9.09	9.44	10.31	10.80	11.38	12.38	12.74	13.13	11.90	11.30	11.54
Japan	34.83	37.38	40.31	43.25	48.00	48.76	52.07	56.20	61.55	66.58	67.94	68.91	66.55	65.63	69.74
UK	13.66	13.39	13.12	13.84	14.56	15.65	16.18	17.13	17.61	17.97	16.57	17.83	17.80	17.99	17.17
USA	81.41	82.55	86.25	93.88	100.36	101.90	103.34	107.79	113.79	120.92	127.83	129.36	126.28	128.58	138.35

Notes:
Data taken from NSF site, "National Patterns of R&D Resources: 1997 Data Update" (table b8.xls).
Canada figures for 1992 and 1994 were calculated from total R&D of Canada for that year by taking the average ratio of previous and next years ratio of non-defense R&D to total R&D.
For UK in 1982 and 1984 we took the average of previous and next year ND R&D.
For France in 1995 we took the non-defense R&D to total R&D ratio of previous year.

Appendix 3a
Disribution of Patents by Technology Categories - US Inventors



Appendix 3b
Disribution of Patents by Technology Categories - Non US Inventors



Thank you David. I agree with Paul that these are two good and very interesting papers and I did enjoy reading them. I have great regard for the authors. Chris DeBresson in particular has been doing work in innovation systems for a long time, long before it was fashionable and the term innovation system became a buzz phrase among bureaucrats. I certainly have learned an awful lot from his work, although I'm sure most people will say I haven't learned enough. But there is a lot there still to be learned.

Let me start with my comments on Ron's paper and then I'll go back to the DeBresson and Barker paper. Ron finds that there may be an investment problem and properly asks whether low investment is under-investment. This is really a function of opportunities. You can look at ratios all you want, that really doesn't tell you how far we are from exploiting the opportunities available to us. And of course then he also mentions that, again looking at ratio analysis, that it looks as if Canadian investment in R&D is too low.

So we've got these possible problems and I think that Ron properly talks about them in terms of what are the institutional failures or distortions that lead us to be ignoring good investment opportunities, whether it's in intangibles or innovation or in more conventional types of investment. And he examines a number of possibilities. To use the well-known phrase, he rounds up the usual list of suspects, managerial myopia, market myopia, capital market regulation. There are other suspects that could be on the list. Industry Canada has addressed them in volumes of papers and in a lot of research on them. There is the question of the taxation and the cost of capital in Canada. There's the broad question of corporate governance. There are, there are a number of other areas, but I don't fault Ron for not addressed them specifically. He focuses on two, managerial myopia and, and market myopia.

With respect to the managerial myopia, Paul Davenport has already addressed the use of poor managerial techniques. Apparently some mangers are still using the payback period as a way of capital budgeting. Some are using discounted cash flow with the wrong cost of capital, the cost of debt instead of weighted average cost of capital. Very few are making use of real options theory. So what does one do? What's the public policy implication here if you have, if you have a badly performing or ill informed managers? This has been a question that's been around for a long time. I once made the mistake during the McDonald Royal Commission days of saying in front of the formidable Laurent Picard, well maybe it's the fault of the business schools. And I got a blast that knocked me almost out of the room. So I won't say that today. But if managers are poorly trained or poorly informed, again as Paul said, what's wrong with the market for corporate control? What facilitates their persistent use of techniques which may be leading to incorrect investment decisions?

On to capital market myopia. Ron summarizes the recent literature. This literature goes back a long way. A lot of event studies have been unambiguous in finding that markets do not punish long-term investments and markets do not punish investments in intangibles. One exception is that markets may punish investments in R&D by firms in non-R&D intensive industries. I think this is an indication that markets are well informed and that R&D may be an indulgence in some of the less technically oriented industries. The literature on management protection measures implies that their adoption sometimes has the effect of reducing R&D. The question is whether this is an

agency problem or a market myopia problem. If it is an agency problem how do we deal with it? It's not clear exactly what we should conclude when we find that there's an association between firms adopting management protection measures and a reduction in R&D. On leverage buyouts, again Ron cites the Bronwyn Hall results that in fact LBO's and R&D are just two different worlds. Leverage buyouts typically don't occur that frequently in R&D intensive industries and they haven't had that much of an effect in any event.

So as a general matter, the findings (and it's good that Ron has updated them) are that markets do not seem to punish R&D. I'd make two general observations. First, for anybody who follows and watches CNN or whatever, the multiples on the .com companies are such that you have to wonder whether the punishing of innovation by the capital market is something we might be worried about right now. It seems to be that excessive optimism of markets with respect to these certain forms of innovation would be our problem. We have these infinite multiples in some cases, firms with no profits and, and in fact sometimes not even any revenues. The second point that I would make is that it was not long ago that industrial policy types were singing the praises of the bank-centred financial systems in Europe, Japan and in the Asian tigers. They were supposed to be so much better than the Anglo-American equities market-based financial system. They were said to allow for managerial stability are for far-sighted investment. What do these scholars and planners think of bank-centred systems now?

I just had some final comments on Ron's paper. Another issue that he might want to address is governance. He talks about it briefly. There are questions regarding the role of directors and issues in bankruptcy and those are all important things. The other issue is political economy. The problem is that the government will buy a company to just to get the head office jobs or bail out a company to keep some head office jobs. We keep talking about flexibility and adaptability but I think we're stuck in the mud institutionally most of the time. We just can't bear to see a company change ownership, change hands, change locations, change almost anything that involves people having to make an adjustment to where they live or what they do. And I think that this may have some effect on investment behaviour.

I'm sorry I haven't left as much time as I wanted for the Barker-DeBresson paper. Chris makes a very broad sweep here. I admire his ability to comment on a vast array of issues. I can't do this. I'm sure of only a couple of things and I've forgotten what they are. So I cannot comment on a lot of these things. But the paper suggests four reasonable policy goals. These are: participate in a learning based economy; building trust; improving the quality of life and repositioning Canada internationally. I don't have a quarrel with this. I guess there are two areas where I'd like to just spend a couple of minutes. One is the recommendation that we improve education, teacher training and pedagogical research. We could look at this in terms of new programs (new spending) and of course that would be the bias of the bureaucracies involved. If you look at this in terms of institutional change, in Ontario a lot of the improvements we might like to make would run headlong into Queen's Park, headlong into the teachers unions and headlong into school board bureaucracies. Past failures and current indifferent performance are not attributable, in my opinion, to a lack of money. The question you really have to ask yourself is whether we need some institutional innovation. If we had a little bit more flexibility in our educational system, letting a thousand flowers bloom, whether it's vouchers or whatever it is, I suspect we'd get a lot more of this

innovation than we're seeing from the kind of centralized bureaucratic type of system that we have. The authors talk about equity and access and I'm not trying to downplay those issues, but we're so concerned with preserving an existing set of entitlements that we, we just can't make a lot of these changes even though they might be desirable.

The second issue is trust. This has become a real issue in a lot of the literature on industrial districts and organizations. Trust is necessary for exchange to occur. The authors appear to interpret it much more narrowly as trust in government. They talk about community forums and community meeting and communities being able to vote on government projects. I'm sure I'm not telling the authors anything they don't know, but I think trust is a lot broader than this. It is a whole sort of inherited commonality that involves maybe having gone to the same schools, living in the same communities, social interaction, work interactions, service clubs, family, kinship, a whole variety of things. And there are a lot of people that would argue that this type of social capital or trust capital is extremely important. I don't dispute that and I could accept that the Quebec Inc. type of approach is probably a manifestation of the existence of that social capital, which maybe isn't duplicated in other parts of Canada. But I'm not sure exactly how one sets out with public policies to create or invest in trust capital and I'm certainly not sure that this idea of community meetings does it. I think that historically that the service clubs in a lot of communities were a device in which, helped build social capital. Merchants, lawyers, managers, whatever people were in the community saw each other and saw each other in another context and were able to build and pass on that kind of trust. As a practical matter, the welfare state has really done a fair amount of damage to that kind of volunteer system in which people could see first hand where others were coming from. So I think it's an important issue, but I'm obviously not sure of the solution.

Finally, who should bear the cost of the many initiatives proposed by Barker and De Bresson? There is this concern expressed at the end of the paper about public, private partnerships and institutional experimentation. And I think a lot more discussion should be devoted to that kind of issue exactly. Chris and Stephanie have a long list of programs they'd like to see in place, but nobody should be under the illusion that they think this should all be financed by taxation and government expenditure. They have in mind somewhere in the back of their minds a number of different institutional reforms and I think more discussion should be given to that. The role of non-profit organizations, whether they're really capable of doing the things we're trying to assign to them or whether a lot of these institutional changes that we've seen in the last few years are just government trying to move some of its activities off the books. Are these new institutions or arrangements really better or is this just a sleight of hand? And I think that's going to be another interesting institutional issue.

Thank you very much.

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BROAD LIBERALIZATION BASED ON FUNDAMENTALS: A FRAMEWORK FOR CANADIAN COMMERCIAL POLICY

Paper Number 2
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By Randy Wigle
Wilfrid Laurier University

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PREFACE

AS A NEW MILLENNIUM APPROACHES, Canadians are going through a time of dramatic economic change. Markets are becoming global and economic activity across nations is becoming increasingly integrated. Revolutionary developments in computer and communications technology are facilitating globalization, and are also altering a great deal the workplace and the lifestyles of Canadians. At the same time, largely as a consequence of the information revolution, knowledge-based activities are becoming increasingly important within the Canadian economy and the economies of other industrialized nations.

These and related major transformations of the economic environment invite a comparison with the Industrial Revolution of the 1800s. As in the earlier time, major structural changes are giving rise to uncertainties. Firms and workers are struggling to find their place in the new economic order. Canadians collectively face the question of whether their nation's physical, human and institutional resources will provide a firm foundation for continued prosperity. Many see Canada's prospects as being much less secure than in earlier years, when the country's rich natural resources played a major role in shaping the Canadian economy.

To examine fully the medium to longer-term opportunities and challenges of these developments, the Micro-Economic Policy Analysis Branch of Industry Canada asked a group of experts to provide their "vision" for Canada in the 21st Century on a number of important issues. Each author was required to undertake two formidable tasks: first, to identify major historical trends and develop scenarios to illustrate how developments in his/her respective area might unfold over the next ten to fifteen years; and second, to examine the medium-term consequences of these developments for the Canadian economy.

The papers coming out of this exercise are now being published under the general heading of "Canada in the 21st Century". This series consists of eleven papers on different aspects of Canada's medium-term outlook. The papers are divided into three major sections. The first section, *Scene Setting*, focuses on important developments that are going to shape the medium-term economic environment in Canada. The second section, *Resources and Technology*, looks at trends among some important components of Canada's wealth creation and considers the actions needed to ensure that these factors provide a firm foundation for continued prosperity. The last section, *Responding to the Challenges*, explores individual, corporate and government responses to the medium-term challenges and offers some options for an appropriate course of action.

As part of the *Scene Setting* section, this paper by Professor Randy Wigle, of Wilfrid Laurier University, considers how Canada's commercial policy can best address the policy challenges posed by the dramatic changes under way in the world economy. Professor Wigle argues that as a result of policy liberalization and the introduction of new information technologies, world commerce is

becoming increasingly global and there is a corresponding need for global solutions in many policy areas. Canada has a strong interest in removing impediments to international commerce because of its small domestic market and its need of foreign investment and foreign technology. The author argues that the further liberalization now required, involving the extension of national treatment into new areas of international commerce, should be pursued by Canada through both multilateral discussions at the World Trade Organization (WTO) and OECD and through regional initiatives involving the Asia Pacific Economic Cooperation forum (APEC), the North American Free Trade Agreement (NAFTA) and the proposed Free Trade Area of the Americas (FTAA).

SUMMARY – THE CHALLENGE

THE NEXT 10 TO 15 YEARS WILL SEE DRAMATIC CHANGES in the world economy. As it becomes increasingly driven by information and as border trade measures continue to fall, we will observe further globalization of international commerce.

The shift toward an information society means many things to many people, but the most fundamental consequences of new technologies are:

- the enhanced ability to integrate productive activities separated by distance;
- dramatic enhancement of the technological capacity to trade some services internationally;
- an increasing share of new business effectively driven by innovation; and
- increasing complementarity between international trade, direct investment and technology flows in business.

One result of these developments is the emergence of enterprises with operations and ownership that are hard to describe in terms of nationality. A related development is the increasing interdependence of a number of domestic and international policy fields. Competition policy and innovation policy were once regarded as overwhelmingly domestic in orientation, but that assessment is less and less accurate. In short, world commerce is increasingly global in outlook and orientation.

As commerce takes on this global perspective, regulatory reforms in many areas need a more global orientation. Governments will be able to achieve domestic policy goals only by giving due regard to the global context. In the long run, as globalization truly includes parts of the world where integration has not yet progressed very far, the multilateral forum will be ideal for resolving international trade issues. For a host of practical reasons, however, the first steps toward solutions will often be taken in the context of regional agreements or negotiations.

CANADA'S COMMERCE

EVEN WITH THE PROLIFERATION OF INFORMATION TECHNOLOGIES and the lowering of trade barriers, geography still matters for significant parts of commerce. This is particularly true for Canada, where geography, combined with shared elements of history and culture, have led the Canadian and U.S. economies to be highly integrated. The integration is the result not merely of recent policy but also of inherent cost advantages from proximity and the existence of widespread networks linking the two nations.

Faster growth rates in other areas of the globe, along with more fundamental structural and policy reforms, are likely to mean that the fastest-growing

markets (in percentage terms) in the next 10 to 15 years will be outside North America. For example, overall trade by South and East Asia is predicted to grow by almost 10 percent per year over the next 10 years. The technological changes mentioned have reduced the importance of geography in many, but by no means all, sectors. As a result, the volume of trade and investment between Canada and the United States is still likely to dominate Canadian international commerce for the near future.

Broad Directions

THIS PAPER ARGUES THAT CANADIAN COMMERCIAL POLICY over the next 10 years should support liberalization on the broadest regional and substantive basis possible. The focus should be on identifying and devising solutions to fundamental problems rather than managing troublesome symptoms such as trade balances or market shares.

Liberalization or Retreat?

CANADA HAS LITTLE REAL CHOICE BUT TO PURSUE OPEN ACCESS to foreign markets through multilateral as well as bilateral negotiations. Some of the reasons are very simple:

- Canada's domestic market is small.
- Access to technology is crucial to Canadian economic growth.
- Access to foreign investment is crucial to Canada.

Accordingly, Canada must continue to push for progressive liberalization in the foreseeable future. This course must be interpreted in light of new realities of international commerce, specifically since liberalization now means more than simply reducing tariffs.

Improving firms' market access or market presence will often amount to extending national treatment to all firms, products and services in more and more areas of international commerce. Just as Canada was in the forefront of liberalization of border measures, it must take the lead in the effort to draft new international accords in areas such as investment, competition policy and product standards, and also in the reconsideration of existing remedies (such as anti-dumping and countervailing duties) in light of these reformulated international disciplines.

What Focus?

FOR MANY REASONS, NEGOTIATIONS ON NEW CODES OF CONDUCT in areas such as competition policy, investment and domestic regulation are likely to take place in several forums. These include multilateral discussions at the WTO and

OECD, discussions in regional forums such as APEC and the NAFTA, and broader discussions about more liberal trade in the Americas.

With the emergence of the United States as the sole political superpower, its dominant position is probably as great a challenge to Canadian policy makers as at any time in our country's history, and it is likely to remain so. For this reason, Canada should continue to give adequate priority to negotiations in the multilateral sphere as a natural counterbalance to the United States' pre-eminent economic power vis-à-vis Canada.

Further, the returns from further negotiations in the Americas have waned in comparison with those in the multilateral forum, partly because of the breadth of achievements in the NAFTA along with Uruguay Round disappointments.

While regional and multilateral discussions on new and traditional dimensions of market access are important, special priority should be given to discussions at the WTO, preferably in the context of a new round of multilateral negotiations. A pressing agenda already exists for a new multilateral round, which should be launched at the earliest opportunity. Canada's overall negotiating strategy should concentrate on the multilateral disciplines that could result as a long-term goal.

Back to Basics

In general, when pursuing solutions to the new challenges or reducing traditional border measures, wherever possible Canada should start by identifying the fundamental cause (in terms of an uninternalized externality or distortion) of an apparent problem and should proceed from there to a solution. In the area of competition policy, for example, Canada should seek elimination of anti-dumping as it is now used. It should also oppose proposals that target symptoms (such as trade balances or market shares) chosen in isolation from any underlying economic analysis. Canada should oppose any proposals involving such targeting except as transitional measures.

Environmental and Human Rights Issues

Over the next 10 to 15 years, the international community will determine how or whether international trade should be linked to environmental and human rights. Canada should clearly promote international efforts to improve the global environment and human rights in their respective primary forums.[1] At the same time, Canada should be committed to making trade aspects of any international accords as consistent as possible with core principles of the trading system, and it should also support solutions that truly address the fundamental challenges of protecting the environment and human rights.

CONCLUSION

CANADA'S COMMERCIAL POLICY OVER THE NEXT 10 TO 15 YEARS should stress two key commitments:

1. Commitment to liberalization on the broadest range of international commerce. This should include a renewed commitment to development of the multilateral system, even in our discussions in other forums.
2. Commitment to achieving the fundamental goals of trade policy in the least trade-distorting manner possible.

The greatest challenges for Canadian policy makers in the next 10 to 15 years are likely to be reining in the public debt and improving the ability of the labour market to supply jobs and needed skills. While prudent commercial policy is an important ally in this task, it cannot replace sound domestic policy making. At the same time, it is quite clear that bad commercial policies (in particular, those that attempt to scapegoat trade) would certainly thwart the achievement of domestic policy goals.

INTRODUCTION

THIS PAPER ANALYSES THE COMMERCIAL POLICY CHALLENGES and opportunities for Canada over the next 10 to 15 years. This period will see dramatic change, some aspects of which are easier to anticipate than others. While many of the biggest challenges facing Canadian negotiators will be in the new areas of deeper integration,[2] there is a continuing challenge to pursue the process of shallow integration.

Canada's commitment to liberalization on the broadest basis is long-standing and well justified, perhaps especially so in the increasingly integrated global economy. But globalization appears to apply not only to the world economy but the world of international commercial diplomacy. For the foreseeable future, Canada must remain committed to discussions in a host of different forums including the World Trade Organization (WTO) and the Organization for Economic Co-operation and Development (OECD), as well as the American trade sphere and the Asia Pacific Economic Cooperation forum (APEC). The paper addresses the issue of the fit and balance between the various forums. The most obvious recommendation is that Canada undertake the groundwork for launching a new multilateral round at the earliest opportunity.

The essential motivation for most international commercial agreements arises from the observation that certain actions by government or private actors in one country ignore externalities that lead to reduced global welfare. Examples range from classic problems such as tariffs to less obvious problems such as national regulation of safety standards for automobiles. In the first case, the externality posed by a national government is obvious and the correction is equally obvious. In the other, the externality lies not merely in the setting of standards but rather in doing so with an eye to benefiting domestic firms.[3] In that case, the key uninternalized externality is a possible lack of consideration by the national government for the compliance costs of foreign producers. The solution here would be to set a standard in light of other existing standards[4] and without special regard for domestic producer interests. Clearly the latter result is less straightforward but it follows from a careful identification of the underlying problem.

This paper argues that, wherever possible, international disciplines should focus on identifying and dealing with the underlying causation rather than symptoms that may seem to need redress. One might think here of large trade or current account deficits or imbalances in trade. The heart of the argument is that focussing on elimination of the observed disparities often means working to eliminate the very trade gains that most multilateral and bilateral negotiations seek to preserve and enhance.

Following the Introduction, the first section discusses the nature of the emerging global economy, highlighting its importance to Canada. The next section discusses the evolution of Canadian commercial policy and lays some of the groundwork for the following section, which discusses future policy issues, followed, in the last section, with our conclusions.

THE GLOBAL ECONOMY

GLOBALIZATION AND THE INFORMATION ECONOMY

THE NEXT 10 TO 15 YEARS WILL SEE DRAMATIC CHANGES in the world economy. As it becomes increasingly driven by information and as border trade barriers continue to fall, we should observe continued integration of most national economies.

The shift toward an information society means many things to many people, but the most fundamental consequences of new technologies are the following:

- enhanced ability to integrate productive activities separated by distance;
- dramatic enhancement of the technological capacity to trade some services internationally;
- an increasing share of new business effectively driven by innovation; and
- increasing complementarity between international trade, direct investment and technology flows in business.

One consequence of these developments is the emergence of enterprises whose operations and ownership are hard to describe in terms of nationality. A related development is the increasing interdependence of a number of domestic and international policy fields. Competition policy and innovation policy were once regarded as overwhelmingly domestic in orientation, but that assessment is becoming less and less accurate. Further, the linkages between investment, competition and innovation policy are becoming tighter.[5] In summary, world commerce will be progressively more global in outlook and orientation.

TRENDS IN WORLD TRADE

BECAUSE OF DIFFERING GROWTH RATES AND POLICY REFORMS, in the next 10 to 15 years the fastest-growing markets (in percentage terms) are likely to be outside North America. In particular, for East Asia as a whole, trade is projected to grow by an average of over 10 percent per year, fuelled by both East Asian export-oriented market economies and China. For South Asian countries trade is projected to grow by nearly 8 percent. In the case of both China and India, increased trade results from extensive policy reform and excellent regional growth prospects. The situation for the newly independent states and former communist countries is somewhat less favourable, partly because of fears of uneven policy reforms and growth prospects. For Latin American countries, trade is expected to grow at a speed similar to that for high-income countries generally.

In many cases, increasing liberalization of trade policies in developing countries is expected to raise these trade growth figures. Developing countries have undergone a remarkable sea change in terms of opening their economies, and the trend is expected to continue (Dean, 1995). Unfortunately there are some important exceptions; hence the projection of mixed trade growth for some low-income nations (World Bank, 1996*a*).

THE INCREASING AND CHANGING ROLE OF FDI

THE RECENT DRAMATIC EXPANSION of international foreign direct investment (FDI) has some new characteristics. While FDI stocks are still predominantly in industrialized nations,[6] FDI flows to other countries (most notably China and Singapore) have been growing much faster.

If FDI in China stabilizes near the levels of the last few years, that country will become as important a host to foreign investment as the United States within 10 to 15 years.[7]

In addition, policy concerns in developing countries by and large have turned from protecting against foreign investment to actively attracting it. This shift is in part due to the technology transfer that is now part and parcel of much FDI. Most developing countries now realize that they need technology transfer to improve their growth performance. In general, they have also found that fears of domination by multinational corporations have been overblown.

TABLE 1.1

FORECAST GROWTH RATES, 1996–2005
PERCENTAGE

Region	Imports	Exports	GDP
World	6.3	6.3	3.5
High-Income Countries	5.8	6.0	2.8
Low- and Middle-Income Countries			
East Asia and Pacific	10.7	10.2	7.9
South Asia	8.1	7.2	5.4
Latin America and Caribbean	5.8	6.1	3.8
Europe and Central Asia	5.9	5.1	4.3
Middle East and North Africa	5.9	4.1	2.9
Sub-Saharan Africa	5.5	4.8	3.8

Source: World Bank, 1996*b*.

TABLE 1.2

GROWTH OF FDI FLOWS, 1985–93
ANNUAL PERCENTAGE CHANGE

Region	Outward FDI	Inward FDI
North America	9.9	10.1
Western Europe	15.3	16.2
South and East Asia	22.2	16.0
Rest of World	14.5	10.0
World Total	14.3	13.1

Source: Graham, 1996, p. 16.

Globalization has also meant that investment, once viewed as a substitute for trade, is increasingly a complement to trade as firms offer a package of goods (or services) plus local support and service for them.

CANADA AND THE GLOBAL ECONOMY

MERCHANDISE TRADE PLAYS AN IMPORTANT PART in the Canadian economy, amounting to roughly 30 percent of GNP (see Table 1.3). This ratio is expected to grow over the next 10 to 15 years. Over the last 20 years, trade in services has grown at about the same rate as the Canadian economy (see Table 1.4). Its volume is currently much smaller than that of merchandise trade but is expected to grow much faster given the technological innovations discussed earlier.

TABLE 1.3

MERCHANDISE TRADE IN CANADA'S GNP

	1935	1975	1995
Exports ($ millions)	732	33,347	253,821
Share of GNP (%)	17	20	33
Imports ($ millions)	526	33,986	225,431
Share of GNP (%)	12	20	29

Sources: Leacy, 1983; and Statistics Canada, 1996.

TABLE 1.4

TRADE IN SERVICES

	1935	1975	1995
Service Exports ($ millions)	397	6,686	36,504
Share of GNP (%)	9	4	4
Service Imports ($ millions)	474	11,418	45,860
Share of GNP (%)	11	6	6

Sources: Leacy, 1983; and Statistics Canada, 1996.
Excludes factor services (investment income).

While Canada still relies on important primary exports (notably forest products, grains, minerals and energy products), manufactures now account for more than 65 percent of its merchandise exports. The share of primary goods in Canada's total exports (including non-factor service exports) is less than 30 percent and has been falling over the last 20 years.

The Geographical Pattern of Trade

Canada's trading relations with the United States are very important. In the first quarter of 1996, exports to the United States accounted for over 80 percent of Canadian exports. By contrast, about 25 percent of U.S. exports come to Canada. Even though each is the other's most important trading partner, Canada's reliance on the U.S. market is dramatically greater than U.S. reliance on the Canadian market.

The increasing importance and participation of low- and middle-income countries in international commerce has been widely noted. Nevertheless, it is possible to overstate the future importance to Canada of their trade. Even though Canada's trade with Asian nations is likely to grow much more quickly than with the United States, the volume of trade and investment between Canada and the United States is still likely to dominate Canadian international commerce for the foreseeable future.

Foreign Direct Investment

When Canadians speak of foreign investment, they usually think of foreign countries acquiring Canadian firms or opening Canadian subsidiaries. The term "foreign investment" has tended to be used for inward foreign investment in Canada. As Table 1.5 notes, this view was appropriate even as recently as 1975. Now, however, Canadian direct investment flows abroad are almost as large as foreign investment flows into Canada.[8] When Canada considers international rules on investment, it ought to examine them from the viewpoints of both host country and potential investor.

TABLE 1.5

FOREIGN DIRECT INVESTMENT

	1975	1995
Foreign Direct Investment in Canada ($ millions)	39,000	168,077
Canadian Direct Investment Abroad ($ millions)	8,200	142,347
Ratio of Inward to Outward FDI	4.7:1	1.2:1

Source: Hummels and Stern, 1994, and CANSIM 1996.

SUMMARY

WHAT WILL ALL THIS MEAN FOR CANADIAN CONSUMERS and businesses over the next 10 to 15 years?

- Trade and investment opportunities should grow faster than Canada's GNP. Growth will be especially strong in East and South Asia.
- Even given the higher rates of growth in trade with other regions, the United States will continue to dominate Canada's international commerce.
- An increasing array of products and services will be available to Canadian consumers at attractive prices. Some of this change will be driven by technology but an important part will be the result of our international commercial linkages.
- We can expect ongoing pressures in labour markets in two main directions:

– turnover and frictional unemployment; and
– increasing skilled-unskilled wage differentials.

Once again, these pressures will come partly from technological change and partly from increased trade competition.

THE EVOLUTION OF CANADA'S POST-WAR COMMERCIAL RELATIONS

THIS SECTION SURVEYS DEVELOPMENTS IN CANADIAN COMMERCIAL POLICY and the multilateral trading system, presenting the background to a future policy approach. Some specific dimensions of Canada's trade policy are related to its particular place in the world economy.

Over the last half-century, Canada has played a prominent role in the world trading system. As a founding member of the General Agreement on Tariffs and Trade (GATT), Canada signalled the importance of stable export markets. The restrictions on Canadian protection imposed by adherence to the GATT system has seemed more than a fair exchange for more predictable and rules-based access to export markets.[9]

Canada's place in international commerce has also influenced its commercial policy choices. As noted earlier, Canada sends roughly 80 percent of its exports to the United States; accordingly, access to this market is key to successful commercial policy. At the same time, Canada's dependence on the U.S. market for exports has been a cause of concern. With an obvious disparity in economic and political clout between Canada and the United States, GATT's commitment to rules has offered a natural counterbalance to U.S. power. On another track, virtually since Confederation Canada has approached and backed away from preferential bilateral trading arrangements with the United States.

The conflict between Canada's commitment to the multilateral trading system's non-discrimination principle and the desire to secure access to its most important market has long been a topic for debate. Until 1965, Canada had eschewed the bilateral path in favour of unequivocal support for the multilateral system.[10]

Canada's indecision about special trading relations with the United States is understandable at a number of levels. On the one hand, there is the opportunity to maximize the returns on trade negotiation efforts, given both the volume of initial trade and the like-mindedness of Canada and the United States. On the other hand, the multilateral approach offers broad-based gains with the widest range of countries. There is, however, an additional issue at stake: the question of how to manage the relative power balance between Canada and the United States. The advantage of the bilateral option is that we signal how seriously we treat the bilateral trade relationship. This is both benefit and cost in the sense that it tends to draw us into negotiations where the United States has more power over agenda setting. A subsidiary issue is the conflict between preferential treatment of the United States and the principle of more favourable treatment for poor nations.

THE AUTO PACT

THE 1965 AUTO PACT BETWEEN THE UNITED STATES AND CANADA could be considered a watershed for Canadian commercial policy, a one-of-a-kind opportunity. The logic of the Auto Pact came from two salient facts (noted in English, 1964; and Eastman and Stykolt, 1967):

- Short production runs made Canadian-produced autos significantly more costly to manufacture than their U.S. counterparts. Vehicles were produced primarily for the small Canadian market. On the export side, border measures made it harder for Canadian firms to increase their production runs by selling cars in the United States.
- U.S. auto firms dominated the Canadian auto industry, and they would benefit from improved access to the Canadian market and cost reductions through rationalizing their operations between Canada and the United States.

Because the Big Three auto firms spanned the Canada-U.S. border, the major resistance to free trade in autos arose from fears that it would lead to the dismantling of the Canadian auto assembly industry. These fears were addressed by safeguards built into the Auto Pact, specifying formulas to assure Canada a fair share of the auto market. The Big Three went along because they did not expect the safeguards to restrict them significantly.

The Auto Pact may be the instance in which the relative returns on the bilateral approach to trade policy were most advantageous. There were potentially large gains on both sides of the border; at the same time, worldwide negotiations on free trade in autos would have been extremely cumbersome and unlikely to succeed. While trade in autos and parts was once small, it now accounts for over 40 percent of Canada's exports to the United States, and over 30 percent of the country's total exports.[11]

THE TOKYO ROUND

BY 1970, THE GATT SYSTEM HAD CONDUCTED SEVEN ROUNDS of multilateral trade negotiations. As well as significantly reducing industrial tariffs, the Tokyo Round (1973–79) went a long way toward codifying some of the key principles of the multilateral trading system. The principle of special and differential status (S&D) for developing countries was embodied in Part IV of the GATT. The Tokyo Codes (which amounted to rule books for anti-dumping, safeguards and countervailing duties, among others) also became part of the GATT and marked a major step forward in making the system more transparent.

The Tokyo Round thus achieved significant results, but problems remained. Trade in agriculture as well as textiles and clothing continued to vio-

late core GATT principles. By the 1980s, the dispute settlement mechanism was being criticized for its delays and the refusal of parties to comply with GATT rulings. The application of most of the Tokyo Codes on an unconditional Most Favoured Nation (MFN) basis had led to divisions between contracting parties. On the one hand, a core group of parties had acceded to all the codes, thereby committing themselves to apply the codes on an unconditional basis to all countries. On the other hand, many low- and middle-income countries acceded to few or none of the codes; accordingly, they came to be known as free riders. Since many of these same countries did not participate in tariff reductions, the view was fostered of a GATT consisting of a core of wealthy nations and a wider group of non-participating countries.

In this split Canada was clearly in the GATT core, and in a sense our experience with the post-Tokyo GATT was not unrepresentative. We had suffered from a lack of compliance with GATT rulings in our favour and had also delayed compliance with GATT rulings against us. Canada has also been equivocal on agriculture: it has sought open markets for its major export products (grains and red meat) while advocating quota protection for the supply-managed sectors.

THE FTA AND NAFTA

CANADA'S INTEREST IN NEGOTIATING FREE TRADE with the United States finally led to the signing of the bilateral Canada - U.S. Free Trade Agreement (FTA) in January 1988. Fuelling the long-standing interest in a special trade deal with the United States were dispute settlement problems and the expected difficulty of addressing new and increasingly important areas (notably services and investment) in the multilateral context.

In the negotiations, Canada's main concern was security of access, including more effective discipline on U.S. contingent protection. For its part, the United States seemed interested chiefly in providing a model for the Uruguay Round of negotiations and constraining some aspects of Canadian policy that were particularly offensive to the Americans. In addition, there may well have been a U.S. willingness to reward a like-minded government for pursuing desirable economic policies. Among the policies that the United States may have wanted to restrict were export controls under the National Energy Program, and Canadian review of foreign takeovers under the Foreign Investment Review Act (FIRA).

The FTA eventually established free trade in most goods, and it extended broad national treatment provisions for trade in services and for investment. Most notably, the FTA introduced a dispute settlement mechanism designed to address the key weaknesses of the GATT process: delays and non-compliance.

The most trade-distorted aspects of agricultural trade were exempted from free trade in goods (notably Canada's supply-managed sectors and U.S. sugar).

Many circles in Canada were highly sceptical of the extension of the FTA to include Mexico under the North American Free Trade Agreement

(NAFTA), but the real impact of that extension on Canadian trade is likely to have been modest indeed.[12] Certainly, trade volumes with Mexico have not increased as rapidly as some had expected. This is not to say that the FTA extension was not a good idea but rather that its effects were less dramatic for Canada than for the other parties.

In many respects the NAFTA resembles the FTA, with obvious changes required to integrate Mexico. The crucial changes included the following:

Side agreements – The agreements on environmental and labour issues are notable in that they are parallel rather than integral to NAFTA. Accordingly, they tend to address the underlying issues directly rather than focussing on trade remedies, as some had argued they should do.

Rules of origin – The NAFTA's rules of origin are considered by many to be less open than those of the FTA. In particular, the rules of origin for autos, textiles and clothing have higher content requirements. Although they are less subject to bureaucratic manipulation, it appears that in some respects these rules were designed to favour the Big Three auto makers at the expense of offshore producers.[13]

Enhancement of new areas – A number of subtle changes broaden the applicability of already strong disciplines on investment, standards and services.

Free Trade in the Americas

Future extension of the NAFTA to eventually include all of the Americas has been spoken of in terms of Western Hemispheric Economic Integration,[14] the Enterprise for the Americas initiative or, more recently, a Free Trade Area of the Americas (FTAA). This is now seen as emerging either from a country-by-country expansion of the NAFTA or perhaps from integration of an expanded Mercosur into the NAFTA. The 1994 Miami Summit of the Americas ended with a commitment by leaders to negotiate a free trade agreement by the year 2005. Canada has also shown its willingness to negotiate bilateral trade agreements with individual Latin American countries, most notably Chile.

The Uruguay Round

While there is insufficient time to present and analyse the full significance of the Uruguay Round to Canada, some important characteristics of the agreement are worth emphasizing. Some of the ongoing discussions under way in the WTO sphere are examined later.[15]

The Uruguay Round broke new ground in several respects:

- coverage of new areas;
- liberalization in problem areas;
- increased participation of non-core countries; and
- broad-based attempts to strengthen the support for rules and to encourage compliance with panel findings.

Expanded Coverage

The Uruguay Round attempted to extend GATT discipline to new areas of international commerce, specifically international trade in services, international investment and intellectual property. The extension was important because part of the perceived weakness of the General Agreement on Tariffs and Trade was that it did not deal at all with what were becoming key elements of the global economy.

Although the service sector in most industrialized countries constitute close to 50 percent of GNP, it had not been covered by GATT disciplines. This was partly because trade in services is largely restricted by domestic regulations or restrictions on foreign firms' right to do business, rather than by the usual GATT border measures; hence the obvious linkages to investment discussions.

The framework created for future negotiations is very valuable since it provides for further liberalization of trade in services within the multilateral setting. Somewhat disappointing, however, was the extent to which nations committed to applying the national treatment obligations.

Investment measures were discussed in the specific context of the Trade-Related Aspects of Investment Measures (TRIMS). These discussions were very disappointing, for several reasons. First, much time was devoted to identifying which investment measures were or were not trade-related, even though most authorities on the topic argue that any such distinction is artificial. All measures that affect investment can be seen as trade-related, particularly when one realizes the fact that an increasing volume of investment is complementary to trade.

In contrast, the progress made on protecting intellectual property was quite remarkable. A broad range of countries agreed to significantly improve protection of intellectual property. In a sense this amounts to a huge concession on the part of developing nations, the overwhelming majority of which are significant net importers of intellectual property. At the same time, improved protection of intellectual property may well have been in these nations' own interest, helping them to attract investors.

Problem Areas

Virtually since the establishment of the GATT, trade in agricultural products and in textiles and clothing has remained outside of normal GATT disciplines. Before the Uruguay Round, trade in these problem areas violated the principles of progressive liberalization, MFN, transparency and special and differential treatment (S&D). More generally, the violations threatened to undermine respect for the multilateral trading system.

Quotas, export subsidies and production subsidies for agriculture were quite common in wealthy countries. One could have called this a cold war of one wealthy nation against another, fought with the weapon of budgets. Poor agricultural exporting countries were often unable to compete.

The Uruguay Round Agreement on Agriculture specifies very modest levels of initial liberalization but it commits nations to return to GATT disciplines, most notably through tarification and restriction of export subsidies. If future rounds further reduce trade barriers, we should see better access for Canada's major agricultural exports (grains and red meat) and the relaxation of the country's extremely restrictive border measures on supply-managed products.

Trade in textiles was governed by a complex system of bilateral quotas under the Multi-Fibre Arrangement (MFA). This amounted to a detailed trade management arrangement featuring restricted access to wealthy markets for low- and middle-income producers. The Uruguay Round commitments, if realized, should eventually mean the end of the MFA. The main threat to this result is the possibility that producers in wealthy nations would resort to anti-dumping duties to limit penetration of imports. Such a move would probably be a major disappointment for many exporters, particularly given the inadequacies of anti-dumping (see the section entitled *Anti-Dumping and Competition Policy* below).

Increased Participation

The Uruguay Round went a long way toward integrating poorer nations into the world trading system. To a large extent, this success was the result of many countries' amazing policy direction shift toward more liberal trading regimes.[16] More directly, the Uruguay Round's single undertaking meant that each country signing the Round agreed to abide by essentially the same wide range of commitments as any other. This uniformity will effectively eliminate the two-tier system of GATT, with the wealthy countries adhering to one set of codes and low- and middle-income countries adhering to weaker ones.

Rules versus Power

The Uruguay Round also provided a number of features that serve to bolster the role of rules in the trading system. Most important, because of the adoption of a more automatic (and thus more rules-based) dispute settlement mechanism,[17]

parties to disputes have a reduced ability to interfere with the investigative panels established under the WTO agreements.

CONCLUSION

SINCE THE INCEPTION OF THE GATT, Canada has been a major supporter of the multilateral trading system and (as many argue) one of its most prominent beneficiaries. Nevertheless, in recent years Canada has devoted special interest to the Pan-American avenue of negotiations. An ongoing question is how these recent efforts mesh with efforts to extend and support the multilateral system.

Future Policy Issues

In what follows, we discuss several issues on the trade policy agenda for the near future. The next section briefly endorses liberalization on the broadest basis as the first priority. Subsequent sections look at a broad range of other issues.

Liberalization or Retreat?

Canada has little real choice but to pursue open access to foreign markets through multilateral as well as bilateral negotiations. Some of the reasons are very simple:

- Canada's domestic market is small.
- Access to technology is crucial to Canada's economic growth.
- Access to foreign investment is crucial to Canada.

Accordingly, Canada must continue to push for progressive liberalization in the foreseeable future. This course must be interpreted in light of the new realities of international commerce, specifically since liberalization now means more than simply reducing tariffs.

Perhaps more important than reasons supporting liberalization is a recognition of the danger of the opposite course: policies that attempt to solve domestic problems by scapegoating trade are likely to be both costly and very ineffective.[18] Because trade policy works so indirectly on any number of domestic policy problems, solutions based on protection are likely to interfere with better-targeted responses. For example, if we react to technologically-driven unemployment by becoming more inward looking, we might make the adjustment to new technologies that much more difficult by increasing the cost of learning, acquiring and using new technologies.

Trade in Services

Discussions over trade in services were new to the Uruguay Round and led to the General Agreement on Trade in Services (GATS). Once again, the number of specific commitments was modest but a framework was created for future negotiations. Because trade in services often does not involve the movement of goods from one country to another, something different was needed from the customary GATT approach of restricting the application of border measures on goods. Liberalization in services will often mean changing domestic regulations that discriminate against foreign service providers. The linkages to discussions on investment are particularly obvious here, since trade in services is often made possible by direct investment.

Perhaps the main challenge on the multilateral agenda is to broaden the applicability of national treatment to more sectors, with fewer exemptions. This long-term goal could be addressed in a new trade round. To a significant degree, extending national treatment will require governments to identify the precise goals of policies violating national treatment, with the aim of addressing the fundamental concern more directly than by discriminatory restrictions on service providers. NAFTA provisions on services apply national treatment more broadly and with fewer exceptions, but even here excepted sectors remain.

Canada offers an example of the justifications used for exempting particular service sectors from national treatment obligations. It has long maintained that Canadian culture is threatened by the domination of U.S. media and culture, necessitating special treatment for cultural industries. Many aspects of the "cultural" industries (e.g., publishing, broadcasting and the arts) fall within the category of trade in services.

In several cases in recent years, Canada has moved to protect "cultural" industries when the United States has considered them to be essentially commercial activities. In one case, Borders Books (a United States-based bookseller) was prevented from opening outlets in Canada. At the heart of the dispute is the question of whether book selling is a cultural industry. While it seems clear that the publication of Canadian writers or other artists is cultural, it is far less evident that retailing falls under this rubric.

There is no consensus in Canada about which aspects of culture deserve protection and what amounts to protection of essentially commercial interests. It would seem that restricting retailing is an extremely indirect way of supporting Canadian culture. This could be done most directly and transparently by supporting Canadian authors or the publication of their work. Such an approach would not require any rules restricting what retailers sell, nor would it require that book retailers from other countries be excluded from the market. Further, the intervention would be applied as directly as possible to the identified problem.

Extension of GATS provisions could be discussed at a new multilateral round, although it is unclear how much success would be achieved. There is less scope for extending services disciplines in the NAFTA context. The general consequences of the process are likely to contribute to increased growth in trade in services; but as noted earlier, given the small base for imports or exports of services, volumes may not increase dramatically. Nonetheless, improved market presence is of interest to a wide variety of global firms.

Competition Policy

While the exact agenda for future discussions on international competition policy is far from clear, the need for such discussions is obvious.[19] As argued earlier, the increasingly integrated world economy has led to inextricable linkages between national competition policies and the abilities of offshore firms to

do business abroad effectively. This applies to firms wanting to sell goods abroad as well as those wishing to undertake direct investments or establish a market presence.

A core concern of competition policy should be to promote economic efficiency, for example, by ensuring that markets are as competitive (contestable) as possible. Doing this will normally entail granting foreign firms and products national treatment for the purposes of establishment and investment. The application of conditional national treatment[20] will not normally be consistent with promoting efficiency.

Broad areas of concern in discussions of international competition policy include the following:

> *International cartels* – The operations of international cartels often lie outside the jurisdiction of any one country, making international rules necessary.[21]
>
> *Restrictive business practices* – Often, business practices have the effect of excluding foreign suppliers.
>
> *Corporate governance* – Differing forms of corporate governance affect the ease or difficulty encountered by new entrants to a market. In some cases foreign firms may be at a particularly disadvantage. Also, firms used to easy entry in their domestic markets may expect similar openness in foreign markets.
>
> *Government regulation* – Some aspects of government regulations treat foreign firms differently from domestic firms. Further, some regulations not explicitly discriminating against foreign firms may still put them at a disadvantage.
>
> *Product standards* – Standards can effectively bar entry of foreign products even without explicitly discriminating against them. Differing safety standards in different countries can result from different national approaches for achieving often comparable ends. The problem for firms is that adapting products to different standards may be costly, particularly where larger-scale production offers greater returns.

The difficulties of negotiating a comprehensive international accord are profound. First, it must be acknowledged that different nations enforce their competition policies with different levels of energy. This in itself has led to significant friction, notably between the United States and Japan. Further, some developing countries do not have a competition policy.

Even beyond these practical difficulties, there are fundamental problems with the economic foundations of some policies, both at the theoretical and empirical level. For example, the theoretical ground for opposing some types of horizontal takeovers has shifted since widespread acceptance that market con-

centration is a problem only when the market concerned is not contestable. Even where the theoretical ground is reasonably clear (as in the case of resale price maintenance), the appropriate policy may depend on case-by-case (including nation- and sector-specific) considerations of empirical magnitudes such as elasticities. The efficiency basis for challenging certain forms of vertical integration (such as the Japanese vertical *keiretsu*) is also very shaky. Further, the appropriate competition policy may depend on the link between rivalry and innovation. Increased rivalry can improve innovation in some circumstances; in others, it may reduce the ability to innovate.

In summary, it is not clear what the "best" competition policy is; and even if we fully understood the economics underlying this question, the "best" competition policy would probably differ from country to country. As a result, negotiating a binding international accord on all aspects of competition policy is very unlikely in the foreseeable future.

The leading options for eventually concluding a multilateral agreement are as follows:

1. To monitor experience with existing arrangements (under the NAFTA and between other governments) and simultaneously to pursue discussions, probably through the OECD. This approach would see a broader multilateral agreement emerging at a later stage. For the discussions to contribute to a broader multilateral agreement, wide participation of non-OECD nations would be essential.

2. To begin negotiations very soon, preferably as part of a new round of multilateral discussions, on a (probably narrower) agreement to be integrated with the WTO dispute settlement process. Discussions can then continue in other forums to aid in future elaboration of the multilateral agreement. The narrower agreement would probably include provisions on cartels and restrictive business practices.

The second option offers the greatest advantage if it can take place in the context of a new multilateral round, partly because there would be the broadest scope for cross-agenda trading.

Anti-Dumping and Competition Policy

Some aspects of existing GATT rules run counter to the goal of assuring contestability of markets. This is the case most notably with current anti-dumping practices. The fundamental argument in favour of anti-dumping duties (ADDs) is that they prevent predatory behaviour through imports. That is, domestic firms should be protected from foreign firms attempting to eliminate competition by predatory pricing.

Most economists argue that, in actual application, anti-dumping duties do little to achieve this goal.[22] Most notably, the calculation of price and cost esti-

mates is heavily biased in favour of finding positive dumping margins. More generally, many aspects of the application of anti-dumping duties err on the side of finding that dumping has occurred even when predatory intent is very unlikely.[23]

The motivation for a large proportion of current anti-dumping cases seems to be the protection of declining industries from import competition. Safeguards protection in the GATT should normally be temporary and should facilitate adjustment (reduction in size) of the industry requesting protection; in contrast, anti-dumping duties need not be limited by any sunset clause.

A current ADD case illustrates the conflict between the intent of anti-dumping and its application, and also shows the resulting difficulties: Canadian bicycle manufacturers are asking for ADDs against a wide range of foreign bicycle manufacturers. They are doing so even though the Canadian producers dominate the Canadian bicycle market to such an extent that no foreign supplier could attempt to eliminate all domestic competition.[24] In this case, ADDs granted earlier have helped some domestic manufacturers but hurt others (those who use frames covered by the ADDs). At the same time, the Canadian manufacturers have suffered from ADDs imposed on their exports to Europe.

One possible element of an international accord on competition policy would be restrictions on "predation" based on national treatment. If the real aim of anti-dumping duties is to prevent predatory behaviour, competition policy is clearly a more appropriate instrument for this purpose. Nations should seriously consider abandoning anti-dumping altogether in favour of international disciplines on predation as a restrictive business practice.

At the very least, if anti-dumping is really about predation, GATT disciplines should be refined to reflect that concern.[25]

Implementation of the Multi-Fibre Arrangement reforms could be held hostage to the current state of anti-dumping duty rules. Many fear widespread adoption of such duties, which could deal exporting countries a serious blow.[26]

Summary: Competition

Given the case for launching a new round of multilateral trade talks, it would seem that future discussions relating to competition should occur there.

INVESTMENT

INTERNATIONAL DISCIPLINE ON INVESTMENT encompasses transparency plus the extension of broad-based national treatment[27] to firms wishing to enter a foreign market.[28]

The current situation is that APEC has endorsed a set of non-binding principles to be applied (including transparency, national treatment and non-discrimination), but these are rather ambiguously written. The OECD is in the process of negotiating a Multilateral Agreement on Investment (MAI) and has

already negotiated related codes of conduct for its members.[29] Because of its narrower membership, the OECD has been able to go further in terms of substance than APEC or the TRIMS negotiations under the Uruguay Round. Accordingly, one proposal is that future discussions of international disciplines on investment take place at the OECD, with continuing experience and elaborations occurring in the context of the NAFTA and other regional groupings.

The drawback to this course of action is that some of the obvious issues for negotiation involve non-OECD countries. Many non-OECD countries identify investment incentives provided by wealthy nations as a prime topic for discussion, whereas wealthy countries wish to discuss performance requirements maintained by many poorer nations. While the OECD might be able to reach a consensus more quickly, it is not clear that the coverage of substantive issues would be significantly greater.[30] Further, the greatest possible geographical coverage would be achieved in the context of WTO negotiations.[31] Once again, the type of cross-agenda trading possible in a new round of multilateral talks might facilitate negotiations at the WTO.

One issue deserving special attention is the extent to which investment disciplines under regional and multilateral agreements should apply.[32] The main option is to apply the (usually more stringent) disciplines of regional agreements only to signatory nations. This is indeed the current application of NAFTA investment provisions. The other alternative is to extend the benefits of the regional agreement on a non-discriminatory basis. (In the case of the NAFTA, this would amount to national treatment for many purposes.)

There are usually two arguments against extending such disciplines to non-signatories: First, by doing so the member nations lose some leverage for convincing others to offer similar benefits in return; this is the free-rider problem. Second, member nations are less willing to agree to substantive rules because of the free riders; this is the foot-dragger problem. There must be significant returns for free riding to support the argument for conditional treatment of investors.

In the case of normal border measures, in many cases unilateral liberalization is judged to generate much of the welfare gains associated with multilateral liberalization. The assumption is that the benefits come from eliminating a domestic tariff distortion and are thus more direct, whereas the benefits from foreign liberalization (and the free-riding returns for non-member nations) depend on favourable terms of trade effects.[33] In the context of multilateral liberalization, these effects are likely to be positive for some nations.

In the case of investment disciplines, it is possible that the benefits come even more overwhelmingly from adopting the disciplines rather than the reciprocal access. In the context of regional trading arrangements, granting national treatment to investors from all home countries would offer limited benefits to free-riding nations. It would also eliminate the need to determine the home nation of a given investor – something very difficult for thoroughly global corporations to do.

TRADE AND THE ENVIRONMENT

ONE OF THE MORE CONTENTIOUS ISSUES TO BE ADDRESSED over the next few decades is the relation between international trading rules and some dimensions of concern for the environment. The connections and feedbacks between trade, economic growth and the environment are numerous and the nature of some of these linkages is not well known.[34]

There are three main avenues of effect. First, economic growth appears to lead to two impacts: With existing environmental standards it tends to cause environmental quality to worsen, since emissions rise with economic activity. As income per capita rises, however, nations tend to raise their environmental standards.[35]

International trade may contribute to economic growth and thereby add the third linkage between growth, trade and environmental quality. The direct influence of trade liberalization on overall environmental quality is likely to be very small.[36] This is partly because most trade is motivated by other forces than an attempt to avoid environmental regulations.

There is an indirect link between environmental quality and trade: tighter environmental regulations can spur trade in abatement equipment, services and environmental technology. Finally, environmental quality contributes to economic growth by improving the health of workers and directly improving productivity in primary sectors.

More or less independent of this statement of the problem, some questions are raised by the linkages mentioned. First, can the rules of the international trading system somehow be made compatible with international environmental accords such as the Montreal Protocol on ozone- depleting substances or proposed agreements to control releases of greenhouse gases? Second, to what extent should international commercial agreements and international environmental accords be made consistent with one another?

Application of national treatment requires that imported goods be accorded the same treatment as domestically produced goods once negotiated border measures are applied. In the context of goods, national treatment in no way restricts measures (such as taxes) to control the consumption of goods that damage the environment. It also does not restrict measures to regulate domestic production.

Perhaps the most difficult question to be addressed is whether one country should be able to base border measures on another country's lax environmental rules. For example, trade restrictions based on the application of different environmental standards might discriminate unfairly against low-income countries even when they have demonstrably higher environmental quality than the country imposing the restrictions.[37] Further, they violate Canada's usual aversion to extraterritorial application of legislation. Most economists believe that environmental rules are unlikely to be compromised by an open trading system.

International commerce might well be less affected by such measures than by actions to deal with some of the world's pressing environmental concerns. For example, the global response to climate change could involve severe limits on fossil fuel use. Various models for reducing carbon dioxide emissions indicate that the impacts on the world's economy would be sufficiently dramatic to have their own independent effect on international trade, regardless of how international commercial rules are changed.[38] In light of this fact, Canada's major concern almost certainly should be the nature of commitments made to reduce greenhouse gas emissions rather than modifications to trading rules.

One potential aspect of emissions reduction is an attempt to allocate abatement costs more fairly, particularly between wealthy and poor nations. Joint Implementation is one such proposal, and it would imply the following:

- Rich nations commit to a certain amount of abatement.
- Rich nations can undertake abatement projects in poor nations (which initially are not committed to any abatement). In this case the country financing the project gets credit for the abatement achieved.[39]

Such a scheme would allow a higher share of costs to be borne by wealthy nations.[40] Since the citizens of wealthy countries are usually assumed to value environmental quality more than citizens of poor ones, such trading may be acceptable to rich nations and poor alike. As mentioned before, abatement costs have been estimated to be very high, and broad-based action may lag until the evidence for global warming is more conclusive.[41]

Human Rights, Worker Rights and Trade

The goal of the discussions relating human rights, worker rights and trade is to ensure that international commerce does not undermine international support for worker and human rights. The challenge is to design rules that safeguard workers without hampering the exports of poor nations. In particular, it is feared that rules designed to block imports of goods produced in nations with inferior protection of worker rights could be used to reduce imports from any low-wage country. Another question is whether international trade sanctions are likely to enhance the protection of human and worker rights significantly.

A possible outcome of these discussions is the kind of parallel accord that was signed with the NAFTA. It could include provisions to monitor human rights protections and permit other nations to request consultations, conduct investigations and publicize the conduct of offending nations. The use of trade sanctions would seem to be inappropriate. As a practical matter, trade measures brought against the exports of specific sectors are extremely unlikely to convince national governments to alter their human rights policies, and economy-wide trade measures are likely to hurt the workers they are intended to protect. If

discussions of labour and human rights lead to an accord that does not include specific trade responses, the agreement will probably result from adherence to this line of argument.

Environmental and Human Rights Issues

Canada's posture in crucial negotiations on global environmental concerns seems clear. First, we should energetically pursue international accords to deal with global environmental issues. At the same time, we should lobby within those negotiations for application and enforcement systems that do not needlessly conflict with key principles such as national treatment and non-discrimination. Finally, we should encourage the adoption everywhere of environmental policies focussed on the environmental problems themselves rather than on largely irrelevant imports.

As in the case of environmental issues, Canada should pursue primary negotiations on worker and human rights, for example, at the International Labour Organization. At the same time, we should support a system of trade measures only when it is clear that those measures will truly be aimed at improving worker or human rights, and will not conveniently be used by domestic firms wanting protection against imports from lower-wage countries. Otherwise, Canada could run the risk of hurting the workers these measures are intended to help.

GOODS TRADE

WHILE THE URUGUAY ROUND WAS WIDELY HAILED AS A WATERSHED in the international trade of agricultural goods, it remains to be seen whether the agreement on agriculture will be followed by continued adherence to GATT principles and progressive liberalization. Canada's supply-managed producers are well protected under the current high tariffs. As the tariffs fall, the commitment of many countries to the multilateral trading system may be tested. However, Canadian consumers and exporters of grains and red meat stand to gain significantly if future reductions of agricultural barriers are locked in.[42] The bold step of tarification will be a very hollow victory if the current high tariffs on some goods are not reduced.

The Uruguay Round also liberalized trade in clothing and textiles. The Multi-Fibre Arrangement restricted trade from lower- and middle-income countries to industrialized country markets; it should effectively cease to function within the next 15 years. This change will benefit the lower-income nations with exports currently constrained by the MFA. But the benefits will come only if industrialized countries do not (as some fear) respond to increasing import penetration with broad-based campaigns of anti-dumping actions.

In agriculture as well as textiles and clothing, there is a clear special and differential treatment component. Major exporters of primary agricultural products and clothing have been constrained by policy regimes that favoured producers in high-income countries at the expense of those in lower-income regions of the world.

In a new round of negotiations, it may be possible to think in terms of eventual elimination of all border measures. Even short of this lofty goal, important issues in goods trade could be addressed.[43]

American Preferential Trading Arrangements

Some specific issues relating to extending NAFTA coverage have been discussed above under the topics of investment and competition policy. However, there are also general issues to be addressed by Canada.

Two important criteria for evaluating Canada's participation in other trade forums (most notably APEC and the Free Trade Area of the Americas discussions) are their impact on Canada's commercial interests (improved access, increased trade, higher investment flows) and their impact on progress in the multilateral system.

Many, though not all, commentators argue that Canada's involvement in NAFTA discussions laid the groundwork for the multilateral discussions, or in several cases offered models for subsequent multilateral accords. (The TRIPS accord – or Trade-Related Aspects of Intellectual Property Rights – is probably the best example; in this case the NAFTA and Uruguay Round agreements are very similar.) At the same time, the view from abroad is not always so generous, and many countries in Asia worry about potential trade and investment diversion as a result of a NAFTA extension.

The returns to Canada from extending NAFTA to encompass all of the Americas are unlikely to approach those of the original Canada-U.S. agreement or its extension to Mexico. Even extension of the FTA probably offered only modest benefits to Canada.[44] Part of Canada's gains from Pan-American economic integration may already be accruing as Latin American countries such as Chile and (more recently) Argentina unilaterally adopt more liberal trading regimes.

It is often said that geography and cultural matters are less important to trade than ever before; nevertheless, distances still matter for a wide range of commerce. The information revolution has made it dramatically easier to produce components in Chile, but the cost of transporting them back to Canada has not fallen by nearly as much. The technological improvements in transportation are significant but they are not on the same scale as those in information technologies.[45]

From Canada's viewpoint, the main dollars-and-cents gains from Pan-American trade discussions are likely to arise from extending the substantive rather than the regional coverage of NAFTA. The fact that NAFTA's coverage

of services, investment, goods trade and intellectual property is already extensive suggests that these returns are likely to be modest.

As a result, Canada should place the discussions at a lower priority than multilateral discussions. Further, our FTAA discussions should be designed to support and lead progress at the multilateral level, especially in the context of a new multilateral round.

APEC and Pacific Rim Liberalization

Canada and the United States are both members of the Asia Pacific Economic Cooperation forum. APEC includes a wide range of nations with interest in economic cooperation on the Pacific Rim. Most of its members are from East Asia, and among them are many of the world's most dynamic economies. This group has been engaged in wide-ranging discussions concerning possible future deeper integration between Pacific Rim nations. Among other things, it has endorsed a set of investment principles (see the section entitled *Investment* above).

While leaders have committed themselves to a broad-ranging agenda contributing to global integration, the discussions on areas of deeper integration (e.g., investment and competition policy) tend to take place with a view to generating consensus and informal application rather than developing a rules-based system. To some extent this approach reflects cultural differences as well as the relative importance attached by Asian nations to deeper integration.

Many prominent Southeast Asian nations attribute their past and future economic success largely to the liberalization of border measures (so-called shallow integration). They feel that greater attention should be given to ensuring continued progress on access rather than deepening integration. To some extent this attitude has been a stumbling-block and may remain so.

APEC's advantage and drawback is its membership. It is broad enough to include China, the United States and Chile, but not broad enough to meaningfully include all the Americas. While the APEC nations constitute a large and fast-growing market,[46] the question remains whether APEC should be seen as home to a new regional trading agreement, a talking shop to support discussions in multilateral forums or an interesting curiosity in function as well as name.

If a new multilateral round is launched, it would seem that APEC could provide a crucial forum for resolving the conflict between the rules-based approach, supported by the United States and (in varying degrees) Canada and the European Union (EU), and the consensus-based informal approach supported by many Asian nations.[47] Beyond matters that can fit into this mould, APEC does not seem well placed to complement a new multilateral round.

The breadth of membership means that agreement within APEC will be difficult. A narrow membership means that there is significantly less scope for cross-agenda trading than in the context of a new multilateral round.

TRADE WITH FORMERLY COMMUNIST COUNTRIES

THE LAST FIVE YEARS HAVE SEEN REVOLUTIONARY CHANGES in economic policy in the former Soviet Union, Central Europe and China. At the same time, there have been dramatic changes in trade and investment flows, as noted earlier. A major task of the international community over the next 10 to 15 years will be the integration of these economies into the world economy. The task is immense. Further, the commitment to adopting more open economic policies varies from nation to nation within this group.

In the case of several of the former Soviet states, integration with the European Union is already proceeding as a natural outcome of their geographic location and their higher level of pre-reform integration. Plans are already under consideration to continue the integration by granting EU membership to former East-bloc countries such as the Czech Republic. European-based integration discussions take place in a number of forums (the Council of Europe and the Central European Initiative, *inter alia*). Several of the former Soviet states have clearly signalled their desire to integrate with the global economy.

Over the next 10 to 15 years, most of the Newly Independent States will want to join China as new contracting parties of the WTO. A major question is when or whether these new traders will be able to assume the full range of WTO commitments. Given the recent elimination of the two-tier GATT through extension of most WTO disciplines to developing countries, the idea of a transitional set of commitments may be unattractive but may still be necessary. If accession becomes gradual, it would be far better to specify time-limited exemptions for particular parties rather than introduce a new layer of exemptions that could give the wrong signals. Significant parts of the pre-Uruguay Round GATT allowed differential and more favourable treatment for developing countries, but this approach may have been harmful, permitting developing countries to follow policies that were almost certainly not in their own interest. Countries had access to these measures (and, in the past, exemption from full participation in tariff reductions) as long as they remained classified as “developing.”

Most important, however, it would be unrealistic to assume that political realities in all the states will continue to favour binding commitment to multilateral reform. The best insurance of such a commitment will be ongoing good performance by the more serious reforming states.

THE WTO AGENDA

EVEN BEFORE THE SIGNING OF THE URUGUAY ROUND'S FINAL ACT, there was much discussion of the next round of multilateral trade talks. This proposed round was initially referred to as the "Green" round, reflecting the expressed need for multilateral discipline in efforts to protect human rights or environmental policy. It seems clear now that there exists an extremely ambitious and promising agenda for a new trade round, with at least the following key elements:

> *Services* – Extend national treatment more generally.
>
> *Investment* – Extend coverage to all investment issues, not only those that are (nominally) trade-related.
>
> *Competition policy* – Address key elements of anti-competitive behaviour, and begin the broader task of developing consensus for wider coverage.[48]
>
> *Environment* – Improve the interface between multilateral trading rules and trade aspects of environmental agreements, thereby strengthening them.
>
> *Rights* – Establish clear restrictions on trade sanctions ostensibly responding to inadequate protection of worker or human rights.
>
> *Subsidies* – Link subsidization definitions and remedies to new discussions on investment and services.
>
> *Goods trade* – Follow up on the Uruguay Round progress in agriculture, textiles and clothing, and look ahead to the eventual goal of removing MFN border measures on all products.[49]

There are many important issues to be negotiated, and the diversity of issues is sufficient to allow for cross-issue trading, facilitating the process.

The ground for multilateral progress seems fertile, particularly since most developing countries are pursuing more liberal trading regimes. On the other hand, the poorer nations' continued support for rules to protect intellectual property will bear fruit only if the wealthy nations remain committed to the multilateral system.

CONCLUSION

THIS PAPER HAS PROPOSED A VISION for Canadian commercial policy over the next 10 to 15 years, based on two broad themes.

First, Canada should support liberalization in the broadest sense. In other words, it should pursue negotiations in a number of forums but should make its highest priority a new multilateral round. A broad enough (and clearly full enough) agenda exists to make launching a new multilateral round worthwhile. Canada's negotiating strategy in other forums should always take into account the multilateral forum.

Second, under certain policy approaches, the identification of the fundamental cause associated with an apparent problem suggests an appropriate response. Wherever possible, Canada's analysis should start from this perspective. There are specific examples where identifying the key externality implies a solution; but more important than these are proposals that target symptoms (e.g., trade balances or trade shares) chosen in isolation from any underlying economic analysis. Canada should oppose any such approach.

The greatest challenges for Canadian policy makers in the next 10 to 15 years are likely to be reining in the public debt and improving the ability of the labour market to supply jobs and needed skills. While prudent commercial policy is an important ally in these tasks, it cannot replace sound domestic policy making. At the same time, it is quite clear that bad commercial policies (in particular, those that attempt to scapegoat trade) would certainly thwart the achievement of domestic policy goals.

NOTES

1 For example, the International Labour Organization for labour rights issues, and the Intergovernmental Panel on Climate Change for climate change issues.

2 In other words, economic integration dealing with topics beyond border measures against goods and associated disciplines (customarily referred to as shallow integration).

3 In this example, there are potentially many externalities since the standard-setting national government does not have to pay any of the cost of compliance with the standard.

4 This might mean having a standard that accepts any of a number of alternative standards — an approach referred to as mutual recognition.

5 Kaell *et al*., 1995.

6 Roughly 70 percent of FDI stocks are in North America, Western Europe and Japan.

7 FDI in China fell markedly in 1995 but has since recovered.

8 Note that the stock of foreign investment in Canada still dramatically exceeds the stock of Canadian investment abroad.

9 Many economists would argue that, for a small open economy, the discipline on domestic protection in itself is a main benefit of adherence to the GATT system, independent of any balancing concessions from other countries.

10 This is not to say that there was no significant support for closer economic ties with the United States. Instead, possible preferential trading arrangements were ultimately passed over until the Auto Pact.

11 See *Statistics Canada Daily*, July 18, 1996.

12 Watson, 1992.

13 Lipsey *et al*., 1994.

14 Hufbauer *et al*., 1994.

15 For an overview see Schott and Buurman, 1994; and World Bank, 1995. Nguyen *et al*., 1995 and 1996, give a numerical evaluation.

16 Dean, 1995.

17 The mechanism adopted draws heavily on the FTA/NAFTA model in the specific respect of time limits and deadlines.

18 This theme is taken up in Bhagwati, 1990.

19 This section draws heavily on Graham, 1995 and 1996.

20 Firms from country *A* receive the same treatment in country *B* as firms from country *B* receive in country *A*.

21 Export cartels are implicitly condoned under GATT. See Dam, 1970, pp. 244 ff.

22 See the chapter by Messerlin in Schott, 1990; and Finger's chapter in Finger and Olechowski, 1987.

23 Among other things, this includes practices such as "cumulation" for determining injury, and flexible definitions of like products. See Finger, 1992.

24 "Bike makers face uphill climb," *Globe and Mail*, August 6, 1996.

25 Chapter by Lipstein in Graham and Richardson, 1996.

26 Under the MFA, exporters received valuable quota rights. If the MFA is phased out only to be replaced by more widespread use of ADDs, exporters would face barriers but would have no quota rights.

27 Including national treatment in terms of regulation, transfer of funds and for right of establishment.

28 This section draws heavily on Graham and Richardson, 1996.

29 The Code of Liberalization of Capital Movements, the Code of Liberalization in Invisible Operations, and the National Treatment Instrument.

30 For example, wealthy countries might agree to dramatic extension of their restrictions on performance requirements, but OECD-agreed restrictions on investment incentives might be looser than would be the case if poorer nations participated in the negotiations.

31 This is essentially the argument presented in Graham and Richardson, 1996.

32 This is the so-called carve-out issue.

33 The term analogous to the terms-of-trade effect of a trade liberalization calculation relates to the reduced returns to domestic investors attributable to the failure of free-riding nations to apply comparable disciplines. Because of the increasing fluidity of asset markets, this term may tend to be quite small.

34 See Anderson and Blackhurst, 1992; Uimonen, 1995; and Low, 1992.

35 Grossman and Krueger, 1992; and Radetzki, 1992.

36 Perroni and Wigle, 1994.

37 For example, some would argue that nations mandating very clean technologies could levy duties on goods coming from nations using less clean technologies. This approach could lead to the situation where goods produced in Ghana (an area with excellent air quality but using a slightly less "clean" technology) are banned from sale in Los Angeles (an area with notoriously bad air quality) because of environmental concerns.

38 Dean, 1993; and Cline, 1992.

39 Australian Bureau for Agricultural and Resource Economics, 1995; Hinchy *et al.*, 1993.

40 Since a ton of carbon has the same impact regardless of where it is emitted, any scheme that sets rich nations' abatement responsibilities will be significantly more cost-effective if some of the abatement can be undertaken in poorer nations, where the marginal abatement cost is lower.

41 *The Economist*, 1995.

42 This is not without challenges since the supply management system also has an important interprovincial dimension that favours Quebec.

43 The complete elimination of tariffs may be opposed by those developing countries that use tariffs as a revenue source, but overwhelming arguments favour other methods of revenue raising.

44 Properly conceived estimates of the welfare gains to Canada from signing the NAFTA are very small. The major issue is whether the basis for comparison is a post- or pre-FTA world. François and Shiells, 1994; Hufbauer *et al.*, 1994.

45 For the same reasons, Canada's bilateral trade accord with Chile is unlikely to generate significant returns or contribute meaningfully to the multilateral discussions.

46 In spite of the fact that APEC includes high-growth economies, numerical estimates of the gains to Canada from APEC-based trade liberalization are negative or very small (less than 0.1 percent of GNP). Young and Huff, 1996; Adams *et al.*, 1996.

47 This theme is central to a recent Brookings volume; Lawrence *et al.*, 1996.

48 An important test of confidence for the multilateral system will be at least to focus anti-dumping on predation or, at best, to agree on an international competition policy that could replace anti-dumping.

49 This would not mean the end of safeguard-type measures, but it would eliminate all barriers to most trade in goods.

BIBLIOGRAPHY

Adams, P., K. M. Huff, R. McDougall, K. R. Pearson and A. Powell. "Medium-Term Consequences for Australia of an APEC Free Trade Area." Mimeo. Monash University, 1996.

Anderson, K. and R. Blackhurst (eds). *The Greening of World Trade Issues*. Toronto: Harvester Wheatsheaf, 1992.

Australian Bureau for Agricultural and Resource Economics. *Joint Implementation of Carbon Reduction Schemes*. Canberra: Australian Bureau for Agricultural and Resource Economics, 1995.

Bhagwati, J. *Protectionism*. Cambridge: MIT Press, 1990.

Bleaney, M. "Economic Liberalization in Eastern Europe." *World Economy*. 17, 4 (1994): 497-507.

CANSIM. *Canada's International Investment Position at Year End*. Technical Report. Statistics Canada, CANSIM Matrix 4180, 1996.

Cline, W. R. *The Economics of Global Warming*. Washington: Institute for International Economics, 1992.

Cook, P. "Is Free Trade Dead or Alive?" *The Globe and Mail*, June 12, 1996.

Dam, K. W. *The GATT: Law and the International Economic Organization*. Chicago: University of Chicago Press, 1970.

Dean, A. (ed). *The Costs of Cutting Carbon Emissions: Results from Global Models*. Paris: Organization for Economic Cooperation and Development, 1993.

Dean, J. M. "The Trade Policy Revolution in Developing Countries." *World Economy*. 18, Global Trade Policy Annual, (1995):173-189.

Eastman, H. C. and S. Stykolt. *The Tariff and Competition in Canada*. Toronto: MacMillan, 1967.

English, H. E. *Industrial Structure in Canada's International Competitive Position*. Montreal: Private Planning Association of Canada, 1964.

External Affairs Canada. *Canadian Trade Policy for the 1980's*. Ottawa: Minister of Supply and Services Canada, 1983.

Finger, M. J. "Dumping and Antidumping: The Rhetoric and Reality of Protection in Industrial Countries." *The World Bank Research Observer*. 7, 2 (1992):121-144.

Finger, M. J. and A. Olechowski. *The Uruguay Round: A Handbook for the Multilateral Trade Negotiations*. Washington: The International Bank for Reconstruction and Development, 1987.

François, J. and C. Shiells (eds). *Modeling the North American Free Trade Agreement*. Cambridge: Cambridge University Press, 1994.

Graham, E. M. "Competition Policy and the New Trade Agenda." In *New Dimensions of Market Access in a Globalising World Economy*. Edited by the Organization for Economic Cooperation and Development, 1995.

Graham, E. M. *Global Corporations and National Governments*. Washington: Institute for International Economics, 1996.

Graham, E. M. and J. D. Richardson. "Competition Policies for a Global Economy." Washington: Institute for International Economics, forthcoming.

Grossman, G. M. and A. B. Krueger. *Environmental Impacts of a North American Free Trade Agreement*. Discussion paper Number 158. Woodrow Wilson School, February 1992.

Hart, M. “What’s Next: Negotiating Rules for a Global Economy.” In *New Dimensions of Market Access in a Globalising World Economy*. Edited by the Organization for Economic Cooperation and Development, 1995.

Hertel, T. W. (ed). *Global Trade Analysis: Modeling and Applications*. Cambridge: Cambridge University Press, 1997.

Hinchy, M., S. Thorpe and B. S. Fisher. *A Tradable Emissions Permit Scheme*. Research Report 93.5. Australian Bureau for Agricultural and Resource Economics, March 1993.

Hufbauer, G. Clyde, J. J. Schott and D. Clark. *Western Hemispheric Economic Integration*. Washington: Institute for International Economics, 1994.

Hummels, D. L. and R. M. Stern. “Evolving Patterns of North American Merchandise Trade and Investment, 1960-1990.” *World Economy*. 17, 1 (1994):5-29.

Jackson, J. H. *Restructuring the GATT System*. New York: Council on Foreign Relations Press, 1990.

Jackson, J. H. “The World Trade Organization: Watershed Innovation or Cautious Small Step Forward?” *World Economy*. 18, Global Trade Policy Annual, 1995.

Kaell, A., D. Ireland and Z. Sadeque. “Trade, Competition Policy and Market Access.” In *New Dimensions of Market Access in a Globalising World Economy*. Edited by the Organization for Economic Cooperation and Development, 1995.

Krugman, P. R. *Pop Internationalism*. Cambridge: MIT Press, 1996.

Lawrence, R. Z., A. Bressand and T. Ito. *A Vision for the World Economy*. Washington: The Brookings Institution, 1996.

Leacy, F. H. (ed). *Historical Statistics of Canada*. Second Edition. Ottawa: Statistics Canada, 1983.

Lipsey, R. G., D. Schwanen and R. J. Wonnacott. *The NAFTA: What’s In, What’s Out, What’s Next*. Toronto: C. D. Howe Institute, 1994.

Lloyd, P. and G. Sampson. “Competition and Trade Policy: Identifying the Issues after the Uruguay Round.” *World Economy*. 18, 5 (1995):681-705.

Low, P. (ed). International Trade and the Environment. Washington: World Bank, 1992.

Michalopoulos, C. and D. G. Tarr (eds). *Trade in the New Independent States*. Washington: World Bank, 1994.

Nguyen, T., C. Perroni et R. Wigle. “A Uruguay Round Success?” *World Economy*. 18, 1 (1995):25-30.

Nguyen, T., C. Perroni and R. Wigle. “Uruguay Round Impacts on Canada.” *Canadian Public Policy*. XXII, 4 (1996):342-355.

Organization for Economic Cooperation and Development. *New Dimensions of Market Access in a Globalising World Economy*. Paris: Organization for Economic Cooperation and Development, 1995.

Perroni, C. and R. M. Wigle. “International Trade and Environmental Quality: How Important are the Linkages?” *Canadian Journal of Economics*. XXVII, 3 (1994):551-567.

Radetzki, M. “Economic Growth and the Environment.” In *International Trade and the Environment*. Edited by F. H. Low. Washington: World Bank, 1992.

Schott, J. J. and J. W. Buurman. *The Uruguay Round: An Assessment*. Washington: Institute for International Economics, 1994.

Schott, J. J. (ed). *Completing the Uruguay Round: A Results Oriented Approach to the GATT Negotiations*. Washington: Institute for International Economics, 1990.

Statistics Canada. *Weekly Digest*. Balance of Payments Section. June 1996.

The Economist. “The Greening of Protectionism.” March 1993.

The Economist. “Stay Cool.” April 1995.

Trela, I. and J. Whalley. “Barrier Representation in North American Integration.” *World Economy*. 17, 1 (1994):31-44.

Uimonen, P. P. “Trade Rules and Environmental Controversies During the Uruguay Round.” *World Economy*. 18, 1 (1995):71-86.

Watson, W. G. “North American Free Trade: Lessons from the Trade Data.” *Canadian Public Policy*. XVIII, 1 (1992):1-12.

Woodall, P. “The Hitchhiker's Guide to Cybernomics.” *The Economist*. September 28, 1996.

World Bank. *The Uruguay Round and the Developing Economies*. Washington:World Bank, 1995.

World Bank. “Disparities in Global Integration and Growth.” *World Bank Policy and Research Bulletin*. 7, 2 (1996*a*):1-4.

World Bank. *Global Economic Prospects and the Developing Countries*. Washington: World Bank, 1996*b*.

Young, L. M. and K. M. Huff. “Free Trade in the Pacific Rim: On What Basis?” In *Global Trade Analysis: Modeling and Applications*. Edited by T. W. Hertel. Cambridge: Cambridge University Press, forthcoming.

APPENDIX: CORE PRINCIPLES OF THE MULTILATERAL TRADING SYSTEM

THIS SECTION PROVIDES A BRIEF DISCUSSION of some of the core principles of the multilateral trading system.

PROGRESSIVE LIBERALIZATION

THIS PRINCIPLE IS THE MOST STRAIGHTFORWARD. Participants in the trading system typically wish to cooperate to the reduction of trade barriers in the belief that it is in the general interest of nations to do so on a reciprocal basis.[1]

NON-DISCRIMINATION

THIS PRINCIPLE IS OFTEN REFERRED TO AS THE MOST FAVOURED NATION (MFN) principle. According to it, no country should be accorded less favourable treatment than the "most favoured" trading partner. In practice, this means that no country's imports should be treated differently (either better or worse) from those of any other country.

NATIONAL TREATMENT

THE PRINCIPLE OF NATIONAL TREATMENT is also relatively straightforward. According to it, once the appropriate border measures have been applied, imported goods should be treated at least as favourably as domestically produced goods. This principle largely concerns discouraging hidden protection (as in the case of imports subject to added taxes or extensive testing not required of domestically produced goods).

POORER NATIONS

THE PRINCIPLE OF MORE FAVOURABLE TREATMENT of poorer nations is usually referred to as the principle of special and differential treatment (S&D). This reflects two concerns: First, there is the widespread belief that poorer nations will improve their state of economic and social development only if they are afforded good access to foreign markets for their exports. Second, poorer nations may not be able to afford the expertise needed to implement some parts of their international obligations. In each case, international trading rules have featured preferential treatment, particularly for the poorest nations.

Fair Competition and Safeguards

According to the principle of fair competition, firms should not have to compete with unfair imports. There are two primary aspects to this principle: First, unfair imports include those that are subsidized by foreign governments as well as those that are "dumped" on foreign markets.[2] In each case, domestic industries injured by such unfair imports can apply for protection from them.

Further, under the (distinct) safeguards aspect of the principle, industries should be afforded temporary protection when import surges from abroad claim radically higher shares of the domestic market. Note that safeguards measures apply to fairly traded imports. In this case, the idea is that as comparative advantages change, some sectors grow and others decline but firms deserve a reasonable amount of time to respond to increased import competition.[3]

Transparency

The principle of transparency touches on a number of the other principles in that transparency means that the effect of a given trade barrier should be as well understood and clearly explained as possible. Potential suppliers of a foreign market must be able to gauge the effect of a given trade barrier, and domestic consumers must be able to understand the amount of protection offered to domestic producers. The principle touches on the principle of national treatment, since the impacts of measures violating that principle are unlikely to be transparent to exporters or consumers.

Notes

1 Among the founding principles of the GATT is that of "binding" of barriers. This amounts to commitment to a specific schedule of tariffs. For our purposes this will be treated as a means of dealing with an important potential loophole for trade discussions: unilateral alteration of the tariff schedule before negotiations begin.

2 It is not always clear what is unfair about goods that are allegedly dumped.

3 The nature of the adjustment may merely be retooling or retraining, but in many cases it may mean that a given industry will decline in the face of import competition.

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I. SCENE SETTING

NORTH AMERICAN ECONOMIC INTEGRATION: 25 YEARS BACKWARD AND FORWARD

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By Gary C. Hufbauer and Jeffrey J. Schott
Institute for International Economics, Washington (DC)

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PREFACE

AS A NEW MILLENNIUM APPROACHES, Canadians are going through a time of dramatic economic change. Markets are becoming global, and economic activity across nations is becoming increasingly integrated. Revolutionary developments in computer and communications technology are facilitating globalization, and are also altering a great deal the workplace and the lifestyles of Canadians. At the same time, largely as a consequence of the information revolution, knowledge-based activities are becoming increasingly important within the Canadian economy and the economies of other industrialized nations.

These and related major transformations of the economic environment invite a comparison with the Industrial Revolution of the 1800s. As in the earlier time, major structural changes are giving rise to uncertainties. Firms and workers are struggling to find their place in the new economic order. Canadians collectively face the question of whether their nation's physical, human and institutional resources will provide a firm foundation for continued prosperity. Many see Canada's prospects as being much less secure than in earlier years, when the country's rich natural resources played a major role in shaping the Canadian economy.

To examine fully the medium to longer-term opportunities and challenges of these developments, the Micro-Economic Policy Analysis Branch of Industry Canada asked a group of experts to provide their "vision" for Canada in the 21st Century on a number of important issues. Each author was required to undertake two formidable tasks: first, to identify major historical trends and develop scenarios to illustrate how developments in his/her respective area might unfold over the next ten to fifteen years; and second, to examine the medium-term consequences of these developments for the Canadian economy.

The papers coming out of this exercise are now being published under the general heading of "Canada in the 21st Century". This series consists of eleven papers on different aspects of Canada's medium-term outlook. The papers are divided into three major sections. The first section, *Scene Setting*, focuses on important developments that are going to shape the medium-term economic environment in Canada. The second section, *Resources and Technology*, looks at trends among some important components of Canada's wealth creation and considers the actions needed to ensure that these factors provide a firm foundation for continued prosperity. The last section, *Responding to the Challenges*, explores individual, corporate and government responses to the medium-term challenges and offers some options for an appropriate course of action.

As part of the *Scene Setting* section, this paper by Gary Hufbauer and Jeffrey Schott, of the Institute for International Economics, focuses on the regional dimension of Canada's commercial relations. It traces the growth of trade, investment and other commercial links between Canada and the United States, and speculates on the evolution of North American economic relations.

The authors are optimistic about the prospects for further North American economic integration. They believe free trade forces will continue to prevail over protectionist sentiments within the United States and that economic progress in North America will bring about a further increase in Canada–U.S. trade, which by 2005 or 2010 could be 20 to 30 percent above what it would have been in the absence of recent trade agreements. Meanwhile, economic reforms in Latin American countries are laying the foundation for NAFTA expansion and the gradual emergence of the Free Trade Area of the Americas.

SUMMARY

THIS REPORT OFFERS A RETROSPECTIVE AND PROSPECTIVE VIEW of the process of economic integration in North America. It begins with a history of the past 25 years of bilateral economic relations, and then speculates on how U.S.–Canada economic relations are likely to evolve over the next 25 years.

TWENTY-FIVE YEARS BACKWARD

THIS SECTION EXAMINES THE ROOTS OF THE "SILENT" INTEGRATION of the past generation. On the basis of this analysis, in the second part we draw some insights about the future course of bilateral economic relations.

Bilateral Trade and Investment

Canada is among the most trade-dependent of the OECD countries, while the United States is one of the least. Each country is the other's best customer, but the United States has no foreign rivals in the Canadian market while Canada is first among equal trading partners in the U.S. market. In simple terms, the U.S. market is more important to Canada than the Canadian market is to the United States.

Over the period from 1970 to 1995, bilateral trade in goods and services has grown faster than GDP, increasing at an average annual rate of about 11 percent. Machinery and transportation equipment dominate two-way trade, accounting for roughly 40 to 45 percent of total bilateral trade. In contrast, bilateral flows of direct investment have been less robust and direct U.S. investment in Canada has slowed markedly since 1990. Firms seem to be expanding output at their most efficient sites and phasing out smaller facilities formerly necessitated by trade barriers.

These aggregate trends mask the significant growth of a series of regional market clusters along the border. In recent years, trade between the U.S. states bordering Canada and their Canadian counterparts has grown substantially faster than national bilateral trade.

Macro-economic Policy Issues

Canada and the United States share many economic values but differ markedly in the role of government in the national economy. While central government spending as a percentage of GDP is roughly the same in both countries, Canadian provinces outspend American states by about two to one. Canada's external debt exceeds 100 percent of GDP (compared to under 20 percent for the United States), and its budget deficit as a percentage of GDP is roughly twice that of the United States. As a result, Canadian policy makers

are caught in a vise between the huge expense of social programs and the substantial political support for their continuance.

Since 1970, Canada and the United States have also diverged in terms of the percentage of GDP claimed by income and profit taxes: the share has increased in Canada and decreased in the United States. In 1993, the figures diverged by a full three percentage points of GDP. Canadian taxes on goods and services have consistently been about double those in the United States.

The Canadian economy tends to move in tandem with the U.S. economy but not in lock step. The degree of correspondence is highest in the money markets, where there is an extremely close correlation between U.S. and Canadian long-term (10-year) interest rates. Except for the early 1990s, there has also been a close correlation between inflation rates. In contrast, the exchange rate continues to fluctuate extensively.

Perhaps the biggest difference concerns labour. Until the late 1980s, Canadian unemployment followed the U.S. pattern with a lag of about a year. Since then, however, it has increased markedly while the U.S. rate has gently declined. The divergence is probably due to the fact that, in the early 1990s, the recession came later and was much deeper in Canada than in the United States. Because Canadian labour markets are less flexible than the U.S. markets, Canadian wages continued to increase in step with U.S. wages. Under the circumstances, Canada's drive for zero inflation would have required much lower wage gains to avert an increase in unemployment.

Trade and Investment Frictions

Among the impediments to integration of the North American economies are unilateral trade actions that can distort trade and investment flows and undercut business strategies seeking to rationalize production across the region. In this paper, we review three types of measures: anti-dumping or countervailing duties, U.S. Section 301 actions and economic sanctions.

Anti-dumping or countervailing duties have been imposed relatively rarely given the overall volume of bilateral trade, but they have drawn considerable attention in Canada because a few U.S. cases covered big-ticket sectors, such as softwood lumber. The United States has initiated more than 70 cases over the past three decades but the incidence has declined sharply in recent years. The new dispute settlement procedures of the Canada-United States Free Trade Agreement (FTA) deserve credit for mitigating the tensions created by these cases.

Could future regional and/or multilateral negotiations curb abuses of the anti-dumping regime? Past attempts do not offer optimism; indeed, recent GATT accords added to the dense regulatory guidelines for administrative agencies. We are wary of new efforts in this area; it may be better to let anti-dumping practices wither on the vine rather than try to prune them back. Past pruning has led to new grafts that have strengthened anti-dumping rules.

Countervailing duties will remain a problem as long as governments remain fixated on subsidizing economic sectors to redistribute income and promote employment. Both countries have tried unsuccessfully to rein in subsidy practices at the sub-federal level, where states and provinces compete with each other to attract new investments to their jurisdictions. Regional and multilateral negotiations have also failed to discipline these domestic subsidy practices. The only effective policy for curbing subsidies is likely to be budget constraint or taxpayer revolt.

Section 301 cases have not been a major concern, with the notable exception of cultural industries. Section 301 refers to Section 301 of the Trade Act of 1974. This statute authorizes the President to retaliate against "unfair" foreign trade practices. Unilateral Section 301 actions are still possible if contested policies are not covered by World Trade Organization rules. Canada's insistence on exempting cultural industries from regional and WTO obligations thus makes it easier to use Section 301 to contest trade practices in this area. This could be a growth area for North American trade lawyers.

Economic sanctions: Until the recent U.S. Helms–Burton Act, the United States and Canada differed infrequently on the use of sanctions in support of foreign policy objectives, and sanctions have not impeded regional trade and investment flows to a significant degree. However, the trend toward invoking sanctions through legislation rather than executive order (as in the Cuba, Iran and Iraq sanctions) is worrisome. If this trend gathers strength, the United States could find itself increasingly embroiled in rancorous disputes with Canada and other countries over the imposition of U.S. sanctions.

Bilateral Economic Initiatives

U.S.–Canadian bilateral economic initiatives over the past generation reflect an emerging understanding that negotiated approaches to conflict resolution are more constructive than unilateral actions. We review briefly the landmark agreements of the period: the Auto Pact, the FTA and the NAFTA.

The Auto Pact spawned a huge network of cross-border trade and spurred investment in the Canadian auto sector. In a conceptual sense, it also proved to be the forerunner of the Free Trade Agreement since the Auto Pact was the first significant departure by the United States from its postwar strategy of pursuing trade liberalization on a multilateral basis.

The FTA strengthened bilateral trade relations and created new rights and obligations regarding investment, services and dispute settlement; these have provided models for subsequent trade talks both regionally and multilaterally. Bilateral trade in financial services has grown at an annual rate of 21 percent since the FTA was implemented, while trade in closely related computer and information services has grown by almost 30 percent. In turn, the FTA largely provided the institutional underpinning for further liberalization achieved in the NAFTA.

TWENTY-FIVE YEARS FORWARD

Economic Integration: the Example of Germany and the Benelux Countries

This section examines the economic convergence between Germany and the Benelux countries over the past three decades as a way to derive insights into future convergence between Canada and the United States. Integration in Northern Europe was particularly far-reaching because of shared borders and close linguistic ties (French and English are common second languages). By 1960, the Benelux states and West Germany had reached a degree of formal integration that Canada and the United States did not achieve until 1990.

On the basis of this European experience, we draw several conclusions:

First, the importance of trade in North America is likely to grow relative to GDP. While rising trade ratios are the natural consequence of globalization, in the 1960s and 1970s trade-to-GDP ratios rose faster in Europe than elsewhere; we attribute the extra growth to integration efforts.

European integration generated a 50-percent increase in intra-regional trade (above levels that would probably have been achieved otherwise). Because barriers to North American trade started at a lower level, we would not expect trade growth comparable to that achieved in Europe, but increases of 20 to 30 percent seem quite possible.

By the same token, it seems probable that trade-to-GDP ratios for Canada and the United States will also rise. In 1993, the ratio of trade in goods and business services to GDP was 60 percent for Canada and 22 percent for the United States. These numbers could well rise to 80 and 35 percent respectively over the next two decades.

The development may be expressed in another way: the rising ratio of trade to GDP means that U.S. and Canadian import markets should grow at least one percentage point faster per year than real GDP.

Second, for several key macro-economic variables, North America has already achieved as much convergence as Northern Europe. The two areas where greater convergence might occur are the exchange and unemployment rates. If exchange rate stability increases in future, it will probably reflect fundamental forces (particularly synchronized inflation rates) rather than a policy decision by the Bank of Canada. In contrast, the force of open markets for goods and services will probably create more flexible labour practices throughout Canada and a closer match with U.S. unemployment levels.

Third, integration does not require convergence of tax policies. In Europe, after far-reaching integration, national tax structures actually diverged more than they had in 1965. In brief, the smaller partners were able to carry on with a more extensive social agenda than the largest partner. We expect current disparities between U.S. and Canadian tax structures to endure for some time, and see no reason why economic convergence by itself should force

Canada to the mode of lower taxes and reduced public spending preferred by the United States.

Implications for Competitiveness

The European experience suggests that there is considerable scope for further economic convergence between the United States and Canada in the next generation. This scenario suggests four lessons for Canadian firms and government policy:

- Corporations must follow the high-quality, low-cost leader or go out of business. Firms must have a lean staff and keep costs to the minimum.
- Firms should be very sensitive to workforce availability and habits in making decisions on new locations.
- Governments may well find that targeted subsidies are effective in attracting individual firms. Given budget constraints, however, officials will have to juggle priorities between general programs (such as better schools) and targeted programs (such as road links to specific industrial sites).
- Government officials should place greater emphasis on goods and services taxes that can be adjusted at the border, and on income tax systems that are fairly uniform so as to avoid driving away highly skilled people or especially profitable but mobile industries.

The Trade Policy Outlook and its Implications for North American Economic Integration

This final section offers our vision of future U.S. trade policy and how it could directly and indirectly affect U.S–Canadian economic relations. We argue that U.S. policy is likely to follow the script of the past two decades and continue to be based on a mixture of domestic legislative actions, regional trade initiatives and multilateral negotiations in the WTO. We describe the likely evolution of ongoing integration initiatives in the Western Hemisphere and the Asia-Pacific regions, as well as new efforts in the WTO.

The United States and Canada are committed to eliminating barriers to trade with the major trading nations of Asia-Pacific and Latin America. If barriers really are removed, free trade and investment in both regions will yield a rich harvest of reforms in the dynamic economies of East Asia and South America, but only modest changes will be required in North American policies affecting most manufacturing sectors (with the important exception of apparel). Agricultural reform will be a sticking point in both regions, as it has been in the

United States–Canada context. These commitments hold three main implications for the North American economies:

- increased adjustment pressure on the apparel sector;
- additional competition in meat and dairy products from Argentina, Australia and New Zealand, and in sugar from Brazil and potentially Cuba; and
- increased export opportunities in the markets of regional partners, as a result of trade-spurred growth.

Western Hemisphere: We are optimistic about the prospects for a Free Trade Area of the Americas (FTAA), for several reasons. First, economic reforms continue throughout the hemisphere, strengthening the foundations for economic growth over the medium and long term. Second, the Summit of the Americas process is working. Third, the process of integration has continued advancing in various sub-regional pacts.

What is the most likely course of development for the FTAA? We believe that a FTAA will evolve from a pragmatic, *ad hoc* approach that combines the continuation of sub-regional integration efforts (including the expansion of the NAFTA region) with hemisphere-wide efforts to harmonize national and/or sub-regional trading rules that could potentially erect obstacles to the FTAA. The NAFTA will play an important role in future hemispheric integration since the NAFTA area accounts for more than 85 percent of the hemisphere's output. Stronger ties between the expanding NAFTA and MERCOSUR areas will also be critical.

Negotiations on Chilean accession to the NAFTA should proceed quickly in 1998, once U.S. fast-track negotiating authority is renewed. The main challenge will be to devise solutions for the WTO-plus features of the NAFTA (e.g., investment, intellectual property, services and labour/environment side agreements).

Asia-Pacific: The United States and Canada have committed to achieving free trade and investment in the Asia Pacific Economic Co-operation (APEC) region by the year 2010. How this will be done is still unclear since the Asian-style negotiating process adopted by APEC creates uncertainty about the depth and timing of national trade reforms. While APEC members seem committed to eliminating border trade restrictions, they have not clarified how deep into domestic policies they will extend their commitments, although discussions have covered a broad range of issues, including investment and competition policy.

Nonetheless, it is difficult to imagine APEC reforms going beyond the comprehensive free trade obligations covered by the NAFTA. U.S.–Canadian norms are thus likely to represent the high water mark for APEC efforts. The one area where APEC could forge ahead is in competition policy, where regional and multilateral efforts in other forums are in their infancy.

In simple terms, we do not expect APEC's government-to-government negotiations to serve as a catalyst for North American integration. Instead, the lure of expanding Asian markets and the challenge of competing in those markets will provide a more powerful impetus for North American industry to restructure.

WTO: If regional free trade initiatives are sustained, they are likely to become linked in new WTO negotiations under the banner of global free trade.

The main question for these prospective WTO talks is whether negotiations in this forum can lead to the same deep integration (i.e., convergence or mutual recognition of domestic regulatory policies) achieved in Europe and now evolving in North America. The difference is that the WTO talks will balance EU norms with those of other regions. In some areas the U.S.–Canadian norm may not be the most stringent and North American policies could be strengthened to meet EU norms.

CONCLUSION

OVER THE NEXT 25 YEARS, the economic integration of North America will advance markedly:

- The border between Canada and the United States will be no more intrusive than the German–Dutch border today. Border trade measures will be a relic of the past; declining resort to antidumping duties and other border measures will be replaced by regulatory competition and investment subsidies.
- Trade will play an even larger role in both economies, and two-way trade flows will continue to expand sharply.
- Trade with Asia will take a much larger share of U.S. and Canadian exports and imports, spurring further development of west coast ports.
- Regardless of developments in Quebec, we will continue to see the devolution of power from federal governments to states and provinces. In both countries, provinces and states will play a larger role in shaping the direction of future integration. This trend will constrain growth of the federal tax base and will thus continue to squeeze budgets for social services.

INTRODUCTION

CANADA AND THE UNITED STATES SHARE THE LONGEST UNPROTECTED BORDER in the world and are each others' main trading partner. From colonial times through the signing and implementation of the North American Free Trade Agreement (NAFTA) in the 1990s, the two economies have been deeply linked. Since the mid-1800s, numerous efforts have been made to codify these linkages in bilateral free trade pacts, but politics trumped economics until quite recently.

This report offers a retrospective and prospective view of the integration process. It begins with a history of the past 25 years of bilateral economic relations, and then speculates on how U.S.–Canadian economic relations are likely to evolve over the next 25 years. By examining the roots of the "silent" integration of the past generation, along with the much-trumpeted trade diplomacy of the period, we attempt to draw some insights into the future course of bilateral economic relations.

TWENTY-FIVE YEARS BACKWARD

BILATERAL TRADE AND INVESTMENT

CANADA HAS LONG BEEN PREOCCUPIED WITH ITS BILATERAL TRADE RELATIONSHIP with the United States. Twenty-five years ago, bilateral merchandise trade totaled approximately $20 billion, and it represented about 65 percent of total Canadian trade and about 24 percent of total U.S. trade. From 1970 to 1995 Canadian exports became increasingly reliant on the U.S. market, despite the diversification efforts of the Trudeau era, while U.S. goods maintained a fairly constant share of the Canadian import market. By 1995, bilateral trade had grown more than tenfold to $260 billion. Canada's dependence on U.S. trade increased to represent 74 percent of its total trade, while the Canadian share of U.S. trade fell to 20 percent (Table 1).

In simple terms, the U.S. market is more important to Canada than the Canadian market is to the United States. The importance of the U.S. market to Canada is underscored by the fact that just over 25 percent of Canada's trade and economic relations staff personnel posted at bilateral missions abroad are located in the United States. The disparities in respective trade destination shares reflect the fact that the United States has a population and GNP roughly 10 times that of Canada (Table 2).

Bilateral Trade

Canada is among the most trade-dependent of the OECD countries; the United States is one of the least. Each country is the other's best customer, but the United States has no foreign rivals in the Canadian market while Canada is first among equal trading partners in the U.S. market. In 1995, Canada sent about 80 percent of its merchandise exports to the United States, and U.S. goods made up about 66 percent of Canada's imports. In contrast, the United States shipped 22 percent of its merchandise exports to Canada, and Canadian goods accounted for 19 percent of the U.S. import market.

Trade between the two countries continues to grow faster than GDP. From 1970 to 1995, both U.S. merchandise exports to Canada and imports from Canada grew at an average annual rate of about 11 percent (Table 3). These trade figures are in nominal dollars. In comparison, U.S. nominal GDP grew at an annual rate of only about 8.5 percent over this period.

Table 4 shows the composition of bilateral trade over the last 25 years. Machinery and transportation equipment dominate two-way trade, as would be expected in the countries that crafted the original managed trade regime in those sectors. They accounted for roughly 40 to 45 percent of total bilateral trade during the period (except for the high-oil-price, high-inflation bust of the late 1970s to early 1980s). Mineral fuels have accounted for a declining share

TABLE 1

BILATERAL MERCHANDISE TRADE SHARES, 1960-95
PERCENTAGE

	1960	1965	1970	1975	1980	1985	1990	1995
Canada (U.S. Share of Total)								
Imports	70	68	66	66	68	69	63	66
Exports	58	62	62	62	61	75	75	80
United States (Canada Share of Total)								
Imports	23	28	22	22	16	19	22	19
Exports	20	21	20	20	16	22	18	22

Source: *Direction of Trade Statistics Yearbook*, IMF.

TABLE 2

BASE ECONOMY COMPARISON, UNITED STATES AND CANADA, 1965-93

		1965	1970	1975	1980	1985	1990	1993
United States								
Population	M	194.3	205.1	216.0	227.8	238.5	249.9	257.8
GDP (real, 1987)	US$ M	2,436,653	2,828,484	3,166,350	3,732,761	4,244,497	4,863,689	5,132,829
GDP (real, 1987) per capita	US$	12,540	13,794	14,661	16,389	17,799	19,461	19,907
GDP (nominal)	US$ M	704,094	1,011,563	1,587,563	2,708,147	4,016,650	5,489,600	6,259 899
Export (goods and non financial services)	US$ M	36,742	59,087	136,993	277,525	296,384	548,900	647,800
Import (goods and non financial services)	US$ M	31,529	55,760	122,729	293,896	417,623	628,500	724,300
Export and import of goods and business services as a percentage of GDP	%	9.7	11.4	16.4	21.1	17.8	21.4	21.9
Canada								
Population	M	19.7	21.3	23.2	24.6	25.9	27.8	28.8
GDP (real, 1987)	US$ M	171,476	215,308	275,314	332,522	383,484	441,722	446,132
GDP (real, 1987) per capita	US$	8,714	10,097	11,862	13,520	14,782	15,894	15,500
GDP (nominal)	US$ M	52,867	84,438	167,236	263,192	347,379	568,072	546,350
Export (goods and non financial services)	US$ M	9,915	19,165	38,297	74,904	98,807	144,773	161,405
Import (goods and non financial services)	US$ M	10,020	17,019	40,664	70,075	90,362	146,750	164,726
Export and import of goods and business services as a percentage of GDP	%	37.7	42.9	47.2	55.1	54.5	51.3	59.7

Source: *World Data 1995*, World Bank, 1995.

TABLE 3

MERCHANDISE TRADE BETWEEN CANADA AND THE UNITED STATES AND WITH THE REST OF THE WORLD, 1961-95
BILLIONS OF US$

	1961	1965	1970	1975	1980	1985	1990	1995	Average Annual Growth 1970-95
Canada									
Imports from the U.S.	3.9	5.6	9.5	23.1	41.2	54.1	75.3	109.0	10.3%
Total imports	5.8	8.0	14.0	35.2	61.0	78.7	119.7	164.3	10.4%
Exports to the U.S.	3.2	4.7	10.4	21.2	41.1	68.3	95.4	152.8	11.3%
Total exports	8.0	8.1	16.7	34.1	67.7	90.8	126.4	190.2	10.2%
United States									
Imports from Canada	3.3	4.9	11.1	22.8	42.0	69.4	85.3	148.3	10.9%
Total imports	14.8	21.4	40.0	103.4	257.0	361.6	39.3	770.9	12.6%
Exports to Canada	3.7	5.6	9.1	21.7	35.4	47.3	93.8	126.0	11.1%
Total exports	21.0	27.4	43.2	107.6	220.8	213.1	517.0	582.5	11.0%

Source: *Direction of Trade Statistics Yearbook*, IMF.

TABLE 4A

U.S. EXPORTS TO CANADA, 1970-95
BILLIONS OF US$, F.A.S.[a] VALUE

	1970	1975	1980	1985	1990	1995	Average Annual Growth
0—Food and live animals	547.6	1,042.0	1,451.2	1,305.3	4,467.5	6,144.0	10.2%
1—Beverages and tobacco	8.8	13.8	89.4	65.4	133.9	215.4	13.6%
2—Crude materials, inedible, except fuels	535.9	906.9	1,826.2	1,487.4	2,986.6	4,413.1	8.8%
3—Mineral fuels, lubricants and related materials	271.3	866.5	1,843.1	1,604.7	2,167.9	1,472.5	7.0%
4—Animal and vegetable oils, fats and waxes	21.8	48.3	32.4	32.6	58.8	130.5	7.4%
5—Chemicals and related products, n.e.s.[b]	553.8	1,222.7	2,134.4	2,698.1	6,139.3	10,652.5	12.6%
6—Manufactured goods classified chiefly by material	1,137.6	3,023.0	3,773.3	3,937.0	10,096.7	16,252.3	11.2%
7—Machinery and transportation equipment	4,869.6	12,360.1	17,993.8	26,900.6	45,294.2	69,717.2	11.2%
8—Miscellaneous manufactured articles	574.8	1,292.8	2,427.2	2,757.0	7,926.9	12,686.7	13.2%
9—Commodities and transactions n.e.s.	270.5	531.4	2,397.1	4,240.9	3,694.7	4,339.8	11.7%
Total	8,791.8	21,307.4	33,968.0	45,028.9	82966.5	126,024.1	11.2%

a Free alongside ship value.
b Not elsewhere specified.
Source: U.S. Department of Commerce.

TABLE 4B

U.S. IMPORTS FROM CANADA, 1970-95
BILLIONS OF US$, CUSTOMS VALUE

	1970	1975	1980	1985	1990	1995	Average Annual Growth
0—Food and live animals	463.1	673.6	1,393.4	2,376.4	3,768.1	5,655.3	10.5%
1—Beverages and tobacco	181.9	246.4	387.7	495.8	594.9	680.1	5.4%
2—Crude materials, inedible, except fuels	1,679.2	2,770.2	5,239.0	5,583.1	7,481.6	10,920.2	7.8%
3—Mineral fuels, lubricants and related materials	1,000.1	4,708.8	7,114.0	10,071.2	9,846.2	13,686.4	11.0%
4—Animal and vegetable oils, fats and waxes	1.2	4.8	5.8	20.5	92.4	339.2	25.3%
5—Chemicals and related products, n.e.s.[a]	361.6	795.3	2,493.6	2,912.9	4,305.0	8,150.4	13.3%
6—Manufactured goods classified chiefly by material	2,222.5	3,625.6	8,175.5	10,716.6	15,778.4	25,389.1	10.2%
7—Machinery and transportation equipment	4,404.8	7,966.2	12,304.9	29,396.8	40,754.4	63,794.9	11.3%
8—Miscellaneous manufactured articles	282.4	475.7	1,642.5	2,997.5	3,593.8	7,760.9	14.2%
9—Commodities and transactions n.e.s.	494.1	903.2	2,698.9	4,435.6	5,157.2	8,742.2	12.2%
Total	11,091.1	22,169.8	41,455.4	69,006.3	91,372.0	14,5118.7	10.8%

a Not elsewhere mentioned.
Source: U.S. Department of Commerce.

TABLE 5

TOP 10 PURCHASERS OF U.S. MANUFACTURED PRODUCTS, 1989-95
PERCENTAGE OF TOTAL U.S. EXPORTS OF MANUFACTURED GOODS

	1989	1990	1991	1992	1993	1994	1995
Canada	25	23	22	22	23	24	23
Japan	9	10	9	8	8	8	9
Mexico	7	8	8	9	9	10	8
United Kingdom	7	7	6	6	6	6	5
Germany	5	5	6	5	4	4	4
South Korea	3	3	3	3	3	3	4
Taiwan	3	3	3	3	3	3	3
Singapore	2	2	2	2	3	3	3
Netherlands	3	3	3	3	3	3	3
France	4	4	4	4	3	3	3

Source: U.S. Department of Commerce.

of trade since the first oil shock in the 1970s; trade in food and beverages has been basically flat at 5 to 6 percent of total trade. Canada consistently tops the U.S. Department of Commerce's list of major foreign purchasers of U.S. manufactured products (Table 5), buying close to a quarter of the total — slightly higher than its share of total U.S. exports.

Trade in services between the two countries has grown at about the same pace as trade in goods: Canadian exports to the United States of commercial services have grown by 13 percent per annum since 1982, and U.S. exports to Canada have increased by 10 percent annually (Table 6). Not surprisingly, two-way trade in computer and information services has been robust throughout the period and has been the fastest-growing sector in the 1990s. However, the leading U.S. service export remains management services, with revenues of about C$2.5 billion in 1994. Moreover, this figure does not reflect the growth of Canadian sales from subsidiaries of American management consulting companies — firms that have proliferated in Toronto, Vancouver and other large Canadian cities.

TABLE 6

U.S.-CANADA TRADE IN COMMERCIAL SERVICES, 1982-94
MILLIONS OF C$

	1982	1986	1990	1994	Average Annual Growth 1982-94	Average Annual Growth 1990-94
Canada to United States						
Communications	87	126	210	324	12%	11%
Insurance	264	569	725	828	10%	3%
Other financial services		144	229	489	17%	21%
Computer and information services	44	110	155	608	24%	41%
Royalties and licence fees	15	47	69	20	24%	31%
Commissions	247	358	516	863	11%	14%
Equipment rentals	105	165	156	198	5%	6%
Management services	49	161	451	497	21%	2%
Advertising	30	21	55	32	1%	-13%
Research and development	122	465	755	793	17%	1%
Architectural and engineering services	105	194	212	589	15%	29%
Miscellaneous business services	608	966	973	1,375	7%	9%
Personal, cultural and recreational services	74	147	267	269	11%	0%
Total	1,732	3,452	4,920	7,336	13%	11%
United States to Canada						
Communications	7	31	78	121	27%	12%
Insurance	360	686	1,157	1,064	9%	-2%
Other financial services	54	292	385	521	21%	8%
Computer and information services	69	109	513	989	25%	18%
Royalties and licence fees	761	989	1,450	1,810	7%	6%

TABLE 6 (CONT'D)

Commissions	218	333	390	595	9%	11%
Equipment rentals	333	328	260	356	1%	8%
Management services	685	976	1,525	2,447	11%	13%
Advertising	53	122	171	288	15%	14%
Research and development	287	978	761	850	9%	3%
Architectural and engineering services	130	136	253	512	12%	19%
Miscellaneous business services	864	1,353	1,048	1,490	5%	9%
Personal, cultural and recreational services	127	138	263	334	8%	6%
Total	3,961	6,431	8,690	11,812	10%	8%

Note: Numbers in column may not add to total because of omission of certain categories.
Source: Statistics Canada.

Blurring the Distinction: U.S.–Canadian Commercial Integration

The majority of Canadians live in urban centres located within 160 kilometres of the U.S. border. Distance and the concentration of Canadian consumers is a compelling force in the Canada–U.S. relationship: within a day's drive from Southern Ontario there are over 100 million American consumers, and truckers can drive about 15 hours from Chicago to reach Winnipeg. Montreal, Toronto and Halifax are all well within a day's haul from Boston, New York or Philadelphia (Table 7). Shipping cargo by road from Vancouver to Los Angeles takes under two days, far less time than from Chicago to Los Angeles. An increasingly integrated North American cargo rail system is also strengthening the transportation links. In addition, Canada–U.S. air traffic is the heaviest between any two nations, with an estimated 13 million passengers per year. The new bilateral aviation agreement (known as the Open Skies agreement), concluded in February 1995, has already added another million passengers in the first year.[1]

The Open Skies accord has allowed Canadian carriers unlimited rights to fly from Canada to any point in the United States; U.S. airlines enjoy similar rights to destinations other than Montreal, Toronto and Vancouver. Total free access for U.S. carriers will be phased in by 1998. The agreement so far includes 23 new routes for Canadian carriers, 33 Canadian carrier charter routes and 46 new routes for U.S. carriers. On the same day as the signing of the Open Skies agreement, the United States and Canada signed the Canada–U.S. Accord on Our Shared Border, in which the governments pledged to work together to streamline routine traffic by land and air.

A series of regional market clusters have developed along the border. Many of Canada's economically most important cities are closer to their American than their Canadian neighbours. A highly trafficked landmark, the Ambassador Bridge (the world's longest international suspension bridge) con-

TABLE 7

TRUCK TRAVEL TIMES
HOURS

	New York	Chicago	San Francisco
Halifax to	24	56	144
Montréal to	18	25	120
Toronto to	12	20	108
Winnipeg to	72	36	84
Calgary to	82	46	58
Vancouver to	108	70	36

Source: Canada, Department of Foreign Affairs and International Trade.

nects Detroit to Windsor-Essex-Tilburg in Ontario, the center of Canada's automotive industry. Cargo haulers can also take the Windsor–Detroit tunnel. In the West, the provinces of Manitoba, Saskatchewan and Alberta have linked with Minnesota and North Dakota in a number of regional trade promotion initiatives, including the Central North American Trade Corridor Association and the Red River Trade Corridor.

In the last few years, trade between the U.S. border states and their Canadian counterparts has grown substantially faster than national bilateral trade (Table 8). Canadian-bound exports from the 10 U.S. states bordering Canada grew at an average rate of 42 percent between 1993 and 1995, considerably higher than the 26 percent growth rate for all U.S. exports to Canada during this period. The border states now account for about half of U.S. exports to Canada. Similarly, the border Canadian metropolitan areas of Vancouver, Windsor and Toronto probably ship more than half of Canada's exports to the United States.

About 23 million Americans visit Canada for a day trip every year, and about 35 million per year stay longer for an average of about three to four days.

TABLE 8

U.S. STATE EXPORT SALES TO CANADA, 1993-95
BILLIONS OF US$

	1993	1994	1995	Change 1993-95
Alaska	0.08	0.12	0.20	132.9%
Washington	1.72	1.86	2.29	32.8%
Idaho	0.16	0.21	0.29	86.6%
Montana	0.14	0.14	0.14	-3.2%
North Dakota	0.23	0.25	0.32	38.7%
Minnesota	1.95	2.11	2.44	25.2%
Wisconsin	1.95	2.44	2.81	44.2%
Illinois	4.86	5.76	6.45	32.8%
Indiana	4.26	4.59	4.59	7.7%
Michigan	11.43	20.81	21.94	91.8%
Ohio	7.67	8.50	8.88	15.7%
Pennsylvania	3.73	4.07	4.67	25.2%
New York	6.58	7.49	9.24	40.5%
Vermont	2.08	2.06	2.51	20.9%
New Hampshire	0.38	0.42	0.49	31.1%
Maine	0.36	0.41	0.40	29.7%
U.S. Total	100.19	114.25	126.02	25.8%
Total Border States	47.59	61.24	67.74	42.3%

Source: U.S. Department of Commerce.

About 54 million Canadians travel to the United States per year, and about 40 million of these trips are one-day trips. Since the total Canadian population numbers about 30 million, it is apparent that the average Canadian visits the United States more than once a year. It is getting easier to cross the border. No longer do U.S. citizens need a passport to enter Canada; a birth certificate or driver's licence will suffice. In a few years it will not be unusual for some border posts to be manned by people working for both countries' customs agencies.

Foreign Direct Investment

Investment is another significant form of economic ties. Many U.S. companies have chosen to build subsidiaries in Canada, and these have often outperformed their corporate parents. Canadian subsidiaries have the advantage of being close to their U.S. headquarters. According to the chief of Compaq Canada, "We [are able] to leverage the programs and thoughts and actions being taken in the United States when it applies.... We are three hours [from headquarters in Houston] by aircraft, so you are able to understand how the dynamic in the United States affects Canada and factor in what the Canadian market requirements are."[2]

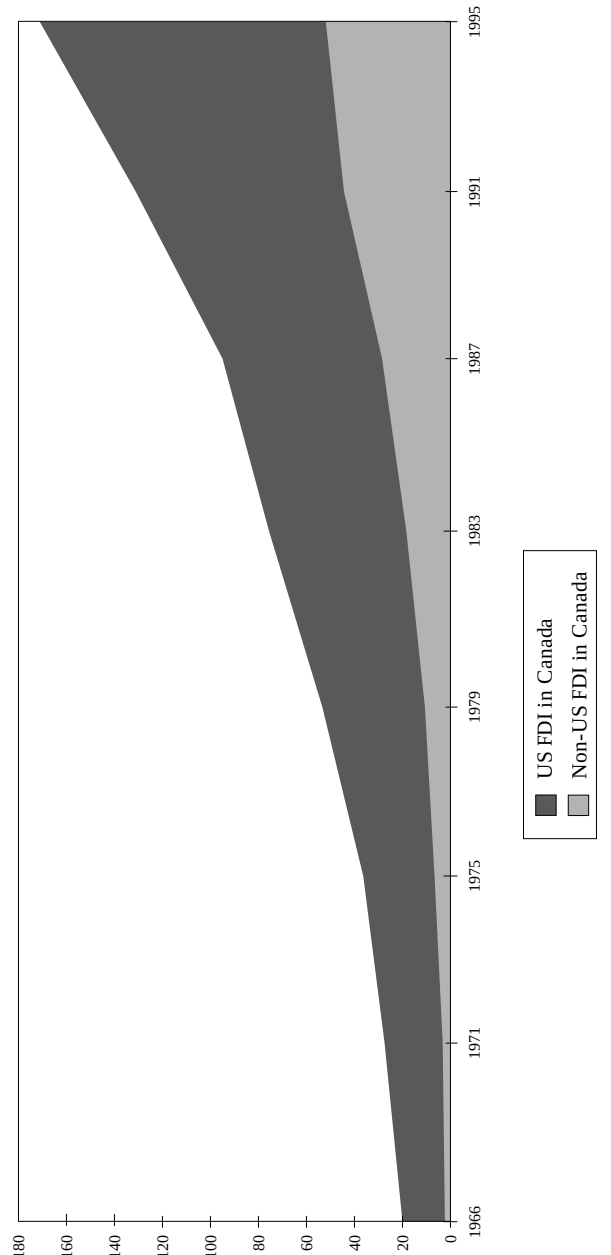
U.S. holdings of portfolio investment in Canada have been, and remain, a significant means by which the Canadian economy manages its fiscal deficits. The United States is the largest external source of portfolio finance, holding $138 billion (38 percent of the stock of Canada's portfolio investment) in 1991. This is more than double the $58 billion held by Japanese portfolio investors (about 16 percent).

Despite the historic role of cross-border foreign direct investment as the first corporate step into global investment, the U.S. share of the stock of FDI in Canada declined somewhat in the 1980s and 1990s (Figures 1 and 2). The only sector to experience a real increase in U.S. FDI in Canada has been the financial sector (Figure 3). In contrast, U.S. FDI in Canada in the petroleum and mining sectors has fallen in real terms since 1965. The ill-conceived National Energy Program (NEP) of the Trudeau government contributed to this decline, but a more important cause has undoubtedly been the poor investment climate in the petroleum and mining sectors since the early 1980s.

Unlike bilateral trade, which has expanded rapidly since 1990, bilateral direct investment has experienced much less robust growth (Table 9). Over the period from 1970 to 1994, Canadian FDI in the United States grew at an average annual rate of 11 percent, but U.S. FDI in Canada increased by only 5 percent per year in nominal terms. Since 1990, Canadian FDI has accelerated somewhat, but U.S. FDI has slumped to an average annual growth of about 2 percent. The conclusion suggested by the diverging trade and investment trends — especially if we compare U.S. exports to Canada with U.S. FDI in Canada — is that firms are expanding output at their most efficient sites and phasing out smaller facilities that were once required by trade barriers.

FIGURE 1

FOREIGN DIRECT INVESTMENT IN CANADA, 1966-95



Source: Statistics Canada.

FIGURE 2

U.S. SHARE OF STOCK OF DIRECT INVESTMENT IN CANADA

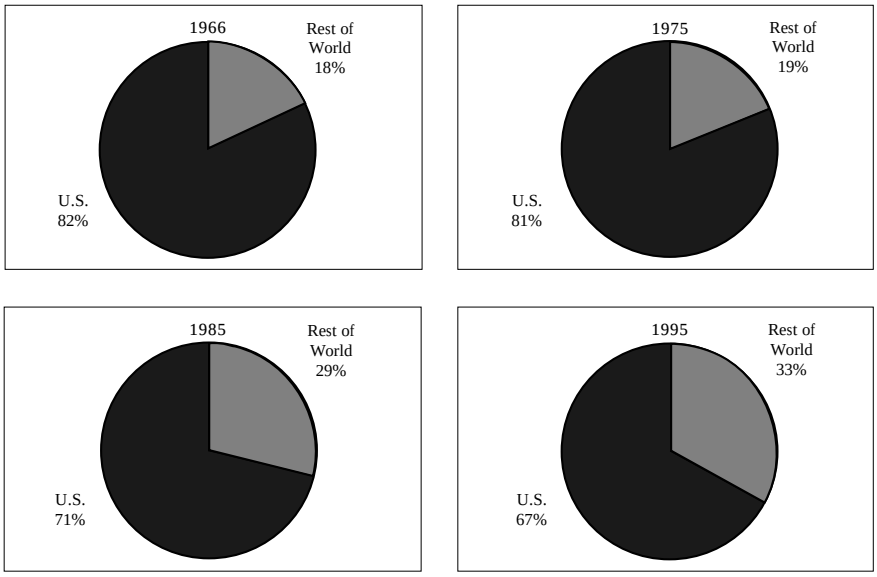
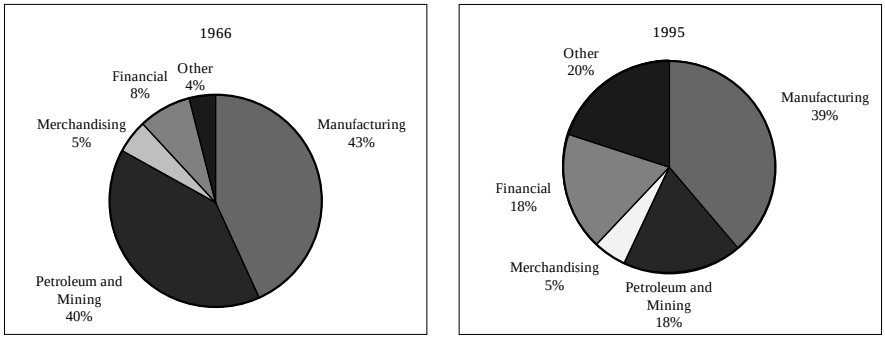


FIGURE 3

U.S. FDI IN CANADA BY SECTOR, 1966 VS 1995



Source: Statistics Canada.

TABLE 9

UNITED STATES–CANADA FOREIGN DIRECT INVESTMENT STOCKS, 1970-94
BILLIONS OF US$

	Petroleum	Manufacturing	Services	Other	Total
Canada in the United States					
1970	0.5	1.9	0.5	0.4	3.3
1975	1.0	3.1	0.6	0.9	5.6
1980	1.5	3.5	1.1	5.6	11.7
1985	1.6	4.6	1.5	9.4	17.1
1990	1.4	9.3	2.4	14.6	27.7
1994	2.6	16.9	2.0	21.8	43.2
Average annual growth	7.1%	9.5%	5.8%	18.1%	11.3%
United States in Canada					
1970	5.3	9.2	1.8	5.1	21.4
1975	7.8	13.8	4.1	6.6	32.3
1980	10.4	18.8	6.0	8.2	43.5
1985	10.5	21.8	6.3	8.5	47.1
1990	10.7	31.6	13.1	10.2	65.5
1994	8.6	35.0	13.0	16.3	72.8
Average annual growth	2.0%	5.7%	8.6%	5.0%	5.2%

a For Canadian investment in the U.S., the data represent wholesale trade.
For U.S. investment in Canada, the data represent banking and finance.

Source: U.S. Department of Commerce.

Macro-economic Policy Issues

Canada and the United States are both wealthy industrialized countries, with market-oriented capitalist economies and democratic political systems. In terms of economy and population, Canada is roughly one tenth the size of the United States; its per capita income is only slightly lower. Despite their many similarities, the two countries diverge on fundamental points. In the United States, the government plays a far smaller role in the economy. A strict line has been drawn between government and private sector. Canadians, on the other hand, value their national health care system, education subsidies and prolonged unemployment benefits.

Table 10 shows the difference in government spending in Canada and the United States. While central government spending as a percentage of GDP is roughly the same in the two countries, Canadian provinces spend about twice as much as American states.

In the past few years, proportionally the budget deficit has been about twice as high in Canada as in the United States. Canadian external debt exceeds 100 percent of GDP, whereas the U.S. figure is under 20 percent. These factors are worrying to Canadians and constrain Canadian policy makers, who are caught in a vise between the burdensome expense of social programs and the substantial political support for their continuance. Government expenditure on social programs accounts for about 30 percent of Canada's GDP.[3] Public debt service payments account for another 25 percent of government spending. The government is thus left with the choice of either reducing spending in politically difficult areas such as defence, regional development and agriculture, or else continuing to run deficits. Parliamentary debates have sounded much like the budget tirades in the U.S. Congress. The Chrétien government pledged to reduce the deficit to 3 percent of GDP by the 1996-97 fiscal year, and many provinces have been hard at work reducing their own deficits.

In 1970 the percentage of GDP claimed by income and profit taxes was the same in Canada and the United States (Table 11). Since 1970, however, the percentage has increased in Canada and declined in the United States. In 1993, the figures diverged by a full three percentage points of GDP. Canadian taxes on goods and services have consistently been about double those in the United States, thereby providing another reason for Canadians to enjoy crossing the border. The Goods and Services Tax (GST) — a multi-stage 7-per-cent value-added consumption tax — provides a large stream of revenue but is extremely unpopular with Canadian consumers. In the 1993 elections the Liberal Party pledged to replace the GST with a system that would generate equivalent revenue flows but would be kinder to consumers and small businesses. So far, this pledge has not been carried out. Meanwhile, politicians on the right complain bitterly about the business costs of Canada's policies.

As the aggregate expenditure figures indicate, Canada's federal and provincial governments both play prominent roles in the country's economy.

Canadian governments have pursued industrial policy objectives, stimulating manufactures in order to seek diversification from natural resources. The result of industrial targeting over time has been a shift in Canada's exports from forestry and natural resources to more highly processed goods. Canada traditionally employed tariffs to promote industrial development, and it generally had higher tariffs than the United States. This feature is, of course, disappearing under the NAFTA for bilateral trade. But the tariffs also impose significant costs on Canadian producers (and consumers) who import from non-North American sources, and in some sectors the tariffs make Canadian firms less competitive than other North American companies. Recognizing that problem, Canada reduced its MFN tariffs on certain textile products soon after the conclusion of the NAFTA to help domestic apparel producers compete against U.S. and Mexican firms.

Although the two economies are highly integrated, the exchange rate continues to fluctuate significantly (Figure 4). Since 1975, Canada has not attempted to peg the value of its currency to the U.S. dollar. The exchange rate is important to the Bank of Canada but is not itself the decisive consideration in setting monetary policy. Between 1985 and 1990, a strong Canadian dollar in real terms put considerable pressure on Canadian firms that had to compete with American businesses. Since 1990, the exchange rate has been more favourable to Canadian firms.

The Canadian economy tends to move in tandem with the U.S. economy, but not in lock step. The degree of correspondence is highest in the money markets. Figure 5 shows an extremely close correlation between U.S. and Canadian long-term (10-year) interest rates. In fact, in five of the six periods examined, the correlation is 0.90 or higher. Share prices (Figure 6) also exhibit a strong correlation in most 5-year periods, averaging about 0.60 (though the correlation was under 0.40 in the period from 1991 to 1995).

In the early 1970s and 1980s, there was a close correlation between inflation rates in the two countries. In the early 1990s, however, the Bank of Canada instituted a policy geared toward very low inflation, and in 1994 the inflation rate was driven practically to zero. It has climbed somewhat since then, settling closer to the U.S. rate of around 2 percent (Figure 7).

Until the late 1980s, Canadian unemployment followed the U.S. pattern with a lag of a year or so. Around 1990, however, the unemployment rate in Canada experienced a sharp upswing, while the U.S. unemployment rate gently declined (Figure 8). What was the cause of the divergence? Both economies experienced a recession in the early 1990s, but in Canada it came later and was much deeper than in the United States (Figure 9). Nevertheless, Canadian wages (as shown in Figure 10) continued to increase in step with U.S. wages. Moreover, labour markets are less flexible in Canada than in the United States. Under the circumstances, Canada's drive for zero inflation would have required much lower wage gains, especially for new entrants to the labour market, to avert an increase in unemployment. This did not happen.

TABLE 10

GOVERNMENT REVENUE AND EXPENDITURE IN CANADA AND THE UNITED STATES, 1972-92
PERCENTAGE OF GDP

	1972	1976	1980	1984	1988	1992
United States						
Central Government						
Revenue	17.7	17.6	20.2	19.0	19.6	19.1
Expenditure	19.2	21.2	22.0	22.8	22.8	24.0
State Governments						
Revenue	6.7	6.8	7.0	7.5	8.1	8.7
Expenditure	8.5	8.8	8.9	8.7	9.4	10.9
Canada						
Central Government						
Revenue	18.6	19.1	18.6	19.2	19.7	20.9
Expenditure	17.8	20.1	21.2	25.0	22.0	25.2
Provincial Governments						
Revenue	12.8	14.8	16.0	16.6	16.5	17.1
Expenditure	17.8	19.7	20.3	22.1	21.5	25.1

Source: *Government Finance Statistics* and *International Financial Statistics*, IMF.

TABLE 11

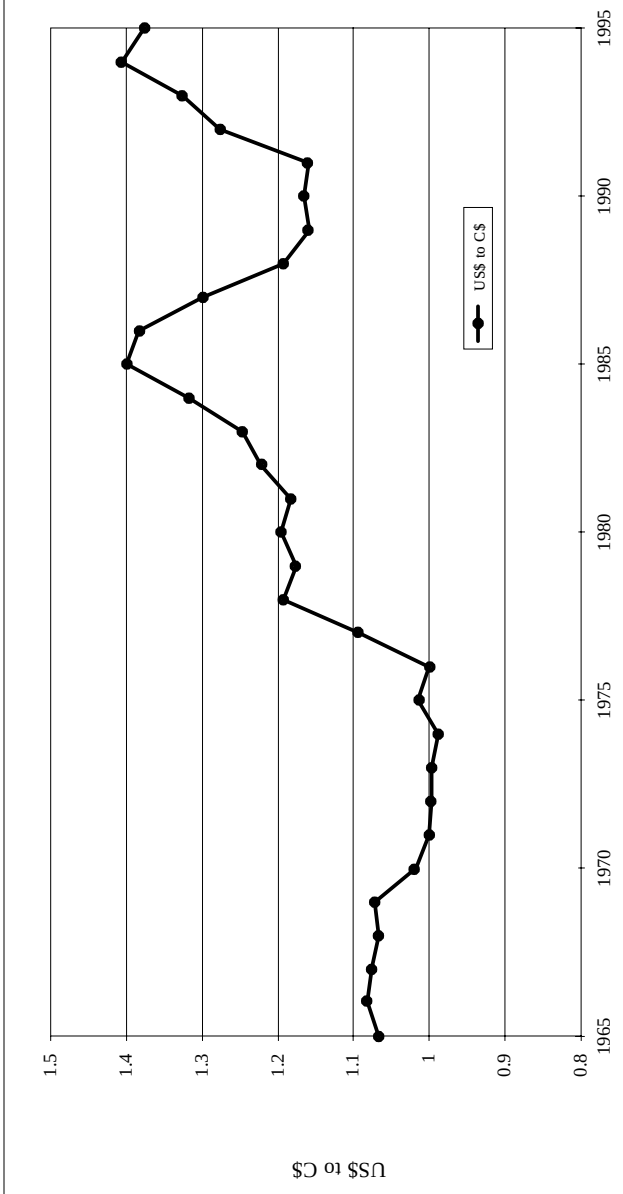
TAX REVENUE IN THE UNITED STATES AND CANADA, 1965-93
PERCENTAGE OF GDP

	1965	1970	1975	1980	1985	1990	1993
Canada							
Income and Profit	10.0	14.0	15.3	14.7	14.6	17.7	15.7
Social Security and Payroll	0.5	1.3	1.2	1.2	1.5	1.2	1.3
Property	3.7	4.0	3.1	2.9	3.1	3.6	4.0
Goods and Services	10.5	9.9	10.4	10.3	10.5	9.4	9.5
Total	25.9	31.3	32.4	31.6	33.1	36.5	35.6
United States							
Income and Profit	11.9	14.0	12.6	13.8	12.3	12.7	12.6
Social Security and Payroll	1.7	2.4	1.9	2.9	3.2	3.4	3.4
Property	3.9	4.0	3.8	2.9	2.9	3.2	3.4
Goods and Services	5.7	5.6	5.4	4.9	5.1	4.8	5.1
Total	25.8	29.2	29.0	29.3	28.7	29.4	29.7

Source: *Revenue Statistics of OECD Member Countries*, OECD, 1995.

FIGURE 4

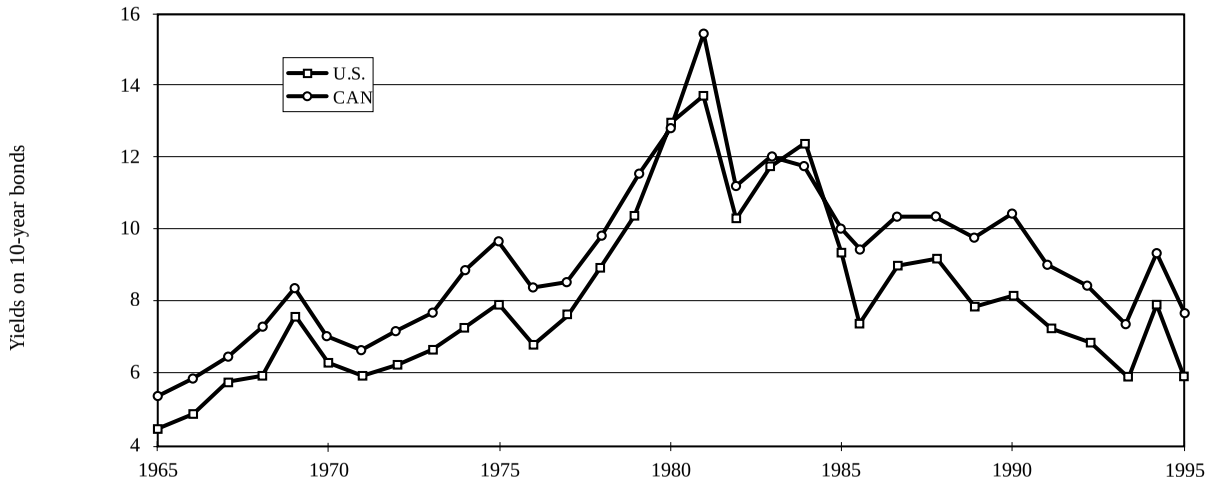
FOREIGN EXCHANGE RATES BETWEEN CANADA AND THE UNITED-STATES, 1965-95



Source: *International Financial Statistics*, IMF.

FIGURE 5

MEDIUM-TERM INTEREST RATES IN CANADA AND THE UNITED STATES, 1965-95



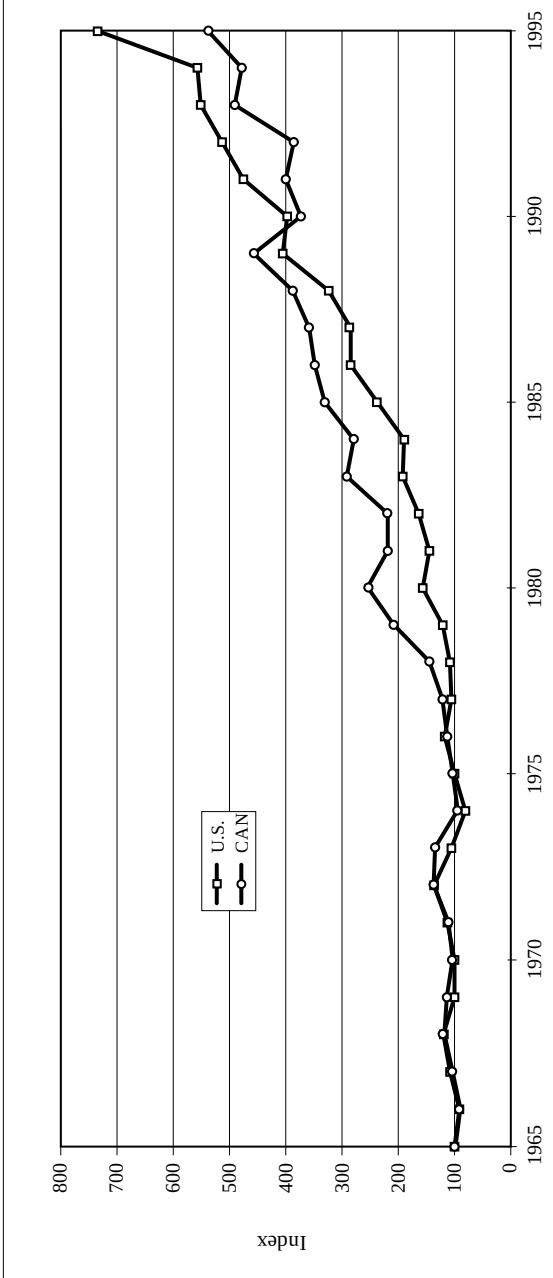
Correlation (United States vs Canada, monthly data)

1966-70	0.98	1976-80	0.97	1986-90	0.77
1971-75	0.95	1981-85	0.94	1991-95	0.93

Source: *International Financial Statistics*, IMF, June 1996.

FIGURE 6

SHARE PRICE INDEX IN CANADA AND THE UNITED STATES, 1965-95



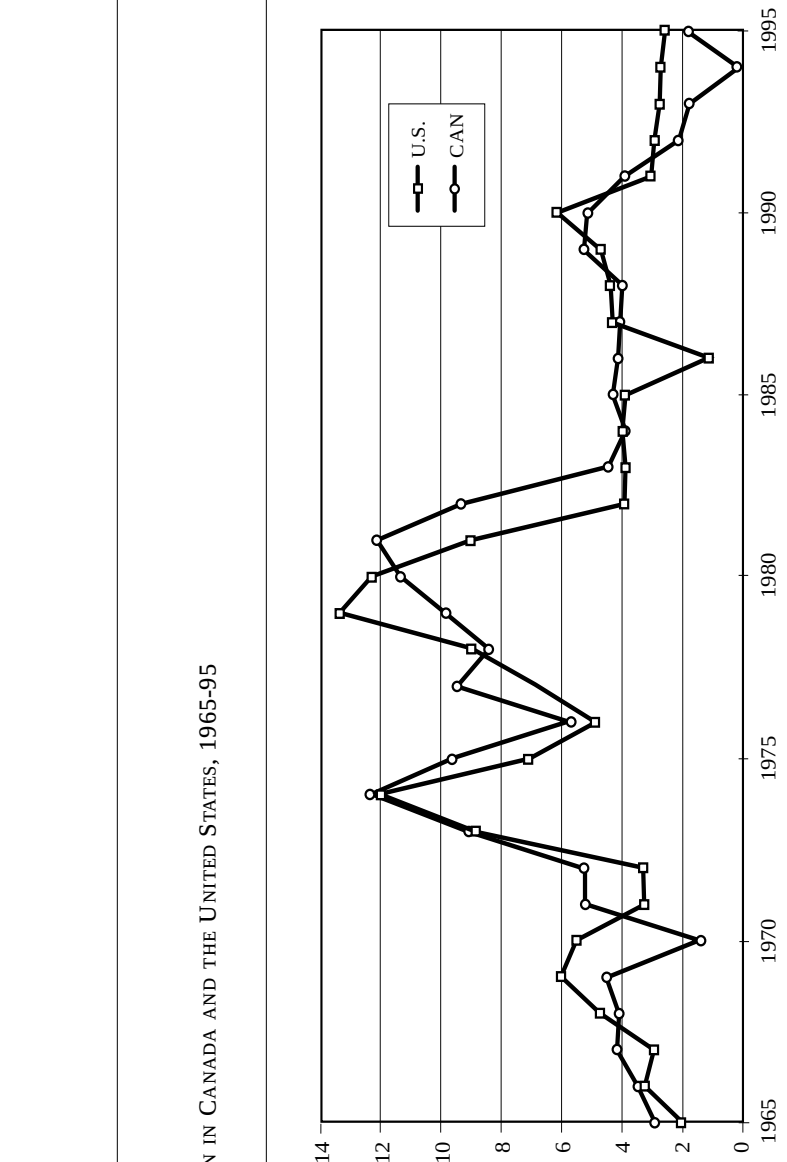
Correlation (United States vs Canada, monthly index return data)

1966-70	0.63	1976-80	0.65	1986-90	0.70
1971-75	0.56	1981-85	0.60	1991-95	0.38

Source: *International Financial Statistics*, IMF, June 1996.

FIGURE 7

INFLATION IN CANADA AND THE UNITED STATES, 1965-95



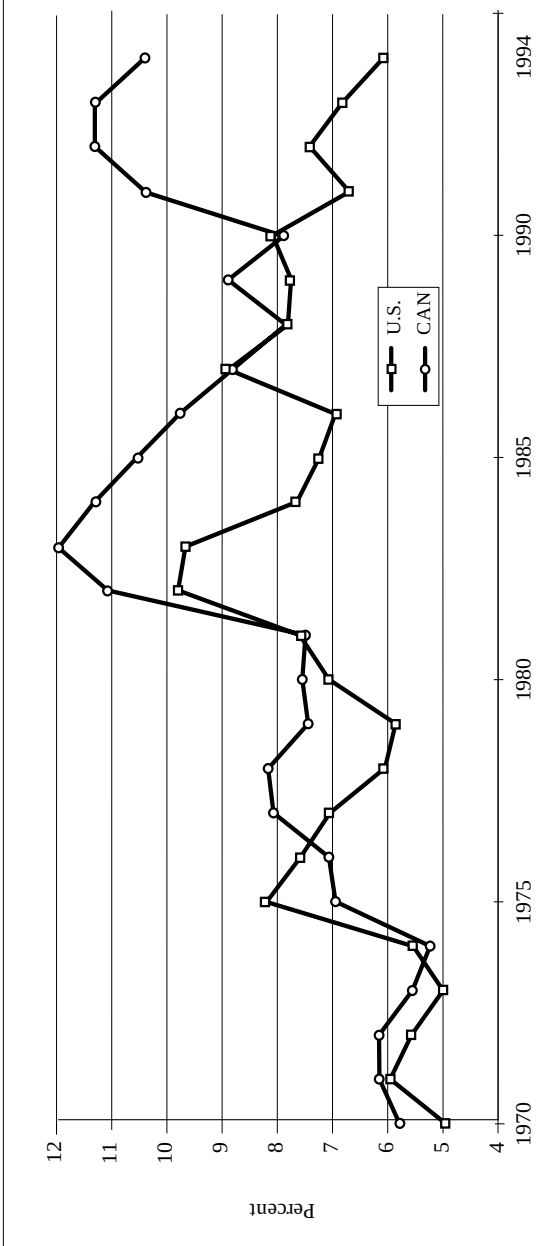
Correlation (United States vs Canada, monthly data)

1966-70	0.22	1976-80	0.69	1986-90	0.51
1971-75	0.90	1981-85	0.87	1991-95	0.85

Source: *International Financial Statistics*, IMF, June 1996.

FIGURE 8

UNEMPLOYMENT IN CANADA AND THE UNITED STATES, 1970-94

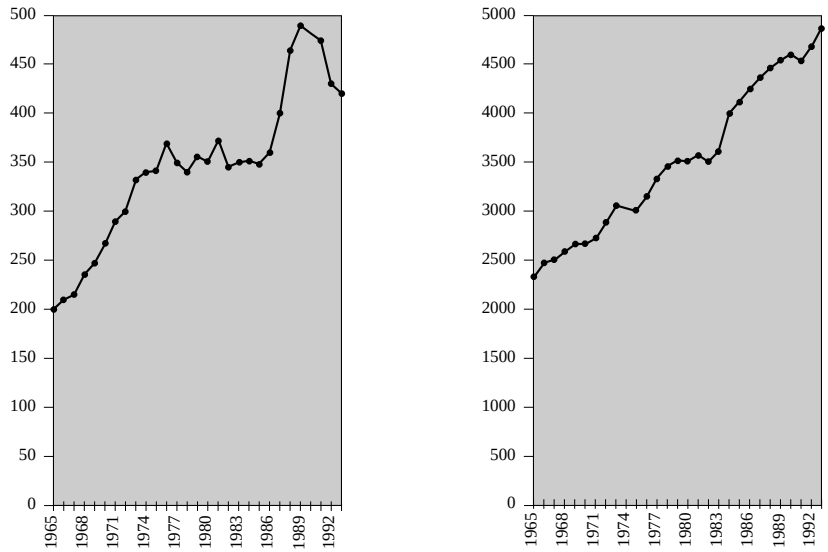


Correlation (United States vs Canada, annual data)
1970-94 0.51

Source: *International Financial Statistics*, IMF, June 1996.

FIGURE 9

GDP IN CANADA AND THE UNITED STATES, 1965-93
MARKET PRICES, BILLIONS OF US$



Source: *International Financial Statistics*, IMF.

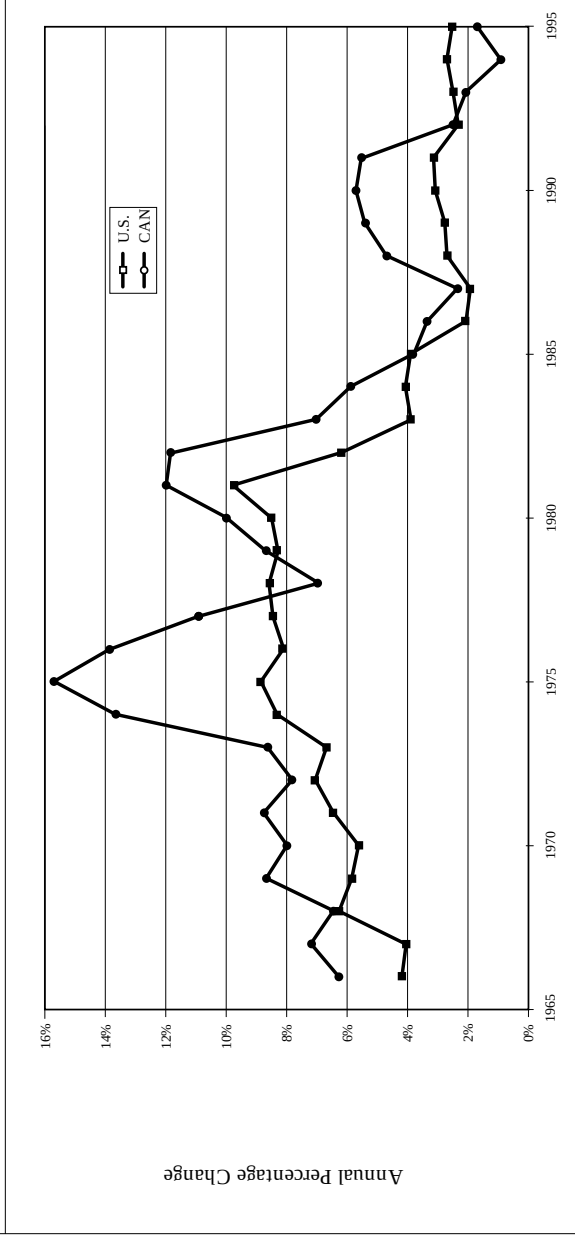
Trade and Investment Frictions: Recent Issues of Contention in the U.S.–Canadian Relationship

Even the best of friends have moments of tension, and trade and investment frictions almost always accompany wide-ranging economic ties; so it is not surprising that commercial disputes frequently arise between Canada and the United States. As the two economies increasingly integrate into the world economy, and as they move closer together, trade disputes will surely continue to be an important feature of commercial diplomacy.

Among the impediments to integration of the North American economies are unilateral trade actions that can distort trade and investment flows and undercut business strategies seeking to rationalize production across the region. Three types of measures deserve brief mention in this regard: anti-dumping and countervailing duties, U.S. Section 301 actions and economic sanctions.

FIGURE 10

WAGES IN CANADA AND THE UNITED STATES, 1965-95



Correlation (United States vs Canada, annual data)
1965-1995 0.86

Source: *International Financial Statistics*, IMF, June 1996.

Anti-dumping and countervailing duties (AD/CVD) have been the source of fractious trade disputes in the past. They have been imposed relatively rarely given the overall volume of bilateral trade, but their imposition has drawn considerable attention in Canada because a few of the U.S. cases covered big ticket sectors, such as softwood lumber. The fact that these measures are a declining U.S. trade policy tool offers little solace to Canadian exporters, whose access to their main market is subject to the vagaries of petitions filed with the U.S. Commerce Department.

The United States has hit Canada with anti-dumping or countervailing duties 70 times in the past three decades. The level of activity was particularly high during the 1980s, when AD/CVD actions were imposed in an average of 3.8 cases per year. In the 1990s the average has dropped to 2.5 per year, and the figure may be artificially high since 13 of the 15 cases occurred in 1991–92, half of them being targeted at the steel sector. Lumber has been another main target for countervailing duty cases, with actions taken in 1982, 1986 and again in 1991 against imports of Canadian softwood lumber.

Recent trade disputes between the United States and Canada have involved softwood lumber, uranium, poultry and dairy products, wheat, sugar, and cultural industries. A U.S. complaint regarding wool suits from Canada looms in the near future. Several of these disputes involve U.S. challenges to Canadian import and export management practices. The poultry supply management system was rendered obsolete by the Uruguay Round, and the United States claimed that Canada's subsequent tariffication of former quotas (with tariffs of up to 350 percent) was not permitted under the NAFTA. The U.S. claim was unanimously rejected by a five-member dispute settlement panel; still, the sky-high Canadian poultry tariff is very much alive as a political issue. Similarly, there have been suggestions from critics such as Senator Richard Lugar that Canada eliminate its Wheat Board. This view is shared by many farmers from Alberta and Saskatchewan, who prefer to drive their trucks across the border and sell their wheat directly in the United States.

While the Canada–United States Free Trade Agreement (FTA) did not pretend to eliminate all trade disputes, it helped lower tensions by creating new procedures. Under the agreement, the United States and Canada could continue to use their national remedies to address trade frictions, but a new mechanism was created for reviewing the decisions of national trade authorities. This was extended and made permanent under the NAFTA.

Both the United States and Canada have made good use of the FTA-NAFTA dispute settlement mechanism (DSM). As of November 1, 1995, the total number of disputes under the NAFTA and the FTA numbered 75. Of these, 17 were brought under Chapter 19 of the NAFTA, 52 under Chapter 19 of the FTA, 1 under Chapter 20 of the NAFTA and 5 under Chapter 18 of the FTA.[4] Thirty months after the NAFTA came into force, Chapter 19 panels have completed seven appeals: two concerning U.S. determinations, one concerning a Mexican determination and four concerning Canadian determinations.

Currently, Chapter 19 panels are considering twelve appeals. All FTA Chapter 19 appeals have been completed.

Could future regional and/or multilateral negotiations curb the abuses of the anti-dumping regimes that have evolved since the passage of the Canadian anti-dumping law almost 75 years ago? Past attempts do not offer optimism; indeed, Tokyo and Uruguay Round accords on anti-dumping added to the dense regulatory guidelines for administrative agencies and thus opened the door to more subjective injury and dumping findings. We are wary of new efforts in this area; it may be better to let anti-dumping practices wither on the vine rather than try to prune them back. Past pruning has led to new grafts that have strengthened anti-dumping rules.

The one exception could be an approach suggested by Messerlin.[5] His proposal would leave anti-dumping rules intact but require the application of a competition policy test before petitions could be accepted. This would ensure that anti-dumping actions do not accentuate anti-competitive conditions in the marketplace.

In other words, a competition policy test would overlay the use of the anti-dumping statute. Such an approach would not follow Canadian proposals to substitute one regime for the other, but it would promote competition policy objectives sought by Canada in the FTA and the NAFTA.

CVDs would not be a problem if governments were not so fixated on subsidizing sectors of their economy to redistribute income and promote employment. Both countries have tried unsuccessfully to rein in subsidy practices at the sub-federal level, where states and provinces compete with each other to attract new investments to their jurisdiction. There is a particularly long history of such conflicts in the auto sector, which was the focus of subsidized competition as long ago as the early 1960s, precipitating the Auto Pact. Most recently, subsidized competition manifested itself in bidding wars between U.S. states for the right to host Mercedes Benz and BMW.

Despite three decades of negotiations to limit such investment incentives, neither the FTA, the NAFTA, or the World Trade Organization contains rules that significantly impede the use of sub-federal subsidies. Moreover, the new investment negotiations in the OECD are likely to avoid the issue altogether. Canadian efforts to supplement regional disciplines on subsidies pursuant to NAFTA Article 1907 suffer from the same lack of political will in both countries. For now, the only effective policy to curb sub-federal subsidies is budget constraint or taxpayer revolt.

U.S. Section 301 cases, in contrast, have not been a major concern in bilateral relations and are unlikely to become a problem, with the notable exception of cases concerning cultural industries. Section 301 of the Trade Act of 1974 authorizes the President to retaliate against "unfair" foreign trade practices. Only eight of the ninety Section 301 cases filed through 1994 were against Canada. Four of these cases dealt with manufactured goods, two were

against Canadian softwood lumber, one was agriculture-related and one was targeted at services.[6]

A recurrent subject of U.S.–Canadian disputes has surfaced in the Section 301 arena: Canada's measures aimed at protecting its culture industry. The dispute over Country Music Television shows the exacerbation of cultural issues and the essentially political nature of dispute resolution. For two years, U.S. firms battled in Canadian courts. In 1995, the United States Trade Representative (USTR) initiated a Section 301 investigation, and in 1996 the USTR determined that certain Canadian broadcasting policies denied national treatment and market access to U.S. companies. In 1996 a commercial agreement was reached, and in the fall of 1996 a U.S.–Canadian joint venture, CMT (Canada), was launched.

Under the new WTO dispute settlement procedures, countries are required to avoid retaliatory action until a panel finding authorizes it. Unilateral actions before such a ruling would violate WTO obligations, unless the measures affect areas not covered by the WTO. This is one reason why, on labour and environmental issues, it may be useful to develop core WTO obligations that meet a trade relevance test.

In brief, WTO rules legitimize the use of Section 301 retaliation after a panel finding if the offending country does not agree to bring its actions into compliance with WTO obligations; but the rules constrain the use of such measures, or the types of sanctions that can be deployed, to the dwindling arena of global commerce not covered by WTO agreements. With Canadian insistence on exempting cultural industries from regional and multilateral obligations, it is thus easier for the United States to apply Section 301 to contested trade practices in this area.

Economic sanctions: Until the recent enactment of the U.S. Helms–Burton Act, which allowed for extraterritorial application of U.S. sanctions designed to restrict trade and investment in Cuba, the United States and Canada differed infrequently on the use of sanctions in support of foreign policy objectives. Indeed, both countries participated in UN sanctions against Iraq, Iran, Libya, Serbia and South Africa.

Most unilateral U.S. sanctions have targeted countries where Canada has only minor economic interests, with the notable exceptions of China and Cuba. The measures against China opened the door for new Canadian export opportunities and thus elicited little commercial opposition. Quite different was the response to the Helms–Burton Act, which restricts activities by violating Canadian firms and their officers in the U.S. market.

Overall, U.S. sanctions have not impeded regional trade and investment plans to a significant degree. However, the trend toward invoking sanctions through legislation rather than executive order is worrisome. Such measures are deployed when there is sharp disagreement between the Congress and the Administration, with the Congress objecting to Presidential discretion in applying sanctions. As a result, sanctions can be fixed in stone until subsequent

legislation overrides the provisions of the existing law. If this trend gathers strength, as it has done over the past decade, the United States could find itself increasingly embroiled in rancorous disputes with Canada and other trading partners over the imposition of U.S. sanctions.

Bilateral Economic Initiatives

U.S.–Canadian bilateral initiatives reflect an emerging understanding that negotiated approaches to dispute resolution are more constructive than unilateral actions. The political payoff from inflammatory rhetoric is gradually diminishing, even on matters as charged as softwood lumber, culture or Cuba.

The first landmark in postwar U.S.–Canadian bilateral relations was the Automotive Products Trade Agreement, better known as the Auto Pact, signed in 1965. Before the 1960s, the automobile industries in the two countries had been fairly isolated and nationalistic. During the late 1950s, the Canadian market was sheltered by tariff barriers and strict local content requirements. Canadian policy makers devised a duty remission program to stimulate this sector, with effects similar to an export subsidy. This prompted a countervailing duty suit initiated by a U.S. auto parts supplier. The Auto Pact addressed the immediate problem and created the legal framework for an integrated industry.

The Auto Pact allowed duty-free exchange of most automotive products between Canada and the United States, while providing production and investment safeguards for the Canadian industry. The safeguards generally required auto makers to assemble approximately as many cars in Canada as they sold there in order to qualify for duty-free importation rights. Auto firms were also required to achieve a Canadian value-added in excess of 60 percent of the value of the cars sold in Canada.[7] The Auto Pact spawned a huge network of cross-border trade in automobiles and spurred investment in the Canadian auto sector. As it turned out, Canada did not need to rely on the safeguard provisions for its industry to thrive. Table 12 shows the robust U.S.–Canadian trade in automobiles from 1980 to 1995.

In a conceptual sense, the bilateral Auto Pact was the forerunner of the Canada–United States Free Trade Agreement. The Pact was the first significant departure by the United States from its postwar strategy of pursuing trade liberalization on a multilateral basis. Autos continued to be a major debating issue in both the FTA and the NAFTA negotiations, but in the end neither agreement fundamentally changed the provisions of the 1965 Auto Pact. The main result was that Mexico joined the North American auto market.

No ground-breaking steps were taken in the 1970s to advance the bilateral Canada–United States relationship, but in the 1980s the idea of new free trade talks gathered strength in Canada. Oil price shocks and worldwide inflation had made the international economy volatile in the 1970s, and the Tokyo Round of multilateral trade negotiations had consumed most of the decade. Canada had experienced a fair amount of economic turbulence, followed by

TABLE 12

US–CANADIAN TRADE IN PASSENGER MOTOR CARS, 1980-94
BILLIONS OF US$

	1980	1981	1982	1983	1984	5-Year Annual Growth Rate
U.S. Exports to Canada	3.0	3.1	2.4	4.1	4.8	17.1%
Canada Exports to the U.S.	4.0	4.4	6.2	8.2	11.3	30.7%
	1985	1986	1987	1988	1989	
U.S. Exports to Canada	6.3	6.5	6.6	6.7	7.3	3.8%
Canada Exports to the U.S.	12.9	14.3	11.5	14.9	14.4	4.2%
	1990	1991	1992	1993	1994	
U.S. Exports to Canada	6.2	6.7	5.8	6.2	7.6	5.9%
Canada Exports to the U.S.	14.8	15.1	15.8	19.5	24.1	13.5%

Source: U.S. Department of Commerce.

recession in the early 1980s. In 1983, the Canadian Department of External Affairs published a trade policy review paper advocating free trade talks with the United States in specified sectors. This sectoral initiative was inspired by the huge success of the Auto Pact, but the circumstances of that industry could not be replicated elsewhere. In fact, the sectoral approach ultimately failed: each side offered to negotiate in sectors where it had strong export interests but refused to give way in sectors where its firms were relatively weak. Still, the breakdown in sectoral talks did not eliminate the idea of liberalizing trade between the United States and Canada; rather, it pointed the way toward a broader framework.

In 1985, the Macdonald Commission published its evaluation of the Canadian economy, with a recommendation that Canada undertake wide-ranging bilateral negotiations with the United States. This paved the way, politically and intellectually, for the "Shamrock Summit," which that same year produced the Declaration of Trade in Goods and Services. In the autumn, Prime Minister Mulroney announced that Canada would seek free trade negotiations with the United States.

On January 1, 1989, the Canada–United States Free Trade Agreement entered into effect. The FTA covered tariffs, non-tariff barriers and institutional arrangements. Negotiated pursuant to GATT Article XXIV, the FTA incorporated issues traditionally covered in GATT negotiations, such as market access and quotas; but it went further in many areas, with provisions on services, investment, financial services and energy. The implementation schedules called for complete free trade and investment in 10 years, although significant exceptions were made for agriculture, energy and cultural industries.

A major contribution of the FTA is the innovative and comprehensive dispute settlement mechanism noted above. Disputes fall into either of two chapters of the FTA: Chapter 18 disputes (except those dealing with financial services or anti-dumping/countervailing duties) are subject to a notification process followed by consultation, then are referred to a binational commission, and finally may be subject to binding arbitration. Chapter 19 establishes binational panels to address contested countervailing duty and anti-dumping actions on the part of national authorities.

During the negotiations, Canada proposed a comprehensive code on government procurement to give it access to the vast U.S. government procurement market. This initiative failed, although the FTA chapter on government procurement ensured more transparent bidding procedures. Subsequently, the Uruguay Round accord negotiated in this area removed some additional restrictions to cross-border procurement.

Not much liberalization of agricultural trade was achieved under the FTA. While it eliminated agricultural tariffs, the United States and Canada were both able to retain quotas that supported supply management regimes and price support mechanisms. However, the agreement advanced the producer subsidy equivalent (PSE) concept, an approach for calculating the extent of

public support. Later this concept provided the basis for agricultural talks in the Uruguay Round.

A significant step was the inclusion of services in the Canada–United States agreement. The FTA services agreement provided for contractual obligations on services for both countries, creating a framework of rights and obligations regarding national treatment, licensing and certification procedures. The FTA services agreement proved to be a forerunner of the General Agreement on Trade in Services (GATS), negotiated in the Uruguay Round. The big difference is that actual liberalization commitments were made in the FTA for most services (except transportation and telecommunications), but GATS provided only a framework for future liberalization.

The FTA investment provisions were designed to allow companies to take advantage of the enlarged North American market. A commitment was made to national treatment in most instances, and the agreement barred the introduction of new trade-related performance requirements. The United States has traditionally advocated an open investment policy (except, of course, in the areas of defence and communications), while Canada has often flirted with restrictions on foreign investment; an example that still makes U.S. investors shudder is the Trudeau-era National Energy Program.

Financial services are covered in the FTA. Both countries had been moving toward deregulating their financial markets, and the FTA provisions reflected the substantial progress in preceding decades toward integration of the Canadian and U.S. financial markets. As noted earlier, since 1970 the financial sector has been an area of growing importance in the overall U.S.–Canadian investment relationship (Figure 3).

The FTA financial agreement opened the Canadian financial market to U.S. investors. In turn, it allowed Canadian banks and securities firms to underwrite and sell Canadian government securities in the United States. In addition, in a development that currently is proving very significant, the United States accepted a provision allowing Canada to take advantage of any future changes in U.S. banking laws or regulations (i.e., the Glass–Steagall Act). Trade in financial services has grown at an annual rate of 21 percent in the years since the FTA was implemented, while trade in closely related computer and information services has grown by almost 30 percent.

The North American Free Trade Agreement represented a further step in the integration of the North American market. Before the NAFTA, Canada and the United States both had in place bilateral framework agreements on trade and investment with Mexico. The FTA largely provided the institutional underpinning for further liberalization achieved in the NAFTA.

Canada has benefited from the NAFTA. Trade with the United States continues to grow as barriers are lowered further. In addition, the NAFTA provides Canada with increased access to the Mexican market. In 1992, Canada exported only $600 million and imported less than $1 billion worth of goods

TABLE 13

NAFTA – GROWTH OF EXPORTS, 1988-95
PERCENTAGE

	Growth 1988-95	Growth 1990-95	Average Annual Growth 1988-95	Average Annual Growth 1993-95
United States to				
World	83	49	9	12
Canada	81	52	9	12
Mexico	122	60	12	4
NAFTA	90	54	10	10
Canada to				
World	63	50	7	16
United States	87	60	9	16
Mexico	95	61	10	15
NAFTA	87	60	9	6
Mexico to				
World	291	194	22	30
United States	396	254	26	34
Canada	625	776	33	13
NAFTA	401	261	26	33

Source : *Direction of Trade Statistics*, IMF.

from Mexico. By 1995, these figures had climbed to almost $800 million in exports and close to $2 billion in imports from Mexico.

Table 13 shows the increased trade between NAFTA countries from 1988 to 1995. Intra-NAFTA trade has increased from 40 to about 47 percent of total exports by NAFTA members during this period. Canada's exports to the United States have grown at an average annual rate of almost 16 percent, and its exports to Mexico have grown at almost 15 percent per year since NAFTA was ratified in 1993.

In mercantilistic terms, Canada paid a low price for the NAFTA. It was able to maintain the exemption of its cultural industries, protection of agriculture, and the basic framework first set out under the Auto Pact.

Although a comprehensive arrangement, the NAFTA does not cover all economic issues. One that is outside its scope is civil aviation; another is taxation. In 1995, the United States and Canada negotiated an income tax protocol to update the 1980 tax agreement. Withholding tax rates on cross-border payments were reduced from 10 to 6 percent on corporate dividends (if the

holder owns at least 10 percent of the company) and from 15 to 10 percent on interest. The 10-per-cent withholding tax on royalties for software, patent and technological information was abolished. The system of taxing capital gains on residential real estate for Canadians living in the United States or Americans in Canada has been modified to minimize double taxation. And an important change is that Canadians visiting American casinos are now able to deduct their gambling losses from their winnings for U.S. tax purposes (Canada does not charge tax on gambling income)!

Twenty-Five Years Forward

Economic Integration – The Example of Germany and the Benelux Countries

Economic integration has preoccupied Europe since the Second World War. The 1951 Treaty of Paris created the European Coal and Steel Community; this was soon followed by the 1957 Treaty of Rome, which launched the European Common Market (EC) and called for the free movement of goods, services, capital and labour (the "four freedoms"). To carry out this ambitious agenda, institutions were established, countless subsidiary agreements were negotiated, and numerous directives and decisions were handed down by the European Commission and the European Court of Justice.

Integration in Northern Europe was particularly far-reaching because of shared borders and close linguistic ties (French and English are common second languages). By 1960, the Benelux states and West Germany had reached a degree of formal integration that Canada and the United States did not achieve until 1990. In population and GDP, Germany (now including the former East Germany) is about three times the size of the Benelux countries. This background suggests that an examination of Benelux–German economic convergence over the past three decades can give insights into future convergence between the Canada and the United States (Table 14).

On the basis of the European experience, in North America the importance of trade is likely to grow relative to GDP. In the case of Germany, imports plus exports of goods and business services rose from about 35 percent of GDP in 1965 to about 55 percent in 1990. In the case of the Benelux states, the rise was from 85 percent to about 115 percent of GDP. The growing relative importance of goods and services trade is not, of course, confined to common markets. Rising trade ratios have been a worldwide phenomenon, attributable to sharp postwar reductions in transportation and communication costs as well as decisively lower tariffs and the elimination of most quotas. Rising trade ratios are the essence of globalization. In the 1960s and 1970s, however, trade-to-GDP ratios rose faster in Europe than elsewhere, and it is fair to attribute the extra growth to the Common Market.

By the same token, it seems probable that trade-to-GDP ratios for Canada and the United States will also rise perhaps by 15 to 20 percentage points between now and 2010, spurred partly by the FTA and NAFTA liberalization. In 1993, the ratio of trade (in goods and business services) to GDP was 60 percent for Canada and 22 percent for the United States. We could envisage a rise in these numbers to 80 and 35 percent respectively.

The development may be expressed in another way: the rising ratio of trade to GDP means that the U.S. and Canadian import markets should grow at least one percentage point faster per year than real GDP. Overall import market growth could be 3 to 4 percent annually, even though real GDP growth will be only 2 to 3 percent.

TABLE 14

BASE ECONOMY COMPARISON, GERMANY AND BENELUX, 1965-93

Germany[a]		1965	1970	1975	1980	1985 [b]	1990	1993
Population	M	59.0	60.7	61.8	61.5	61.0	63.2	80.7
GDP (real, 1987)	US$ M	631,590	770,368	857,928	1,007,388	1,066,294	1,258,187	1,439,494
GDP (real, 1987) per capita	US$	10,703	12,689	13,876	16,370	17,489	19,899	17,839
Export and import of goods and business services as a percentage of GDP	%	35.8	40.3	46.5	53.3	61.5	58.4	42.9
Benelux								
Population	M	22.1	23.0	23.8	24.4	24.7	25.3	25.7
GDP (real, 1987)	US$ M	193,383	247,878	291,527	334,300	350,509	407,520	421,367
Import (goods and non financial services)	US$ M	16,121	28,492	74,43	168,760	134,952	286,452	285,005
Export and import of goods and business services as a percentage of GDP	%	85.4	94.6	99.6	113.1	131.4	121.7	112.2

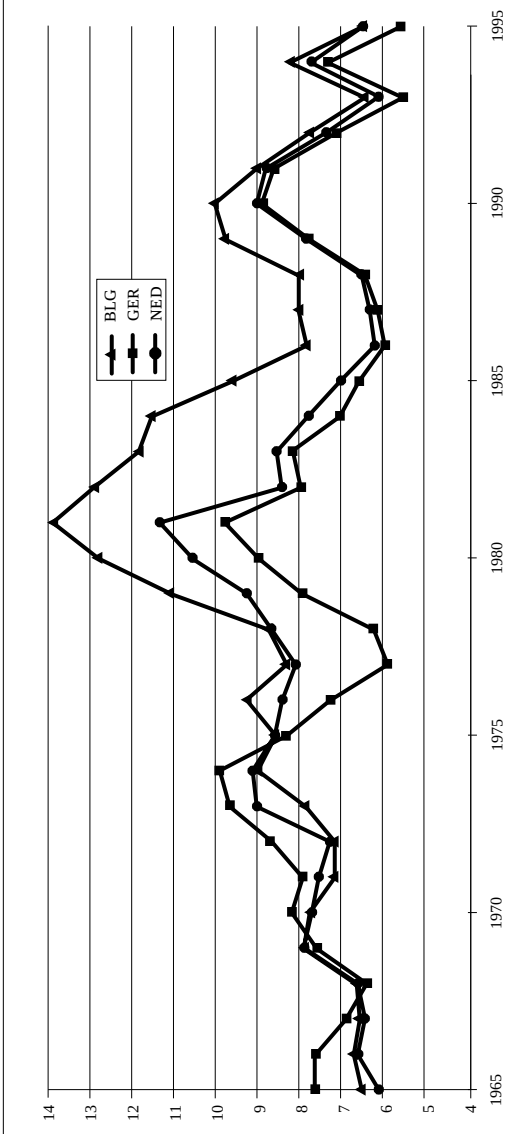
a Datas refer to the Federal Republic of Germany through 1990 (before unification).

b The trade-as-percentage of GDP figures for 1985 are distorted by a superstrong U.S. dollar that year, which depressed nominal GDP expressed in U.S. dollars.

Source: *World Data 1995*, World Bank, 1995, *International Financial Statistics*, IMF, June 1996.

FIGURE 11

MEDIUM-TERM INTEREST RATES IN GERMANY, BELGIUM AND THE NETHERLANDS, 1965-95



Correlation (Germany vs Belgium and the Netherlands, monthly data)

	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95
Belgium	0.55	0.61	0.77	0.87	0.92	0.98
Netherlands	0.50	0.81	0.91	0.98	0.94	0.97

Source: *International Financial Statistics*, IMF, 1996.

But rising overall trade ratios will not necessarily translate into higher trade shares between partners with common borders and a common language. From the extensive econometric work of Frankel and others[8], we know that the Common Market increased EC internal trade by about 50 percent above levels that would otherwise have been achieved in 1985. However, the experience of Germany vis-à-vis Belgium and the Netherlands suggests that there will be no lasting lift in the trade shares of these countries.

These patterns may be repeated in North America. Frankel's econometric analysis of trade between Canada and the United States could detect no FTA effect as of 1992. But implementation had barely started then and the NAFTA was still on the drawing board. It is conceivable that, by 2005 or 2010, trade within North America will be 20 to 30 percent higher than it would have been without the two agreements. The preferential trade area effect is not likely to be as great as in Europe because external barriers around the North American market are substantially lower than they were for the European Common Market in the 1960s. Still, the effect should be substantial and measurable.

But it is less certain that there will be a prolonged rise in bilateral Canada–U.S. trade shares as a result of the FTA. Bilateral trade shares have already gained several percentage points since 1990 and the blip could be over. After 1970, Germany's trade with its southern neighbors grew as fast as with the Benelux states or faster; in the same way, from now onward, U.S. bilateral trade with Mexico seems likely to rise in share terms.

Another aspect of integration is correlation in interest rates. As Figure 11 shows, the monthly correlation of medium-term interest rates between Germany and Belgium, and between Germany and the Netherlands, has gradually strengthened over the past 30 years. Whereas the correlation coefficients were about 0.60 in the late 1960s, they now exceed 0.95. What does this say for Canadian–U.S. financial integration? Probably not much, because U.S. and Canadian financial markets are already tightly linked. The correlation between 10-year bond yields has exceeded 0.90 for much of the past 30 years (Figure 5). Similarly, share price correlations between Germany and its two neighbours are not much higher than they are between the United States and Canada (Figures 6 and 12).

Since the early 1980s, there has been very little exchange rate fluctuation between the Belgian franc, the Dutch guilder and the German mark. The planned Economic and Monetary Union (EMU) will put a *de jure* facade on what is already a system of virtually fixed parities (Figure 13).

In contrast, over the past 15 years the Canadian dollar has fluctuated significantly against the U.S. dollar. European experience might suggest a narrower range of fluctuation in the future. However, neither Canadian nor U.S. authorities place great emphasis on narrow bilateral exchange rate bands as a symbol of integration. If greater stability occurs in the future, it will probably reflect fundamental forces (particularly synchronized inflation rates) rather than a policy decision by the Bank of Canada.

The monthly inflation rates of Germany, Belgium and the Netherlands are no more synchronized than U.S. and Canadian rates (Figures 14 and 7). Nor is there a closer correspondence of annual wage movements (Figures 15 and 10). But unemployment rates move much more closely in Northern Europe than in North America (Figures 16 and 8). The creation of open markets for goods and services will probably lead to more flexible labour practices throughout Canada and a closer match with U.S. unemployment levels.

In broad terms, for several key macro-economic variables North America has already converged as much as Northern Europe. The two areas where greater convergence might occur in the future are the exchange and unemployment rates.

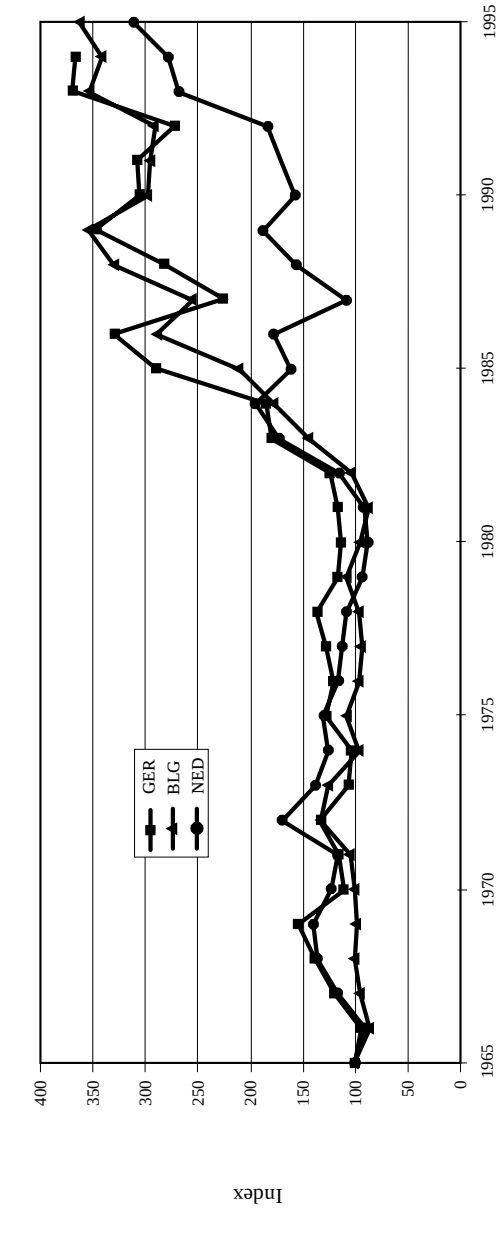
Even with substantial macro-economic convergence and the likelihood that additional markets will move in tandem in the future, a high degree of institutional convergence does not necessarily follow. In the early 1970s, for example, when Denmark was on the verge of joining the European Community, many Danes feared an end to their social safety net. This did not happen nor, in recent years, has Denmark been forced to accept lower Spanish or Greek environmental standards. Denmark has maintained its environmental standards on such items as disposable packaging, and it is even pushing for higher European-wide standards on industrial processes.

An institutional feature that lends itself to easy quantification is taxation. In 1965, before integration had reached an advanced stage, there were remarkable similarities between Germany, Belgium and the Netherlands in the overall tax burden as well as in the structure by types of tax. All three countries had total tax burdens of between 31 and 33 percent of GDP. In all three, income and profit taxes were between 9 and 12 percent of GDP, social security and payroll taxes between 9 and 10 percent, and goods and services taxes between 9 and 12 percent. Some 30 years later, after intensive integration of all markets, the tax structures were not nearly as similar. The Dutch tax burden was 48 percent of GDP, whereas the German burden was 39 percent. There were wider spreads in some of the major tax headings as well. In other words, the smaller partners were able to carry on with a more extensive social agenda than the largest partner (Table 15).

This experience suggests that the current disparities between U.S. and Canadian tax structures at the federal, provincial and state levels will endure for some decades. Not only will revenues collected as a percentage of GDP differ, but tax rates may diverge sharply. At the federal level, the top marginal corporate rate in the United States is 35 percent, while state corporate taxes range between 1 and 12 percent. In Canada, the federal rate on manufacturing profits is about 35 percent, and about 44 percent on other types of corporations. Provincial rates range between 9 and 17 percent. These differences in rate structure are well within the bounds of the European experience. The corporate tax rate is 35 percent in the Netherlands, 40 percent in Belgium and 51 percent in Germany.

FIGURE 12

SHARE PRICE INDEX (INDUSTRIAL) IN GERMANY, BELGIUM AND THE NETHERLANDS, 1965-95



Correlation (Germany vs Belgium and the Netherlands, monthly index return data)

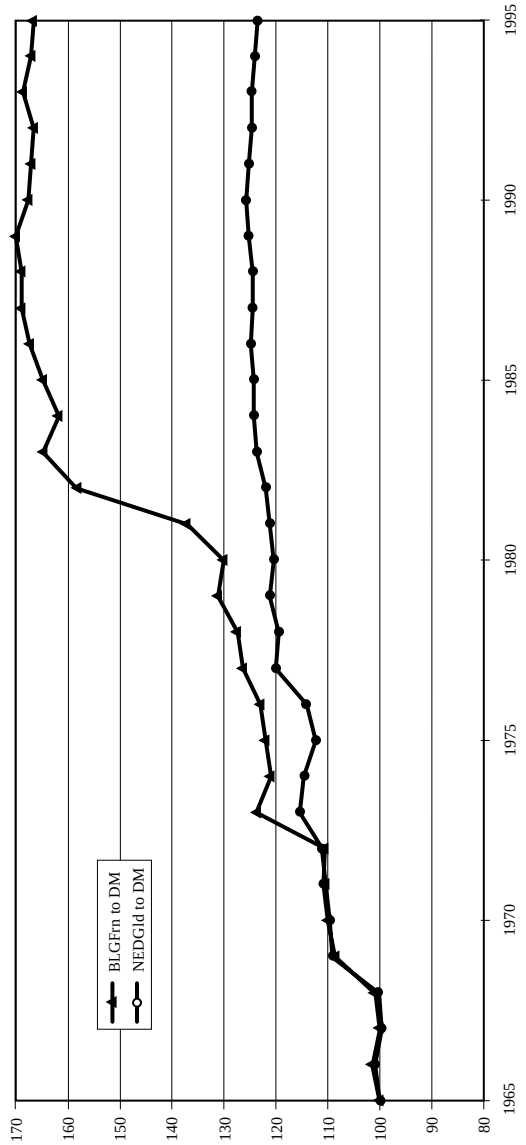
	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95*
Belgium	0.42	0.46	0.43	0.28	0.55	0.70
Netherlands	0.51	0.74	0.52	0.22	0.79	0.75

Source: *International Financial Statistics*, IMF, 1996.

* Calculation based on January 1991 to June 1995 data.

FIGURE 13

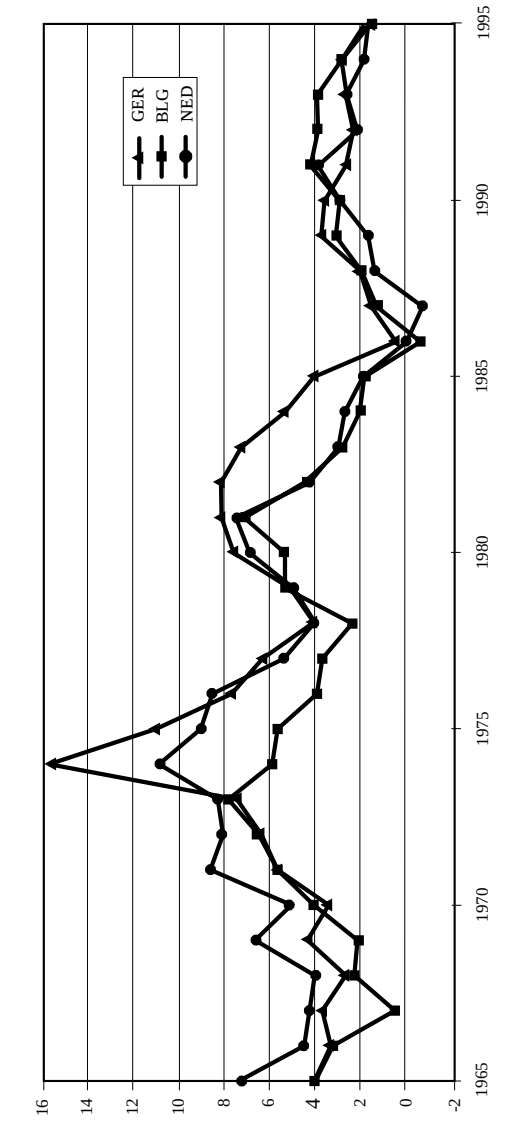
FOREIGN EXCHANGE RATES IN GERMANY, BELGIUM AND THE NETHERLANDS, 1965-95



Source: *International Financial Statistics*, IMF, 1996.

FIGURE 14

INFLATION IN GERMANY, BELGIUM AND THE NETHERLANDS, 1965-95



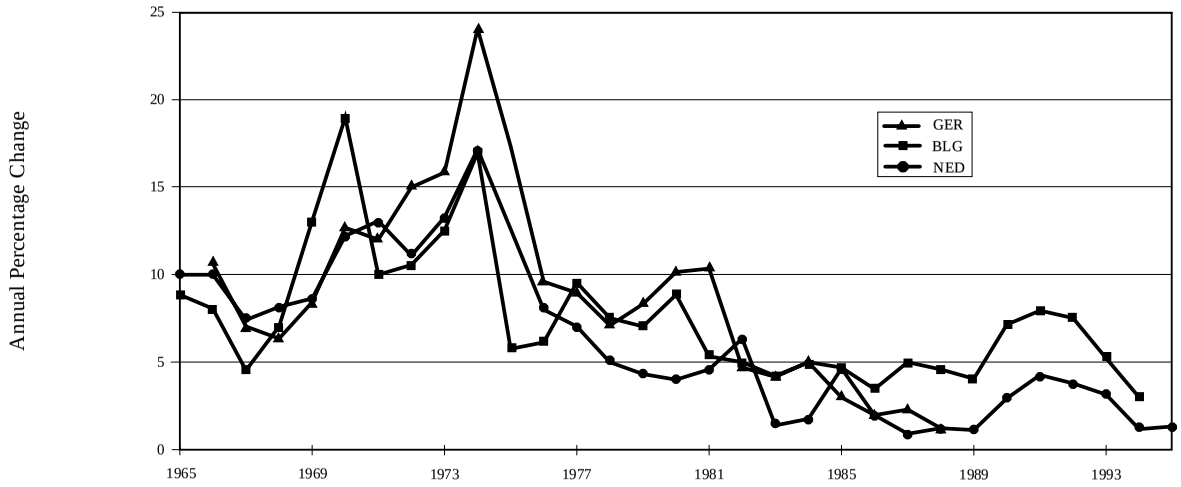
Correlation (Germany vs Belgium and the Netherlands, monthly data)

	1966-70	1971-75	1976-80	1981-85	1986-90	1991-95
Belgium	0.63	0.40	0.45	0.71	0.87	0.63
Netherlands	0.15	0.34	0.41	0.94	0.82	0.72

Source: *International Financial Statistics*, IMF, June 1996.

FIGURE 15

WAGES IN GERMANY, BELGIUM AND THE NETHERLANDS, 1965-95



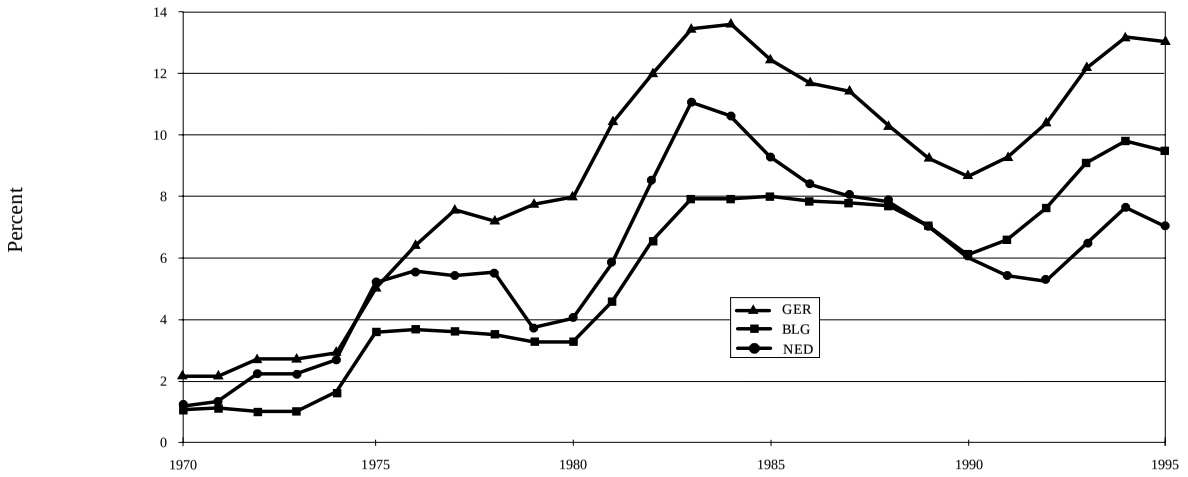
Correlation (Germany vs Belgium and the Netherlands, monthly data)

	1966-88
Belgium	0.72
Netherlands	0.89

Source: *International Financial Statistics*, IMF, June 1996.

FIGURE 16

UNEMPLOYMENT RATE IN GERMANY, BELGIUM AND THE NETHERLANDS, 1970-95



Correlation (Germany vs Belgium and the Netherlands, monthly data)

	1970-95
Belgium	0.95
Netherlands	0.86

Source: *OECD Economic Outlook*, Nos. 39, 59.

TABLE 15

TAX REVENUE IN GERMANY, BELGIUM AND THE NETHERLANDS, 1965-93
AS A PERCENTAGE OF GDP

	1965	1970	1975	1980	1985	1990	1993
Germany							
Income and Profit	10.7	10.6	12.4	13.4	13.3	11.9	12.0
Social Security and Payroll	8.7	10.2	12.5	13.2	13.9	13.7	15.1
Social Security	8.5	10.0	12.2	13.1	13.9	13.7	15.1
Goods and Services	10.4	10.5	9.7	10.3	9.8	9.8	10.9
Total	31.6	32.9	36.0	38.2	38.1	36.7	39.0
Belgium							
Income and Profit	8.6	11.2	16.4	18.2	19.4	16.8	16.2
Social Security and Payroll	9.8	10.9	13.3	13.5	15.7	15.4	16.3
Property	1.2	1.1	1.0	1.0	0.9	1.2	1.2
Goods and Services	11.6	12.5	11.0	11.6	12.0	11.7	12.0
Total	31.2	35.7	41.8	44.4	48.1	45.1	45.7
Netherlands							
Income and Profit	11.7	12.4	14.9	14.8	11.6	14.4	15.5
Payroll and Workforce	—	—	—	—	—	—	—
Goods and Services	9.4	10.3	10.4	11.4	11.3	11.8	12.1
Total	32.7	37.0	42.9	45.0	44.1	44.6	48.0

Source: *Revenue Statistics of OECD Member Countries*, OECD, 1995.

In other words, the European experience suggests that, as a matter of political economy, countries can maintain very different tax structures even with completely open markets for goods and services.

However, according to the findings of recent econometric work (summarized by Hufbauer and DeRosa, 1997[9]), countries that impose high business taxes suffer severe investment penalties. Econometric studies of foreign direct investment suggest that an increase of one percentage point in the corporate tax rate (e.g., from 34 to 35 percent) may diminish the FDI stock by as much as 3 percent. In fact, between U.S. states the impact may be as high as 10 percent. As this econometric work becomes more widely known and is borne out by practical experience, it seems likely that there will be considerable pressure on high-tax states, provinces and countries to cut their business tax rates.

Implications for competitiveness

The evidence shows that a high degree of convergence has already been achieved in important fields: a wide range of products and services, interest rates, share prices, and broad movements in wage rates. In the future, unemployment rates may move more closely together. Moreover, the high response of investment to differing business tax regimes will probably cause high-tax jurisdictions to cut their corporate income tax rates. At the same time, European experience suggests that there is considerable scope for institutional divergence between Canada and the United States.

What does convergence in markets and divergence in institutions mean for Canadian competitiveness over the long haul? As Paul Krugman rightly argued, if competitiveness between nations means anything, it means how they compare in per capita living standards. In the long run, the trade performance of particular industries and the trade balance of the nation are less important than per capita income performance. If per capita income is rising in Ontario relative to Michigan and New York, it doesn't much matter whether net Canadian auto exports are declining; and the reverse is equally true.

In answering the appropriate but difficult question about competitiveness, it is instructive to start by examining the per capita income performance of the 50 U.S. states and the District of Columbia between 1960 and 1990. From Table 16, three points stand out. First, the per capita income ratio between the top three and bottom three states narrowed somewhat over this 30-year period, but at the slow rate of about 0.5 percent per year, from 2.18 in 1960 to 1.84 in 1990. In other words, convergence in per capita incomes occurred, but at a slow pace. Second, the correlation in rank ordering between 1960 and 1990 was a quite high 0.85, measured by the Spearman rank correlation coefficient. History matters: leaders generally remain leaders and laggards generally remain laggards. Finally, there are some significant ups and downs. The rising economic escalator did not guarantee the same relative place for every state. Among those gaining more than 10 places in rank order were New

Hampshire, Georgia and Oregon. Among those losing more than 10 places were Delaware, Michigan and New Mexico. Through a combination of luck and policy, some states made big gains and others suffered heavy losses.

The per capita income ratio between the United States and Canada is also narrowing slowly at a rate of about 0.4 percent per year, from 1.43 in 1965 to 1.28 in 1990. With greater convergence, the ratio should narrow further and, in time, Canada could catch up in per capita income. The narrowing could be accelerated with a dose of good policy or a good dose of luck.

Economists have nothing useful to say about luck. However, they can make relevant observations about policy. The scenario of market convergence and institutional divergence suggests four lessons:

- Corporations must follow the high-quality, low-cost leader or go out of business. Government barriers that protect key markets are going to fade away (e.g., restricted access to the Toronto–Montreal air corridor, or "buy America" steel specifications for bridge construction in U.S. states). Equally important, past ties will command little loyalty on the part of corporate customers and big retailers. GM and Ford have demonstrated this with respect to their suppliers; Walmart and Du Pont will be just as ruthless; and so will state, provincial and federal agencies.
  Accordingly, firms must have lean staffs and keep health and pension costs to the minimum. It's one thing if government requires all firms to pay a given level of health or pension benefits; area-wide requirements will be offset by area-wide declines in wage rates and/or property values. But it's another thing for a particular firm, such as the old IBM, to provide wages or benefits above the prevailing level to its workforce. At the same time, management must move rapidly in adapting to new process technology, bringing out new products and devising new distribution systems. Management that lags will be bought out or thrown out.

- In making new decisions on location, firms will be very sensitive to workforce availability and habits. Unions that limit workforce flexibility (in terms of job assignments, layoffs and seniority rules) will be a major negative force. Post-secondary training programs designed to suit particular corporate needs will be a major positive force. Similarly, good transportation links, high-quality primary and secondary schools, and a clean living and recreational environment will attract firms because they enhance workforce availability.

TABLE 16

PER CAPITA INCOME OF U.S. STATES, 1960 AND 1990

State	Population (,000)	1990 Income Per Capita $	Rank	Population (,000)	1960 Income Per Capita $	Rank
Mississippi	2,575	12,583	51	2,178	1,240	51
Arkansas	2,351	13,824	50	1,786	1,400	49
West Virginia	1,793	13,943	49	1,860	1,613	44
Utah	1,723	14,103	48	891	2,010	30
New Mexico	1,515	14,257	47	951	1,893	34
Louisiana	4,220	14,265	46	3,257	1,658	42
Montana	799	14,768	45	675	2,074	28
Kentucky	3,687	14,782	44	3,038	1,580	46
Alabama	4,040	14,926	43	3,267	1,530	48
Oklahoma	3,146	15,130	42	2,328	1,890	35
South Carolina	3,486	15,175	41	2,383	1,385	50
North Dakota	639	15,336	40	632	1,741	41
Idaho	1,007	15,392	39	667	1,799	38
South Dakota	696	15,661	38	681	1,762	40
Tennessee	4,877	15,952	37	3,567	1,570	47
Arizona	3,665	16,317	36	1,302	2,074	29
North Carolina	6,632	16,330	35	4,556	1,602	45
Iowa	2,777	16,709	34	2,758	1,994	31
Texas	16,986	16,808	33	9,580	1,942	33
Indiana	5,544	16,847	32	4,662	2,188	21
Wyoming	454	16,960	31	330	2,121	25
Maine	1,228	17,101	30	969	1,858	37
Georgia	6,478	17,197	29	3,943	1,648	43
Oregon	2,842	17,312	28	1,769	2,205	19
Vermont	563	17,407	27	390	1,795	39
Nebraska	1,578	17,427	26	1,411	2,126	14
Missouri	5,117	17,432	25	4,320	2,106	26
Wisconsin	4,892	17,437	24	3,952	2,201	20
Ohio	10,847	17,572	23	9,706	2,349	14
Kansas	2,478	17,676	22	2,179	2,157	22
Michigan	9,295	18,268	21	7,823	2,365	12
Minnesota	4,376	18,830	22	3,414	2,080	27
Colorado	3,294	18,883	19	1,754	2,281	16
Florida	12,938	18,906	18	4,952	1,959	32
Pennsylvania	11,833	18,981	17	11,319	2,271	17
Rhode Island	1,003	19,043	16	859	2,212	18
Washington	4,867	19,396	15	2,853	2,348	15
Virginia	6,189	19,615	14	3,967	1,865	36
Delaware	666	19,820	13	446	2,915	2
Illinois	11,431	20,191	12	10,081	2,649	9

TABLE 16 (CONT'D)

New Hampshire	1,109	20,289	11	607	2,142	23
Nevada	1,202	20,549	10	285	2,807	4
California	29,758	20,757	9	15,717	2,730	7
Alaska	550	20,909	8	226	2,655	8
Hawaii	1,108	21,029	7	633	2,370	11
Massachusetts	6,016	22,257	6	5,149	2,466	10
New York	17,991	22,333	5	16,782	2,747	5
Maryland	4,718	22,467	4	3,101	2,354	13
New Jersey	7,730	24,217	3	6,067	2,736	6
District of Columbia	607	24,547	2	764	3,010	1
Connecticut	3,287	25,434	1	2,535	2,840	3

Spearman's rank correlation between personal income per capita in 1960 and 1990: 0.853

- With the expected market environment of the next 30 years, low corporate income tax rates and targeted subsidies may well be effective in attracting individual firms. National and international codes leave plenty of room for permitted subsidies, particularly by municipal, provincial and state governments. Moreover, states, provinces and national governments are entirely free to alter their corporate tax systems. European experience suggests that top-down discipline is likely only in egregious cases. In designing their subsidies and shaping their tax systems, few sub-federal governments will be able to afford the full range of permitted practices. Instead, they will need to ask whether money is more effectively spent on general programs (such as better schools and parks) or targeted programs (such as a new road link to a specific industrial site, or a tax holiday for new investment).

- The prospective economic environment does not compel governments to adopt the same expenditure policies in order to remain competitive. Some jurisdictions may emphasize education in their social agendas; others may emphasize retirement benefits. The prospective environment does, however, suggest a greater emphasis on goods and services taxes that can be adjusted at the border, and on income tax systems that are fairly uniform so as to avoid driving away highly skilled people or especially profitable but mobile industries. In particular, the new environment will penalize states and provinces that levy high corporate income taxes on business firms.

The Trade Policy Outlook and Its Implications for the North American Economic Integration

Any vision of regional integration in North America must reflect the dominant influence of U.S. policy on the trading system. The United States account for 71 percent of total NAFTA exports (including intra-regional trade), 54 percent of Western Hemisphere exports, 30 percent of APEC exports and 12 percent of global exports. When the United States sneezes, its trading partners get a cold. When U.S. policy makers get cold feet, new trade initiatives freeze up.

The 1996 U.S. presidential campaign saw only limited trade policy debate. At first glance, the lack of attention raises concern that the United States may not be able to sustain its legacy of free trade initiatives in the face of protectionist sentiments festering in both major political parties. Anxiety over stagnant wage growth and job insecurity (despite near-full employment in the United States) threatens to undercut support for new trade talks. Politicians in both parties have seized on these concerns; some have revived the pauper labour arguments, which were discredited during the NAFTA debate but have resurfaced since the Mexican crisis.

To be sure, the United States will have to go through a wrenching national debate on these issues over the next few years, just as Canada did before ratifying the FTA in 1988 (but without recourse to a national referendum). At the end of the day, we believe the free traders are likely to prevail, for two reasons:

First, new trade pacts support the export-oriented U.S. trade strategy advocated by both parties. The U.S. economy is not as dependent on exports as Canada's, but many more U.S. companies and workers rely on exports to underpin growth and employment than was the case even a decade ago. Second, prospective trade deals entail asymmetric obligations regarding trade liberalization. Because U.S. barriers are generally very low, little change is required in U.S. practices compared to the significant reductions undertaken by U.S. trading partners. The NAFTA was a prime example of such a pact: the negotiations essentially involved agreeing on commitments that Mexico would undertake in order to join the Canada–U.S. club, and few changes were required in return by the United States and Canada. This mercantilist calculus resonates well with U.S. political leaders, who object to giving up something for nothing but not the reverse!

For those reasons, we expect that the U.S. Congress will re-authorize fast-track negotiating authority by mid-1998, allowing the United States to gear up for regional and multilateral trade initiatives that have been stuck in neutral since early 1996. Accordingly, U.S. policy is likely to follow the script of the past two decades and continue to be based on a mixture of domestic legislative actions, regional trade initiatives and multilateral negotiations in the WTO.

The following sub-sections briefly speculate on the main trends that might emerge in each area. To be sure, forecasting trends in U.S. trade policy

is as hazardous as predicting the weather. We will undoubtedly miss the sudden squalls that rain on bilateral trade and investment for short periods, but the long-term forecast is for a Bermuda high to dominate North American trade relations.

Within the next 25 years, the United States and Canada have committed to eliminating barriers to trade with the major trading nations in the Asia Pacific and Latin America. If barriers really are removed, free trade and investment in both regions will yield a rich harvest of reforms in the dynamic economies of East Asia and South America, but only modest changes will be required in North American policies affecting most manufacturing sectors (with the important exception of apparel). Agricultural reform will be a sticking point in both regions, as it has been in the U.S.–Canadian context. These commitments hold three main implications for the North American economies:

- increased adjustment pressure on the apparel sector;
- additional competition in meat and dairy products from Argentina, Australia and New Zealand, and in sugar from Brazil and potentially Cuba; and
- increased export opportunities in the markets of regional partners, as a result of trade-spurred growth.

Seen in this light, the free trade commitments do not seem so daunting. Indeed, the main problem in terms of employment is probably in the apparel sector, where politicians fear massive inflows of goods from China. However, by the time China is ready to assume all the obligations of APEC free trade and thus receives the full benefits, our 25-year horizon will have mostly expired. Moreover, we can assume that apparel will be among the last sectors liberalized by the United States and Canada in 2010, and reciprocity conditions may be attached; these could open the Chinese import market for textiles while maintaining some safeguards against Chinese apparel exports.

Prospects for Free Trade in the Americas

In December 1994, at the Summit of the Americas in Miami, the Western Hemisphere's 34 democracies declared their intention to negotiate a Free Trade Area of the Americas by 2005. The objective is a bold one, especially for the region's smaller countries with one-dimensional and relatively underdeveloped economies. To be sure, these countries are pursuing integration initiatives within their own sub-regional trade pacts, albeit on a lesser scale, so the process of economic integration is already under way. The successful and sustained implementation of these initiatives is a prerequisite for hemispheric integration.

But can hemisphere-wide integration be achieved given the economic and political challenges confronting most governments?

Three factors fuel doubts about the durability of the FTAA process. In our view, all of them reflect transitional problems that should be resolved within the next few years:

- The first concern is the U.S. difficulty in extending fast-track negotiating authority, thereby stalling progress on Chile's accession to the NAFTA and on NAFTA parity for Caribbean Basin Initiative (CBI) countries. As explained above, however, fast track is likely to be revived in 1998 and U.S. protectionist pressures are likely to be manageable.

- The Mexican financial crisis, erupting just 10 days after the Miami Summit, re-opened concerns about the sustainability of economic reforms in Latin America. Although the tequila effect was felt in only a few Latin countries, it exposed the vulnerability of many countries to future crises because of their weak banking sectors. Fortunately, the World Bank and the Inter-American Development Bank have devoted substantial resources to help central banks shore up and monitor the banking sector. The Mexican crisis could thus turn out to have been a timely, if expensive, wake-up call.

- Finally, political developments have cast doubts on whether the hemispheric partners have the requisite harmony to work together toward a FTAA. Large income disparities exist not just between but within countries; these have been increasingly divisive and weakened support for political leaders in the forefront of the battle for economic reform. Colombia's drug connection continues to burden U.S. relations with that country and others (including Mexico) that serve as conduits for drug shipments. At the same time, border conflicts have beset relations between Ecuador and Peru, and between Colombia and Venezuela. These are the most intractable problems; but the FTAA process, which addresses sustainable development, narcotics and other issues, should be a constructive part of national responses.

On balance, the concerns noted above are more than offset by the positive signals that continue to be projected by Latin American countries. Three developments, if sustained, give cause for optimism:

- First, economic reforms continue to advance throughout the hemisphere, strengthening the foundations for economic growth over the medium and long term. For the hemispheric integration process to culminate in a FTAA, the major countries of Latin

America and the Caribbean will have to strengthen their own economic reform programs.

- Second, the Summit of the Americas process is working. Ministerial meetings have been held in Denver (June 1995) and Cartagena, Colombia (March 1996); the next sessions are scheduled for May 1997 in Belo Horizonte, Brazil, and 1998 in Costa Rica. Trade ministers have established 11 working groups to examine areas of existing and potential co-operation between hemispheric partners; work on dispute settlement is to be launched at the next ministerial meeting in Brazil. Most important, hemispheric leaders have agreed to attend a second Summit of the Americas in March 1998 in Santiago, Chile; at that time they could well announce the launch date for the FTAA negotiations.

- Finally, the process of integration has continued to advance in various sub-regional pacts. The MERCOSUR countries continue to deepen their customs union, despite sectoral problems in autos and agriculture. At the same time, the four members are linking up with Chile, Bolivia and the Andean Group countries in what they refer to as "association arrangements"; in fact these are merely free trade pacts that cover primarily border measures on merchandise trade. In addition, the Central American countries have revived their common market, and the Caribbean countries are beginning to implement the regional commitments they undertook years ago.

Building the FTAA

What is the most likely course for developing the FTAA? Some, including former Canadian Trade Minister Roy MacLaren, favour the "big bang" approach: they call for all countries to sit down together and develop a new trade accord, as was done in the GATT/WTO. Others argue that the FTAA need not reinvent the wheel but should rather evolve from the continuing process of sub-regional integration throughout the hemisphere, culminating in the link-up of those groups into an integrated free trade area.

We suggest a more pragmatic, ad hoc approach that combines both the continuation of sub-regional integration efforts (including the expansion of the NAFTA region) with hemisphere-wide efforts to harmonize national and/or sub-regional trading rules that could potentially erect obstacles to the FTAA. Given the different circumstances of each country and each sub-regional group, we believe the process must reflect variable geometry rather than linear progression.

NAFTA expansion will play an important role in future hemispheric integration since the NAFTA region accounts for more than 85 percent of hemispheric output. Companies that want to do business in the dominant market will tailor their policies to comply with NAFTA norms.[10]

Negotiations on Chile's accession to the NAFTA should proceed quickly in 1997-98 once the prospects for U.S. fast track authority are clear and positive. NAFTA membership could then expand to several other countries in Central America and the Caribbean; and Colombia could join as well if it successfully mitigates the severe political frictions generated by the drug issue (something it probably cannot do until after President Samper leaves office in 1998). In addition, legislation was introduced in the U.S. Congress to grant NAFTA-like preferences to the 24 members of the Caribbean Basin Initiative on the understanding that they will seek NAFTA membership within a decade. Some of the CBI countries will be able to accede much sooner if their domestic economic reforms remain on track. When Fidel Castro disappears from the scene, Cuba will be a prime candidate for NAFTA membership. Simple arithmetic shows that 29 countries could well be associated with the NAFTA by the year 2005.[11]

Can these countries commit to the rigorous NAFTA obligations? In many respects, they already have done so through their participation in the Uruguay Round accords, which incorporate several reforms modeled after specific NAFTA provisions. The main challenge will be to devise pathways to solutions for the WTO-plus features of the NAFTA (e.g., investment, intellectual property, services and labour/environment side agreements).

The main question mark for FTAA development will be the relationship between the expanding NAFTA and MERCOSUR. This relationship will depend on how the NAFTA adjusts to its wider membership, and on how the MERCOSUR evolves over the next five years as it moves to complete its customs union and also negotiate free trade accords with its neighbours in South America.

With the expansion of the NAFTA and MERCOSUR, some countries (including Chile and possibly Colombia) will have overlapping accords with both North and South American powers. Some will be members of several free trade areas involving different partners, and there could be conflicts in trade rules and regulations as well as liberalization schedules.[12] These types of problems could best be addressed by hemisphere-wide negotiations to complement the sub-regional integration process and the negotiations between sub-regional groups.

In this connection, we see the FTAA working groups serving several discrete purposes:

- They can remove obstacles in the path of integration between countries and sub-regional groups (and forestall the emergence of new problems), primarily by spotlighting inconsistencies and monitoring developments in the sub-regions.

- They can promote consultations on specific issues not covered by sub-regional or multilateral (i.e., WTO-plus) rules and obligations.
- They can provide a forum for hemispheric negotiations on standards and customs procedures that may be amenable to harmonization or mutual recognition arrangements.

Prospects for Free Trade in APEC

At Bogor, Indonesia, in November 1994, the 18 members of the Asia Pacific Economic Co-operation forum committed themselves to achieving free trade and investment in the Asia Pacific region by 2010 for developed countries and 2020 for developing countries. APEC members took cautious first steps toward that goal at their Osaka meeting in November 1995. At the Subic Bay Summit in November 1996, APEC leaders gave a concerted push to the Information Technology Agreement (ITA), which was embraced at the Singapore Ministerial meeting in December 1996.

The APEC process is different from that of the FTAA. APEC members have committed to the goal of free trade by a fixed date but have left open the modalities for implementing national reforms. They have opted for a flexible, ad hoc approach under the banner of "concerted unilateralism." Each country decides where, when and how to liberalize, subject to two constraints: the fixed target dates and the requirement that countries undertake comparable reforms given their relative development status. APEC negotiations will effectively occur in "consultations" to ensure comparability of unilateral reforms. In addition, APEC may inspire multilateral liberalization in other sectors, such as financial services, civil aviation and chemicals.

Nonetheless, it is difficult to imagine APEC reforms going beyond or being implemented sooner than the comprehensive free trade obligations covered by the NAFTA. U.S.–Canadian norms will be the high water mark for APEC efforts; and as the initial talks on APEC investment principles demonstrated, the rule-making results are likely to fall short of the NAFTA model.

In simple terms, we do not expect APEC's government-to-government negotiations to function as a catalyst for North American integration. Instead, the lure of expanding Asian markets and the challenge of competing in those markets will provide a more powerful impetus for North American industry to restructure. Trade with East Asian countries will expand sharply, promoting the rapid development of the West Coast regions in each North American country.

Prospects for Global Free Trade

If regional free trade initiatives are sustained, they are likely to become linked in new WTO negotiations under the banner of global free trade.[13] The motive behind such a scenario is straightforward: fear.

In our view, the fear of being left out of major markets is leading the European Union to rethink its policy of giving priority to expanding regionalism in Europe. That policy inevitably increases pressure to maintain or surreptitiously strengthen protection against other countries, particularly those that compete with East European and Mediterranean countries in agriculture and low-tech manufactures. If the European Union maintains its Euro-focus, it will be left out of the integration initiatives that now involve the world's most dynamic economies of East Asia and Latin America. To avert this danger, the EU has attempted to link its regional efforts with those of Asia (in the Asia–Europe Meeting) and MERCOSUR, and some foreign policy officials have promoted a U.S.–EU link in a Trans-Atlantic Free Trade Area (TAFTA). All these initiatives are long on political dialogue and short on economic content; all will founder on the unwillingness of the European Union to include agriculture in any free trade negotiations.[14]

Since the new WTO provides a forum for continuing negotiations, we expect that multilateral negotiations will start shortly on the built-in agenda mandated by the Uruguay Round accords, supplemented by new issues added at the Singapore and subsequent ministerial meetings. The Singapore ministerial meeting was extremely important in setting the near-term agenda. We do not foresee the organization of one-shot, big bang rounds as in the past under the GATT; instead, the process of biennial ministerial meetings and continuing negotiations accommodates a modified approach, which we call "round-ups."[15] In brief, every two years or so, WTO members would round up issues on the WTO agenda that are ripe for resolution. Each round-up would include a large enough package of agreements to afford the opportunity for cross-issue and cross-sector trade-offs. Negotiations would continue on other issues and new areas could be brought into the talks at any time. Round-ups would essentially be consecutive rounds rolled together.

The main question for these prospective WTO talks is whether WTO negotiations will be able to achieve the same degree of integration that is the hallmark of EU integration and that is evolving in North America as well. The difference is that the WTO talks will balance EU norms with those of other regions. In some areas the U.S.–Canadian norm may not be the most far-reaching and North American policies could be strengthened to meet EU norms. Three areas where this might occur are adoption of area-wide competition policy norms; adoption of rule-of-origin treatment for indirect taxes when goods are shipped across national borders; and mutual recognition of standards, test data and certification marks.

CONCLUSIONS

OVER THE NEXT 25 YEARS, the economic integration of North America will advance markedly:

- The border between Canada and the United States will be no more intrusive than the German–Dutch border today. Border trade measures will be a relic of the past; declining resort to anti-dumping duties and other border measures will be replaced by regulatory competition and investment subsidies.
- Trade will play an even larger role in both economies, and two-way trade flows will continue to expand sharply.
- Trade with Asia will take a much larger share of U.S. and Canadian exports and imports, spurring further expansion of west coast ports.
- Regardless of developments in Quebec, we will continue to see the devolution of power from federal governments to states and provinces. In both countries, provinces and states will play a larger role in shaping the direction of future integration. This trend will constrain growth of the federal tax base and thus will continue to squeeze social services budgets.

NOTES

1 U.S. Department of Transportation, Office of International Aviation, *The Impact of the New U.S.–Canada Aviation Agreement at Its First Anniversary*, Washington, D.C.: March 1996.

2 Reuters, interview with Don Woodley; David Tanaka, "Who's on First? Compaq?," *The Computer Paper*, June 1995.

3 According to Statistics Canada data.

4 NAFTA Statistics, NAFTA Secretariat, December 1995.

5 Patrick Messerlin, "Competition Policy and Anti-dumping Reform," in Jeffrey J. Schott, ed., *The World Trading System: Challenges Ahead*, Washington, D.C.: Institute for International Economics, 1996.

6 Thomas O. Bayard and Kimberly Ann Elliott, *Reciprocity and Retaliation in U.S. Trade Policy*, Washington D.C.: Institute for International Economics, 1994, p. 58.

7 Paul Wonnacott, The Auto Sector, in Jeffrey J. Schott and Murray G. Smith, eds., *The Canada–United States Free Trade Agreement: The Global Impact*, Washington, D.C.: Institute for International Economics, 1988.

8 Jeffrey A. Frankel, *Regional Trading Blocs*, Washington, D.C.: Institute for International Economics, July 1997; Jeffrey A. Frankel and Srang Jin Wei, "Open Regionalism in a World of Continental Trading Blocs", *NBER Working Papers*, September 1995; and Jeffrey A. Frankel and Srang Jin Wei, "Regional Trading Arrangements: Natural or Super-Natural?", University of California, *Berkeley Working Papers*, January 1996.

9 Gary C. Hufbauer and Dean A. DeRosa, "Costs and Benefits of the Export Source Rule, 1998–2002," February 1997.

10 Indeed, the European Free Trade Association countries adopted EC standards long before they negotiated EC membership.

11 Barbados recently announced that it would not seek NAFTA membership and would await the FTAA. However, at the same time it reiterated interest in NAFTA parity, which is dependent on gradual NAFTA accession.

12 This issue has been examined in detail by the Canadian economist Ron Wonnacott.

13 For a comprehensive analysis of this scenario, see C. Fred Bergsten, "Globalizing Free Trade," *Foreign Affairs*, Vol. 75, No. 3 (May/June), pp. 105–20.

14 For a concise critique of the TAFTA proposal, see Jeffrey J. Schott, "Reflections on TAFTA," in Bruce Stokes, ed., *Towards an Open Transatlantic Marketplace*, New York: Council on Foreign Relations, 1995.

15 For a more detailed discussion of this point, see Jeffrey J. Schott, *WTO 2000: Setting the Course for World Trade*, Washington, D.C.: Institute for International Economics, September 1996.

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Session 8

The Private Sector Response to Economic Challenges Facing Canada

CHATTER

A. Sulzenko OK, I'm going to – Ladies and Gentlemen, we're going to start the session now. I'm Andrei Sulzenko. I'm chairing this session called The Private Sector Response to Economic Challenges Facing Canada. We've heard a lot over the last day and a half about the challenges facing the country and now it's time to focus our debate on how we're going to react to the challenges and act to seize the opportunities. This session looks at possible responses from the private sector. The session following this one will be from the public sector. I'm pleased today to have Professor Randall Morek, right here to my immediate left, of the University of Alberta, who will be presenting his paper done with a colleague professor, Bernard Young of the University of Michigan entitled The Corporate Response Innovation in the Information Age. Let me as well introduce the 3 panelists who will comment on the paper. From, and my immediate left, Jim Frank, the Vice-President and Chief Economist at the Conference Board of Canada. To his left, Roger Martin, Dean of the Joseph L. Rotman School of Management at the University of Toronto. And to my far left, Bob Baldwin, Director of Technical Services at the Canadian Labour Congress. We'll now turn the floor over to Professor Morck for his presentation.

Prof. Morck **INSTRUCTED NOT TO TRANSCRIBE**

APPLAUSE

A. Sulzenko Thanks Randall for that provocative talk. I don't know what kind of set up it is for our, our panelists and I'll let them decide. And I think we'll, we'll start with, with Jim Frank. And I've asked the panelists to try to limit their remarks to about 10 minutes and that'll still leave us about 10 for question and answer.

J. Frank Thank you Andre. I should identify myself for some of you who don't know who I am and what I do. I'm one of those people that has spent a goodly part of my professional life trying to forecast with econometric models. And when I started to read this paper, I wasn't quite sure whether it was going to be a piece that would spend 50 pages attacking the veracity of forecasting in general, or just exactly what it was going to do.

So, when the paper starts out by pointing out that just about all forecasts are wrong I felt a little nervous because we forecast quarterly and we

actually put numbers on our forecasts. And, I thought, if he's going to take this position, why would I carry on reading. After all, anything that he writes which would have a considerable forecast tinge to it, given the premise of the piece, would obviously be wrong.

In any event he wasn't terribly deterred in making his own forecasts despite his initial position. I went through the piece and counted 28 predictions! Now none of them – Randall – have any numbers in them. So they're particularly good predictions and I'd only like to read one here for you because I think it's especially good. It's the classic if/then prediction. It says, "If high income taxes push innovators out of Canada and/or lower the countries innovation rate by reducing the returns to innovators, there could be heavy costs to bear in the longer term." Now either it is a problem or it is not a problem. So I don't know what to think.

I just want to editorialize a few more moments before I become more serious. I felt very much like I was back in my student days when I read this because it's an excellent primer on the Austrian school of economics and the assumptions, values and concepts that underpin this line of thought. First, the basic ideas that people are driven by greed and risk aversion seem to me to be perhaps an extreme statement, but nevertheless there's some truth to it, as pointed out in the piece. And incentives obviously make a difference in what we choose to do in life and business. I must confess that a lot of the points and ideas in the document are ones that I share.

So with this in mind, I would like to make these few points about innovation from the point of view of the Conference Board of Canada and some of the work that we've been involved in over the last number of years. We'll be publishing our 4th annual report on Canada's *Performance and Potential* and we are spending a lot of time on the issues of productivity, brain drain, income distribution, quality of life and, of course, innovation. And I guess the perspective that I could offer to you in response to what Randall has presented here today is reflected in our *Performance and Potential* work.

All of us I think understand what we mean when we talk about innovation. It has something to do with finding new ways to do things or new things to do that other people haven't thought of. It's in that sense both a process and an outcome. And it's very hard to quantify this concept for any kind of serious research.

And in fact Randall doesn't even define innovation! Now we don't either, with any degree of precision, except that we say it's an effort to squeeze more useful "stuff" or economic value, out of the knowledge that we have as a society.

But there are virtually no measures of innovation itself. So it's a great topic to talk about and to forecast and make predictions about because of course if you can't measure it how will you ever know if you've got it or don't have it!

Now, in truth there are indirect measures and we heard some this morning about our patents issued and so on. And it is our view also, at the Conference Board that Canada, that our country has a serious innovation shortfall. It's related to a lot of things, our industrial structure, ownership structure and what I would argue is a long-term tradition of protectionism in this country.

We also think that just because only 4 or 5 per cent of Canadian companies do any serious R&D, that we can't argue that they are the only ones that might be innovative. If you talk to business people, they will all say they innovate. They innovate in small ways, and in big ways; they try to find a leg up on their competition and so on. But it's a moving target because it means different things to different people. In mining or in high tech, innovation has different meanings and so we have to measure and research it differently.

We believe that innovation is about ways of doing more than just cutting prices. In fact the goal of most businesses that I deal with is to try to get an innovation that does in fact allow you to raise prices. To earn what economists would call monopoly rents. And those profits supposedly move on into employment gains and hopefully successful long-term employers of lots of people.

Profits in innovative firms have to reflect the ability of those managers to outperform their competitors. And that ability to out-innovate or outperform has to be rewarded with higher rates of return, somewhere in the system. You have to reward people for their risk taking and the dedication and the hard work that goes with innovation, particularly if you're talking of smaller or start-up organizations. Randall makes this point I believe quite correctly.

Remember that change always implies loss and Randall is quite correct when he talks about the Schumpeterian idea of creative destruction. I'm always conscious as a manager of the difficulty in making change occur. It's because people instinctively worry about the disinvestment in what they are already doing. Thus it is a real challenge to make change occur and it relates of course to ideas of incentives needed to support change.

Second point. Innovation is supported by all of the factors of production including management and leadership. And this isn't just the leadership of

the CEO, it's leadership at all levels in the organization. We think, at the Conference Board, that management and leadership is probably the most scarce resource we have in our organizations.

Now it's hard to prove that. But certainly when you observe how some firms are so successful in the same types of business as other firms, you do have to come to things like leadership, organizational culture and so on. We call this doing the softer, but harder, things better by being innovative in organizational processes, as opposed simply to adding more technology or more M&E investment. Thus we talk an awful lot in our organization, about finding ways to innovate in organizational structures, processes and so on.

What are we trying to do here? We're trying to get people to take risk. We're trying to reward them for taking risk. And we're trying to ensure that when they fail, which they will do most of the time, that they aren't penalized. And that's a very tricky business.

When we did our analysis on the Free Trade Agreement 10 years ago at the Conference Board, we thought we would see manufacturing productivity just take off in this country—economies of scale, access to bigger markets, all the usual drill. And yet we have not seen that. And we've been banging on that little drummer on manufacturing productivity for some time. It is my considered opinion, after having worked in the productivity area for the better part of 25 years, that a central issue goes around management, ingenuity, entrepreneurship and drive in Canadian organizations versus their competitors. And I think that's where we come up short.

Third point. We don't believe that R&D alone or technological innovation alone is where we have to look for successful innovation. Innovation is not an end in itself. Innovation is a competitive weapon as far as we can tell, or at least that's the way we see it. So what we're looking for here is innovations that help us get ahead of the next guy. And that means we have to be nimble, we have to be able to take risk, to change quickly and so on and we need incentive systems that allow us to do that.

We also think that diffusion of discoveries or new ways of doing things by other organizations is a key determinate for Canadian firms because of the low level of R&D that we do here and the nature of our markets. We all know about the better mouse trap that didn't get sold because marketing was poor or people didn't have the capacity to market and make the sale. Marketing abilities are one of those softer but harder things to measure.

And I would only say to you that if you believe the skill shortages in Canada are not just for carpenters at the moment, but are for

entrepreneurial talent that can really take ideas and operationalize them into successful products and services, then we have a serious issue around incentives. I'm reminded in this regard, about the Japanese. As you know, their management and operational prowess have fallen in and out of fashion over the last decade, but they have been able to innovate in some areas very, very effectively. I would draw your attention to the auto sector. Cadillac and Lincoln were around a long time before Lexus, Infinity or Acura were even thought of. Ladies and gentlemen, the Japanese niched that high-end market with a more innovative product than what we were producing in North America and they have changed the industry.

Now, my last point. On the public policy front I can only leave you with a simple message. It's a difficult one for governments because I think that what they have to do is ensure that the legal and policy framework is supportive and conducive of *change* and particularly *rapid change*.

And this is where the challenge arises because firms and people, who lose from change as I said earlier, are obviously going to look everywhere, and especially to governments, for help. And this of course is something that Randall points out. This naturally impedes change and innovation. So the less that governments do to stop or manage change I would say the better.

But this is a tall order in a society, and I'm going to say something perhaps you won't like to hear. I believe that Canadian culture is predominantly risk averse, egalitarian and entitlement oriented. In this regard the level of taxes on individuals and businesses are a central deterrent that gets in the way of innovation.

We know that startups and spin-offs require individuals to take significant risk and pay the personal price of doing this. And the vast majority fail. For those who succeed it usually takes several tries and years of sacrifice. Then, when they start making significant returns Her Majesty takes half of them. It doesn't take too long for folks to decide that perhaps they will look elsewhere to do their business.

I don't think Canada is going to change in this regard very quickly. And as a result I think we're going to lose out. And that's because there is truth to the idea that knowledge is central to organizational success and that services that are knowledge intensive can be supplied from various parts of the world.

My final reflection goes back again to a bit more lighthearted, I suppose, comment here. And that is that when Denis Gauthier called you, Randall, and offered you money to challenge directly some of the issues around looking into the long-term, it amazed me to see in your report that there was such a strong discussion around the motives of business and of course

public servants. So I thought to myself, now Denis, why would you ever hire somebody that is going to be challenging some of these points to the degree to which Randall has done.

I want to draw your attention if I could very quickly to page 25 where you say, "the Austrian perspective on public sector economics has led to a number of insights, among them public choice theory, which stresses lobbyists' influence and the dynamics of politicians and bureaucrats' self interest. In a nutshell, the idea is that politicians, bureaucrats and lobbyists all have the same human nature as everyone else and that government should be designed with this end in mind." I was greatly relieved to see on the front cover that it says the views expressed in these papers do not necessarily reflect the views of Industry Canada or the Federal Government.

I enjoyed reading the document, it was fun. I think it's by and large on the right track and I want to congratulate you for having the courage at least to put forward those ideas so aggressively. Thank you.

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CANADA IN THE 21ST CENTURY

III. RESPONDING TO THE CHALLENGES

THE CORPORATE RESPONSE — INNOVATION IN THE INFORMATION AGE

Paper Number 10
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Industry Canada
Research Publications Program

CANADA IN THE 21ST CENTURY

III. RESPONDING TO THE CHALLENGES

THE CORPORATE RESPONSE — INNOVATION IN THE INFORMATION AGE

By Randall Morck, University of Alberta, and
Bernard Yeung, University of Michigan

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PREFACE

AS A NEW MILLENNIUM APPROACHES, Canadians are going through a time of dramatic economic change. Markets are becoming global, and economic activity across nations is becoming increasingly integrated. Revolutionary developments in computer and communications technology are facilitating globalization, and are also altering a great deal the workplace and the lifestyles of Canadians. At the same time, largely as a consequence of the information revolution, knowledge-based activities are becoming increasingly important within the Canadian economy and the economies of other industrialized nations.

These and related major transformations of the economic environment invite a comparison with the Industrial Revolution of the 1800s. As in the earlier time, major structural changes are giving rise to uncertainties. Firms and workers are struggling to find their place in the new economic order. Canadians collectively face the question of whether their nation's physical, human and institutional resources will provide a firm foundation for continued prosperity. Many see Canada's prospects as being much less secure than in earlier years, when the country's rich natural resources played a major role in shaping the Canadian economy.

To examine fully the medium to longer-term opportunities and challenges of these developments, the Micro-Economic Policy Analysis Branch of Industry Canada asked a group of experts to provide their "vision" for Canada in the 21st Century on a number of important issues. Each author was required to undertake two formidable tasks: first, to identify major historical trends and develop scenarios to illustrate how developments in his/her respective area might unfold over the next ten to fifteen years; and second, to examine the medium-term consequences of these developments for the Canadian economy.

The papers coming out of this exercise are now being published under the general heading of "Canada in the 21st Century". This series consists of eleven papers on different aspects of Canada's medium-term outlook. The papers are divided into three major sections. The first section, *Scene Setting*, focuses on important developments that are going to shape the medium-term economic environment in Canada. The second section, *Resources and Technology*, looks at trends among some important components of Canada's wealth creation and considers the actions needed to ensure that these factors provide a firm foundation for continued prosperity. The last section, *Responding to the Challenges*, explores individual, corporate and government responses to the medium-term challenges and offers some options for an appropriate course of action.

As part of the third section, *Responding to the Challenges*, this paper by Professors Randall Morck of the University of Alberta and Bernard Yeung of the University of Michigan examines the corporate response to the major forces driving economic change: the accelerating pace of innovation, the emerging global free market economy and the aging of Canada's population. In

this new environment, firms must enhance their ability to collect and process information so as to create innovations.

The authors suggest the need for market-type incentives within organizations so that firms can imitate the market's ability to foster efficient information generation and processing. Policy should be directed only at significant market problems that governments can usefully address. One such problem is inadequate competition in parts of the banking and financial sector, which partly explains the financing problems of small firms. Equally addressable are failures in markets for education, training and basic R&D. These inhibit innovation and justify the provision of government subsidies. More generally, the authors point out, government itself has become a competitive business; governments must deliver valuable public goods at competitive tax rates or risk an outflow of capital, ideas and skilled labour.

SUMMARY

IN FORECASTING COURSES, undergraduate students of economics are routinely taught to plot trends in variables of interest, and then to use statistics to extrapolate them into the future. This procedure has the advantage of requiring virtually no work in understanding the thing being predicted. It also leads to spectacularly wrong results. We believe the key to making educated guesses about the future is understanding some basic elements of economics. We believe an economic theory called Austrian economics, part of which has recently emerged from a half-century of obscurity in the guise of endogenous growth theory, is the key to understanding our current situation.

Predictions that the world is on the verge of a totally new age are fun to make but the world usually does not co-operate. Corporations and jobs 10 years from now will probably not be that different from what they are now. However, there are a few changes that probably will matter. We believe the most important of these to be the accelerating pace of innovations, globalization, and the changing demographics of Canada's population. These three changes are not unrelated.

Immigration is probably the only way to rescue Canada from demographic disaster as its existing population ages. This leads us to what we think are some reasonably safe predictions about Canada 10 years from now: its population will be more diverse than that of other advanced Western countries, and the diversity will be a tremendous competitive advantage in forging economic links with newly rich countries in Asia and elsewhere.

Accordingly, globalization can be a very good thing for Canada. We may be in a better position to benefit from the shift of the world's centre of economic gravity out of the North Atlantic. Canada's current policy of pushing for global free trade makes sense. But the accelerating pace of innovation is an even stronger rationale for Canada to push for free trade.

Innovations have unique economic properties. Once a firm has spent money on R&D to develop a new process or product, it makes a higher return if the innovation can be marketed on a larger scale. We believe it will become increasingly obvious that the real competition in the global free market economy will be competition to innovate. If Canadian firms are to be competitive innovators, they must be able to earn high returns on their innovations. To do that, they must have access to the largest market possible: the global market.

In our view, government has a crucial role to play in fostering Canada's economic health in the next decade, but this role is quite different from the one it has assumed in much of the 20th century. Government is becoming a competitive business. Governments that fail to provide high-quality tangible and intangible public infrastructure at competitive tax rates will lose capital, skilled labour and therefore knowledge to other economies. A critical part of this infrastructure, we believe, is a sound, reliable and fair legal system that protects property rights, both tangible and intellectual. Essential to the legal system are

corporate governance laws that promote investment by strengthening investors' trust in corporations. Education, public order and social safety nets are other basic components of the infrastructure. Subsidies to corporations, for whatever allegedly good cause, are not.

We conclude with a brief description of the corporate job of the future and end with a forecast that we believe to be a sure bet, in case the others fail to pan out.

FUTURES PAST

The future is not what it used to be.
— Paul Valéry (1871–1945).

WHAT HAPPENED TO THE JET PACKS, robot dogs, videophones, Mars colonies and 15-hour work weeks that were just over the horizon in 1965? Why did 1960s predictions by *Popular Mechanics* writers completely miss the personal computer, fax machines and the Internet? The global winter that scientists had earnestly said was inevitable if Saddam Hussein lit the Kuwaiti oil fields never came, presumably much to the disgust of the distraught dictator. Physical scientists seem to be lousy at predicting the future, and economics is much less exact than physics. Why should anyone pay attention to an economist's ravings?

Many eminent economists have been surprisingly good at predicting the world decades ahead. Thorstein Veblen, Friederich August von Hayek and even Karl Marx made surprisingly astute forecasts of things to come.[1] Of course, professional economic forecasters are often compared to monkeys with darts.[2] What is the trick? What does it take to make sensible forecasts? We believe there are a few basic principles.

HISTORY DOES NOT EXTRAPOLATE FROM TRENDS

> *In the space of 176 years the Lower Mississippi has shortened itself by 242 miles. That is a trifle over an average of one mile and a third per year. Therefore, any calm person, who is not blind or idiotic, can see that in the Old Oölitic Silurian Period, just a million years ago next November, the Lower Mississippi river was upwards of one million three hundred thousand miles long, and stuck out over the Gulf of Mexico like a fishing rod. And by the same token, any person can see that 742 years from now the lower Mississippi will be only a mile and three quarters long, and Cairo and New Orleans will have joined their streets together and be plodding comfortably along under a single mayor and mutual board of aldermen. There is something fascinating about science. One gets such wholesale returns of conjecture out of such a trifling investment in fact.*
> — Mark Twain, *Life on the Mississippi*, 1863.

IN FORECASTING COURSES, undergraduate students of economics are routinely taught to plot trends in variables of interest, and then to use statistical techniques to extrapolate them into the future. This procedure has the advantage of requiring virtually no work in understanding the thing being predicted. It also routinely leads to spectacularly wrong results.

In 1968 a group of MIT scientists calling themselves the Club of Rome made stark predictions of imminent global shortages of almost all metals and fuels. They projected 1960s exponential growth rates in the use of raw materials indefinitely into the future, and concluded that the world's reserves of

aluminum, copper, gold, molybdenum, natural gas and zinc would soon be totally exhausted. Their report, *The Limits to Growth*, was instrumental in launching the modern environmentalist movement.[3]

The Club of Rome's predictions were also completely wrong (at least so far). Exploration greatly increased available reserves; price increases reduced demand, fostered innovation to increase efficiency and develop substitutes, and made recycling profitable. The MIT scientists' extrapolation of the future from then-current trends was unwarranted, and it failed to capture how supply and demand would change as prices changed and knowledge was accumulated. Few economists in the 1990s expect raw materials shortages to impede economic growth in the foreseeable future.

UNDERSTAND THE SYSTEM

> *Socialism was embraced by the greater part of the intelligentsia as the apparent heir of the liberal tradition: therefore it is not surprising that to them the idea of socialism leading to the opposite of liberty should appear inconceivable*.
>
> — Friedrich August von Hayek, *The Road to Serfdom*, 1944, p. 27.

HAYEK, A NOBEL LAUREATE IN ECONOMICS, predicted the totalitarian nature of all communist economies at a time when intellectuals everywhere were enthralled with Marxism. He did so by trying to understand how a communist economy could function. If economic decisions are made centrally, how can the central government know what to do without a huge information-gathering (i.e., surveillance) apparatus? How is it to make sure its decisions are implemented without a huge police presence in all aspects of life? Hayek predicted that communist economies could not endure and would eventually collapse into chaos. First, they had no mechanism for rewarding creativity, innovation or initiative and so would cease growing; and second, the problem of gathering information and co-ordinating economic actions would only worsen with time. He was right on both counts.[4]

Unlike the Club of Rome or the Who's Who of 20th-century Western intellectuals who supported communism (and national socialism too), Hayek thought hard about the economic system he was studying. He took human nature and basic principles of economics as given, and asked where they would lead to in such a system. We believe this contrast between Hayek and the Club of Rome is at the nub of problems in economic forecasting.

Hayek was a leading member of the Austrian School, a group of economists that rises to the fore whenever records in long-term prediction are compared.[5] We shall therefore invest several pages of the reader's time in an overview of this school of thoughts and what it has to say about our present situation. Although Austrian economics was important in the late 19th and early 20th century, it meshed poorly with the mathematical approach of postwar economic theory and so was regarded as little more than an intellectual curiosity until recently, when it was resurrected and re-anointed as endogenous growth theory.

Austrian economics is not superseding standard micro- or macro-economics but is increasingly supplying missing pieces in their explanations of the world.

Basic Principles of Economics

Economics is About Supply and Demand, Not Just Supply

> *Before man reaches the moon, your mail will be delivered within hours from New York to California, to England, to India, or to Australia by guided missiles…. We stand on the threshold of rocket mail.*
>
> — A. Summerfield, U.S. Postmaster General, 1959.

Rocket mail, jet packs, robot dogs, videophones and Mars colonies actually were technologies that were "just over the horizon" in the 1960s. They are all technologically feasible now, they could be "supplied." So where are they?

The U.S. military was the biggest potential customer for jet packs in the 1960s, but it quickly found that jet packs exposed troops to sniper fire, needed too much fuel and were hard to manoeuvre. Further R&D probably could have overcome the last two problems but the first was insurmountable. Jet packs died not for technological but economic reasons: demand dried up.

Videophones were tested but consumers disliked the greater invasion of privacy caused by a camera in the kitchen. Carrying pictures on telephone lines is technologically possible now but no manufacturer is pushing videophones. Given consumers' profound lack of interest, the economics do not justify it. Robot pets and Mars colonies may yet happen but the consumer lobby groups are so far still quiet. We keep our fingers crossed for the 15-hour work week and against a nuclear winter. We sincerely hope that the demand for quick mail delivery will never justify a Canada Post program to bombard cities with guided missiles.

In all of these cases, supply was not an insurmountable problem. The technology for producing these goods is there and probably could be refined substantially if demand existed. The problem is that people do not want them; there is no demand. Since the purpose of production is to meet demand, there is no production.

The Source of Value Is Subjective

> *Value is the most invincible and impalpable of ghosts, and comes and goes unthought of while the visible and dense matter remains as it was.*
>
> — W. S. Jevons, *Investigations in Currency and Finance*, 1884, Pt. 2, Ch. 4.

Aristotle argued that goods have an objective "just price" determined by moral principles.[6] It has taken humanity more than two millennia to overcome this folly, and "ethical pricing" continues to rear its ugly head even now. If a nuclear

winter were coming and modern economists could pick one piece of knowledge to hand down to survivors of the apocalypse, it would unquestionably be the idea that value is subjective. It is nonsense to say that three talents is an objectively "just" price for a load of wheat but that four talents is not.

Philosophers before Adam Smith argued long about value. A popular theological view suggested that value was "need": a medicine is valuable because people need it. But what about water, an absolutely essential good that is virtually free? Water is abundant but medicines are scarce. Does "scarcity" determine value? But valuable land is abundant; and two-headed chickens are rare, yet little cherished.

A great triumph of 19th-century economics was to make sense of this jumble. Value is determined by the relative weight of supply and demand. High demand and relatively low supply push prices up. Water has high demand but also high supply, and two-headed chickens may have low supply but the demand is subterranean.

The demand for a good depends on how many people can use it to satisfy their "wants," and "want" is a subjective notion. The supply of a good depends on people's ability to make it. This depends in turn on a combination of natural scarcities of raw materials and knowledge about production processes. Knowledge is also a subjective concept and is often far more important than natural scarcity.

Value Creates Supply

> *Justice is to allow people to exercise their unequal skills to satisfy their self-interest*.
> — Confucian saying.

When demand exceeds supply, prices rise. This makes finding ways to increase supply lucrative. Finding new raw materials, expanding production capabilities and (most important) devising innovations to increase productive efficiency all become more profitable when prices rise, at least if people are free to keep the economic gains from these activities. When supply exceeds demand, prices fall and these sorts of activity look unprofitable. This "market mechanism" is the deceptively simple basis of market economies.

A Failed Experiment

> *Psychology cannot experiment with men, and there is no apparatus for this purpose. So much the more carefully must we make use of mathematics*.
> — Johann Friedrich Herbart, *Lehbuch zur Psychologie*, 1816.

Like human psychology and astronomy, economics must be an observational science. We cannot test theories by doing controlled experiments. Subjecting half the population to an experimental economic regime while

using the other half as a control group is impractical and probably unethical. It is therefore fortunate that history has performed such an experiment for us in the guise of international communism. Applying communism to one half of Germany, Korea, China and the former Austro-Hungarian empire, and capitalism to the other is a controlled, replicated experiment in the best tradition of the natural sciences. The conclusion is inescapable: market mechanisms of the sort we have described are critically important.

The underlying aim of international communism was to change human nature — to create a "new socialist man" [sic] who would be altruistic instead of selfish. Altruistic workers would happily toil for the good of their comrades and without thought for their own reward. If communist regimes had succeeded in fostering such a change, they might well have survived and prospered. Their spectacular failure suggests that human nature is, if not immutable, then at least rather hard to change. Economics must be fashioned around human nature, with all its flaws and imperfections.

HUMAN NATURE

> *To succeed, be in the right climate, on the right land and in harmony with people.*
> — *Confucius*.

A SOUND UNDERSTANDING OF HUMAN NATURE is the basis for good economics, good government and good management. Is human nature subject to predictable regularities? The premise of all psychology is that it is. That being so, which regularities in human nature can help forecasters make predictions?

Self-Interest

> *By 1960, work will be limited to three hours a day.*
> — John Langdon-Davies, *A Short History of the Future*, 1936.

Most animals, including humans, appear to be hard-wired with various survival responses. These instincts arguably direct much human behaviour, especially when snap decisions are required. From the economist's viewpoint, the most important of these instincts are greed and risk aversion.

Like many other animals, humans are hoarders. Greed increased the odds of survival for our Paleolithic ancestors and so it is an unalterable part of human nature. Why is this important for forecasting? Avarice is the abyss down which the 15-hour work week disappeared. Since 1950, real per capita GDP has increased by a factor of just under 4. If a person in 1996 were comfortable with the average income that prevailed in 1950, she could obtain it by working one fourth as much as would have been necessary then — a 15-hour work week. Few take up this opportunity. Human nature makes us want wealth more than leisure, so we toil on.

A second aspect of human nature that clearly has its roots in biological self-preservation is risk aversion. If there are a safe way and a risky way of achieving the same valued end, all else being equal, human beings prefer the safe route. This has deep implications in predicting things such as investment behaviour.

Self-preservation, it may be argued, leads to some rather sophisticated behaviour. People also strive for intangible possessions such as power, status and recognition, perhaps more than for tangible wealth. But this is still a strategy based on self-interest. These intangibles let their owners use other people's resources to satisfy their own wants. Self-preservation may also lead to a balancing of short-term and long-term self-interest. Our Paleolithic ancestors had to be able to sacrifice short-term consumption (say, eating tasty carrion) for long-term survival (avoiding a predator who might linger in the area).

Social Animals

> *"Never speak disrespectfully of Society, Algernon. Only people who can't get into it do that."*
>
> — Oscar Wilde (1854–1900), *The Importance of Being Earnest*.

Self-interested behaviour is not necessarily selfish behaviour. Many species have developed amazing co-operative behaviour to enhance their survival.[7] Humans fall into this group. Unco-operative behaviour that enhances instant happiness but threatens long-term survival will not last — because if it does, the species itself will not last. Economic experiments, mainly on undergraduates, suggest that a tendency to co-operate is a very basic part of human nature. Computer simulations show that the most effective form of co-operation is "tit for tat" interactions. People keep track of who has done favours for them and who has wronged them, and act accordingly in future dealings. This proclivity toward favour trading, combined with greed, is thought by many economists to have a central part in explaining much of the interaction between politicians and corporate lobbyists.

Our co-operation instinct leads us to develop and submit to social rules, regulations and institutions. Violators are punished, expelled from society (and thus exposed to predators) or killed. Good rules enhance survival, and societies with poor rules wither. Our survival instinct leads us to join societies with good rules and to desert societies with bad rules. This fact has deep implications for government-business relations in the global economy.

Conditioning

> *We are all controlled by the world in which we live, and part of that world has been made and will be constructed by men. The question is this: are we controlled by accidents, by tyrants, or by ourselves in an effective cultural design?*
>
> — B. F. Skinner, *Cumulative Record*, 1972.

Conditioning is a pervasive characteristic of animals, including human beings.[8] We are conditioned by our economic and social environment. We learn what yields rewards and what triggers punishment. For the most part, society rewards behaviour that enhances everyone's collective benefit. In communist state-owned factories, where self-initiative and work were not rewarded, workers developed the ethic "They pretend to pay us, we pretend to work." Stealing on the job was common since it was not punished and was rewarded in black markets. As the police presence receded in communist countries, on-the-job theft became so endemic that reformers referred to it as spontaneous privatization.[9] Yet these same workers, placed in Western-run businesses, can become honest, hard-working and creative employees or entrepreneurs.

Conditioning turns common behaviour into internalized habits, norms, precepts and virtue. Co-operative behaviour, self-sacrificing, caring for others, honesty, etc. — all become internalized virtues and norms after we have gone through enough tit for tat.

The downside of conditioning's importance in human behaviour is that it leads us to stick to old ways. Many managers distrust radical innovations, as many bureaucrats distrust deregulation. When faced with problems, managers conditioned to rely on government assistance may actually divert resources from modernizing to lobbying. A key to the success of capitalism is that it has created an environment where at least some people become conditioned to expect and accommodate change.

Cognitive Dissonance

> *Know thyself.*
>
> — Inscription at the Oracle of Delphi, ca 700 b.c.

Psychologists call the tension a person feels between his own life and his concept of a virtuous life "cognitive dissonance," and they believe people strive to minimize it.[10] This is why many rich heirs believe firmly in the genetic basis of intelligence, and why people's readiness to accept propaganda rises during wartime. We want to believe we are right, especially if what we are doing is at all disturbing. Cognitive dissonance disguises our self-interest as altruism, at least in our own eyes. Cognitive dissonance allows us to come up with ingenious and extremely sincere arguments to justify what we advocate, even when what we advocate appears outrightly self-serving. This has deep implications about the attraction of ideology.

> *We regard these elements of economics, and the principles of human nature upon which they are based, to be largely immutable — at least on anything less than a paleological time scale. They are therefore a reasonable basis from which to forecast the future.*

THE STARTING POINT: FADS OR FACTS?

Beware of enterprises that require new clothes.
— Henry David Thoreau (1817–62).

BUSINESS STRATEGY IS LIKE TEENAGERS' CLOTHING. Despite the relative permanence of basic human nature and the basis of value, fashions come and go with dizzying speed, and innovations catch on with little apparent logic or practical purpose. Diversification, down-sizing, re-engineering, total quality management, "just in time" inventory, quality circles and Zen philosophy each have their time in *Business Week* and then are gone. There is remarkably little evidence that any of these pieces of Vedic wisdom improves profits, value or productivity.[11] These mantras, however profound, are unlikely to have lasting effects.

The starting point in any serious attempt to understand businesses' likely response to structural changes in the economy is to distinguish real underlying changes from fads.

We are bombarded with predictions about the onset of a totally new era. It is fun to be radical but the world usually does not co-operate. We find exaggerated the radical predictions about the death of jobs or corporations as we know them, and the coming age of cottage offices connected by fibre optics. Corporations in 2006 will probably not look that different from corporations now. Head offices, physically proximate employees and nine-to-five hours will still be the norm. MBAs will still get jobs and firms will still lobby politicians for political favours. Against this backdrop of similarity, though, there are a few changes that probably matter.

We believe the most important of these to be the increasing importance of innovation. The information age is here. Although computer technology has exponentially increased our capabilities to collect and process information, this is not the most important aspect of the information age.[12] The real change is that corporations everywhere are feverishly competing to be the first to embed new information into production processes, distribution systems[13] and goods. Figure 1 shows that the number of new patents granted each year is rising sharply, and Figure 2 shows how Canadian firms' spending on R&D has grown apace as they struggle to keep up. According to these statistics, the information age is very real. Knowledge about using innovations is relatively scarce and in high demand. This increasing *value of knowledge*, rather than particular innovations such as the Internet, is the reason it makes economic sense to speak of an information age.

Yet corporate performance in the developed countries, as measured by productivity or accounting ratios, has not increased dramatically — presumably because price-cutting competition has intensified too.

This leads us to the second real change: the world economic system in which Canada must function is changing. Socialism is dead, and the world is embracing free markets and liberalism, as it did at the end of the 19th century.

FIGURE 1

U.S. PATENTS: 1790-1993

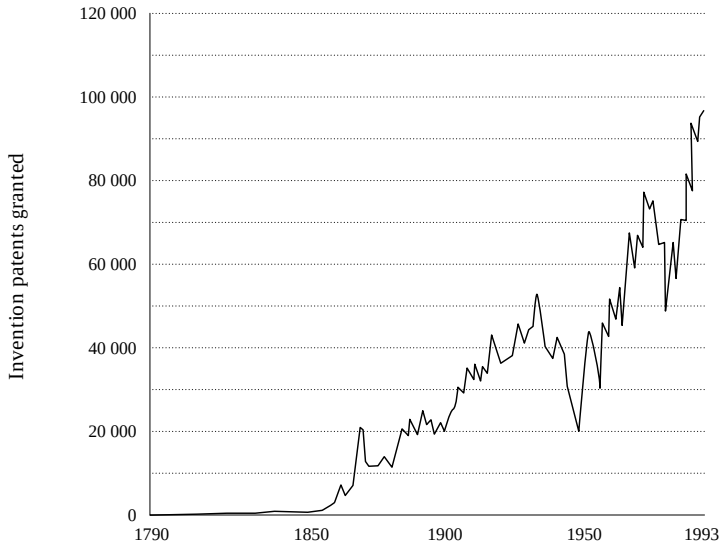
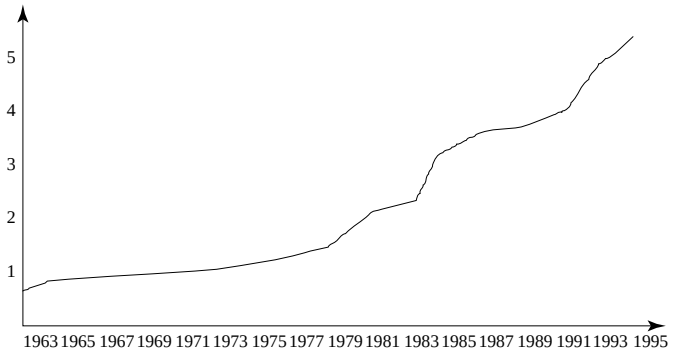


FIGURE 2

CANADIAN CORPORATE R&D SPENDING, 1963-1995
BILLIONS OF 1985 DOLLARS



Source: Statistics Canada, Cat. No. 88-202.

International trade and investment barriers are at their lowest in this century. New economic powers such as China, India, Indonesia and Russia are at various points on entry paths into the world economy. Many corporations are embracing global-scale business competition, though others dread it. Globalization is here, and it certainly will affect Canadian companies and limit the ways Canadian governments can interact with them.

The third real change that we see affecting Canadian corporations during the next 10 years is Canada's changing demographics. An aging population; Asian immigration to British Columbia, Alberta and Ontario; a shrinking pool of young native-born Canadians — these factors are all likely to have real economic impacts.

THE FUTURE CORPORATE WORLD

A general's success is built upon ten thousand corpses.
— Ancient Chinese saying.

TO PROJECT THE FUTURE OF THE CORPORATE WORLD in the context of the changes discussed, we need a framework that captures the essence of corporate behaviour.

What sort of conditioning are corporate managers subjected to? Corporate governance laws and managerial compensation packages are pushing managers to focus harder on increasing share values. Like any other values, these rise when demand outstrips supply. Consequently, managers are being pushed to make their firms' shares more attractive to investors. Since the typical investor is greedy and risk-averse, managers must find ways to increase investors' returns without increasing the risk to which stock ownership exposes them.

How can managers do this? They must find ways to increase corporate profits without taking improper risks. In a competitive economy, making more profits than rival firms is difficult. Competing corporations obtain raw materials, workers and basic financing at similar costs, and sell their products at competitive prices. Competition between them should lead to price cutting until their profits just cover their costs and provide a competitive return to shareholders.[14] Where can a corporate manager squeeze extra profit out of such a situation?

Although Canadian corporations may seek different solutions, we believe their best bet will be to find information-based "edges," some of which can be legally protected by patents, copyrights and trademarks — intangible property rights. Intangible assets are unique knowledge a corporation (or individual) owns that may enable it to meet consumers' wants at a uniquely low cost. By charging a price that is a bit less than the competitive price but still well above its costs, an innovative firm with such assets can steal all its rivals' customers and still make a hefty profit. It can win accolades from shareholders, fatten its managers' pay cheques and flood the public treasury with taxes.

> Prediction: Unique knowledge advantages will become increasingly important in gaining competitive "edges" over rivals.

The flip side of innovation is obsolescence. Obsolete skills have no economic value. In theory, every successful innovation could cause the deaths of many companies without new ideas. The innovator's rivals have now lost all their customers and cannot lower their prices without posting losses. They are doomed to shrink and ultimately fail unless they come up with competing innovations of their own or obtain external funds such as bailouts or legislatively guaranteed markets.

> Prediction: Firms that do not develop unique knowledge advantages will be under increasing economic pressure from competitors, suppliers, customers, creditors and shareholders. Business failures will increase.

Canadian investors, corporate managers and politicians must learn to accept that failure can happen. They must be conditioned to see profit in avoiding failure and imitating success. Only by weeding out corporations with poor governance can good governance come to prevail. This is the way evolution forges our economic institutions. Although it sounds paradoxical, a low business failure rate would actually be disturbing in such an environment. It would suggest that government was intervening to protect poorly governed businesses and thereby slowing the Canadian economy's development of better governance.

An innovative firm with an information-based "edge" cannot rest on its laurels either. If a rival hits upon a different innovation, it may suddenly lose its customers. Shareholder pressure and corporate managers' self-interest should lead to intensified competition to innovate.[15]

> Prediction: Firms that develop profitable innovations will need to invest a large part of their profits in developing further innovations.

This conceptualization of the source of competitive advantage is particularly relevant at the advent of the information age and global-scale economic liberalization. Given the economic importance of informational "edges," innovations in information manipulation are especially lucrative. The demand for information-processing capabilities has remained strong as costs have fallen and supply has expanded. Computerized research has revolutionized fields as diverse as genome mapping and marketing. The multi-year, multi-billion-dollar project to map the human genome is far ahead of schedule as increased information-processing power renders old DNA splicing techniques obsolete. Credit card companies such as American Express can use computers to sort through their customers' purchasing habits, and then target advertising more precisely than was previously possible.

Innovation begets innovation, in an upward spiral that at present appears to have no practical limit.[16] Advances in radio and television manufacturing led to computers. Computer networking and telecommunication capabilities continue to create new approaches to retailing, product design, accounting operations, financial control and banking.

Like Siamese twins, innovation and trade liberalization are inseparable and support each other. Access to foreign markets lets Canadian companies apply innovations to world-scale production. It therefore generates more profits, encouraging further innovation. Also, access to Canadian markets by foreign corporations brings foreign innovations here quickly, forcing Canadian corporations to innovate, obtain bailouts or die. A greater multinational presence

induces domestic companies to increase R&D spending.[17] Domestic companies with successful innovations are doing the equivalent of failing to pick up $20 bills lying on the sidewalk if they do not apply their innovations abroad.

> Prediction: Globalization will beget innovation, and innovation will beget globalization.

This symbiosis between globalization and innovation is the underlying dynamic of our age. The need for large markets to justify the up-front costs of innovation is leading to globalization of technology. The 20th-century technological predominance of the United States is gone, and we believe this to be the most important effect of the basic changes we are discussing.[18]

Of course, not all firms will be successful innovators.

> Prediction: Firms that fail to innovate will be threatened by foreign competitors even in the absence of domestic competitors. They will have a vested interest in opposing trade liberalization.

The Canadian situation is not unique. Non-innovative corporations everywhere will face the same consequences in a global innovation race. Again, cognitive dissonance may lead protectionists to cloak their arguments in pleas for charity on behalf of poor working people, national culture and the like. Of course, proponents of free trade may be equally driven by self-interest and cognitive dissonance. However, we shall argue that the pro-free trade position is more tenable.

Canadian corporations that own valuable innovations will of course view the world quite differently. Entrepreneurs, perhaps especially immigrants, will call for more economic freedom and particularly for free trade. As the population ages and retired baby-boomers become more concerned about cheap goods than about job security, they may be more open than ever to free trade; however, our bet is that corporate managers' lobbying will be harder to resist. Grey power lobbyists will be more likely to demand higher pensions than cheaper imports. If free trade does emerge as a grey power issue, freedom to invest RRSP money abroad is most likely to be the focal point.

> Prediction: Innovative corporations and consumers will benefit from free trade.

We believe the economic pressures pushing innovation are virtually irresistible. Canadian corporations will innovate or die. Consequently, there will be keen competition to hire the sorts of people who can generate innovative ideas. However, employees are free to leave a firm at any time. Accordingly, corporations will be loath to invest heavily in worker training or education

since their competitors might benefit from their investment by hiring their workers away.

> Prediction: Corporations will need highly educated employees but will be reluctant to pay for their education.

AUSTRIAN ECONOMICS: A PRIMER

IN THE PREVIOUS SECTION, we ventured a number of predictions about how corporations' environment will change and how they may respond. Our next task is to consider how these changes will affect other parts of the economy, and how government can deal with them. To do this, we must inflict a few pages of economics on the reader. This is because we strongly believe that government must first adopt a new economic perspective, and that the appropriate perspective supplements traditional economics with the Austrian School.

Standard economics textbooks model a corporation as a "production function." For a given firm *i* the formula is as follows:

$$Q_{it} = F_i\,(K_{it},\, L_{it}\,)$$

Here Q_{it} is the firm's output in year *t*, and K_{it} and L_{it} are the capital and labour it requires to produce Q_{it}[19]. Since an economy's output is the sum of all firms' Q_{it}, the production function approach led economists to assume that economies grow at a rate commensurate with the growth in their capital and labour. In fact they do not. Past data for a Western economy generates a diagram similar to Figure 3. Actual GDP rises much faster than predicted by capital and labour growth rates transformed by production functions.

The view of the corporate world presented in the previous section suggests the answer. It is clear that two variables should be added to the formula:

$$Q_{it} = F_i\,(K_{it},\, L_{it},\, R_{it},\, P_t)$$

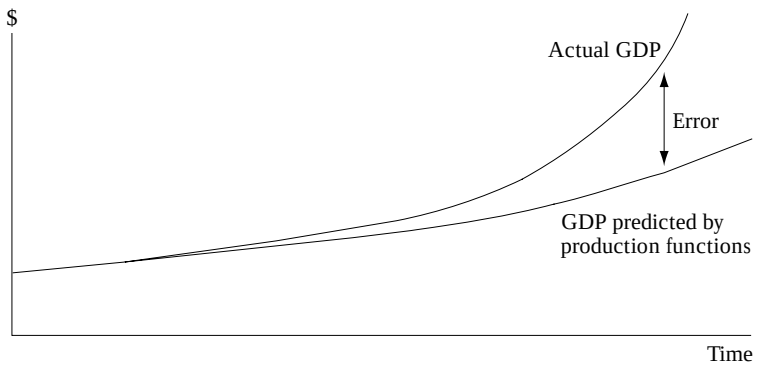
Here R_{it} is the firm's proprietary innovations in period *t*, and P_t is the stockpile of publicly available information. Since today's public information is yesterday's secrets, P_t is the sum of all firms' past innovations.

This representation changes the dynamics of the production function. "Ideas" matter now; they did not in the previous representation. Corporations that develop and implement profitable ideas grow faster than those that do not, even when they have identical capital and labour growth. Capital and labour in firms — and in countries — with ideas, earn more because they are capable of producing more with the same set of capital and labour. Because of this stockpiling of individual ideas into an economy-wide reservoir of knowledge (the attractive term is "spillovers"), both corporate growth and general economy-wide growth measures are higher in economies with such ideas than in economies without them. This is what economists now call *endogenous growth theory*.[20]

The fundamental insight of this approach is that the key to faster economic growth is the "creation" of ideas. That is, governments should aim to foster an environment that rewards the generation and application of useful ideas. An economy that fails to do this will fall further and further behind.

FIGURE 3

GDP AS PREDICTED BY PRODUCTION FUNCTIONS VS. ACTUAL GDP



The real surprise is that academic economists, who are mostly paid to sit around and develop ideas, were so slow to discover their ideas' economic importance. No entrepreneur would find anything at all controversial here. Our economy is built of ideas embodied in concrete and steel. In fact, the economists' profession has been saved by the Austrian School, which thought long and hard about innovations as early as the 1870s, and developed some penetrating insights. The idea of spillovers and the concepts underlying endogenous growth theory are modern representations of these insights. Consequently, a brief tour of Austrian economics is in order to search for other insights that might be applied to our current state.

The basic principles of the Austrian School that speak to the late 20th century are straightforward.

PROSPERITY IS BUILT ON INNOVATIONS MORE THAN ON CHEAP CAPITAL OR CHEAP LABOUR

> *The secret of business is to know something nobody else knows*.
> — Aristotle Onassis (1906–75).

FEW STILL TAKE SERIOUSLY KARL MARX'S IDEA that capitalist economies' successes are based on exploiting labour. Nevertheless, the idea persists that prosperity can be gained by lowering the cost of capital through savings incentives, subsidies to corporations, etc.

The easiest way to see why this idea may be misleading is to look at what corporations decide to do with the capital they obtain, and how corporate financial economists analyse their decisions. A capital investment by a corpo-

ration might involve taking perhaps $100,000 of current profits that could be paid out to investors (e.g. as dividends) and using this money to buy a new machine. The machine produces output that will be sold at a total profit of $14,000 each year for, say, 10 years, after which the machine must be replaced. The corporate financial analyst tries to estimate how much a typical investor would pay for an equivalent 10-year annuity paying $14,000 per year. If the estimated value to the average investor of a return of $14,000 per year for 10 years is $150,000, and the firm can obtain this return on its shareholders' behalf for a $100,000 investment in a new machine, then the machine is a bargain. Acting in the interests of its shareholders, as good corporate governance requires, the firm should undertake the investment. If the value of the annuity had worked out to be less than $100,000, the firm's corporate financial economist would have rejected the investment as financially unviable.

Financial economists call this a "net present value" (NPV) calculation. The machine's net present value is represented as follows:

NPV = market value of the future stream of profits from the machine, minus the machine's cost

The term "net present value" is used because financial economists employ a mathematical technique called a present value calculation to estimate the market value of an investment project's future profits.

In *Das Kapital*, Karl Marx correctly pointed out that in a static competitive economy, net present values (he called them "surplus values") should be zero. Pursuing our example, if many competing firms buy the same machine, they will try to steal customers from each other by cutting the price of the good made with that machine, thereby lowering their profits per unit sold. This can continue until the market value of the stream of future profits falls to $100,000. Marx argued that competition would push all net present values to zero, and that the only way corporations could still continue to prosper would be by cutting workers' pay. This is the famous "exploitation of the masses" that was central to Marx's thoughts.

In fact net present values have not gone to zero, and the flaw in Marx's argument was exposed by the great Austrian economist Joseph Schumpeter in the 1930s. Schumpeter pointed out that a firm with a patent on a machine has no competitors and therefore need not lower the price of the output to keep its customers. Even without a patent, if the machine's way of functioning is unknown to competitors, the firm's profits are secure — at least until its secret leaks out. This is the "information-based intangible capabilities" we referred to in the previous section.

Schumpeter realized that Marx had misunderstood the role of innovation in a capitalist economy. New technologies, new approaches to customers and new ideas in general underlie positive net present values. The machine creates value for its corporate owner because it embodies an innovation — information about how to produce and sell the output, available to no one else.

Proponents of national industrial strategies, government subsidy programs, investment tax breaks and other schemes to provide companies with cheap financing are all falling into the same error as Karl Marx. Subsidized financing (that is, exploitation of savers or taxpayers) is no more the driving force of prosperity than is exploited labour. Indeed, in the midst of global competition, corporate subsidies are beef for foreign consumers and grief for domestic taxpayers.

In the Austrian economist's world, information and its embodiment, innovation, are the true sources of value. This was always so, but in mature capitalist economies it has become so apparent that laymen now speak of the information economy.

The Real Competition in a Capitalist Economy is the Competition to Innovate

> *The reason a lot of people do not recognize opportunity is because it usually goes around wearing coveralls looking like hard work.*
>
> — Thomas Edison (1847–1931).

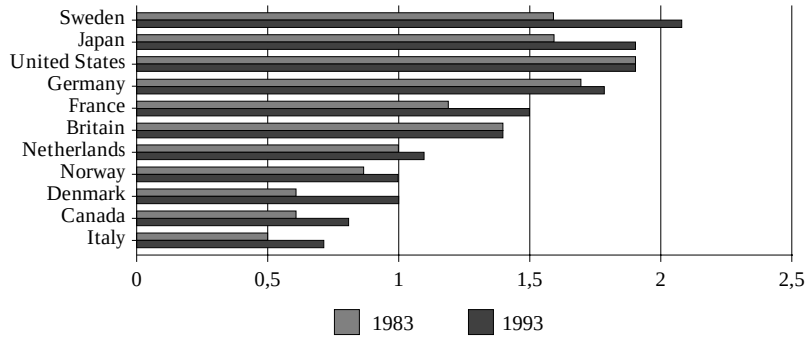
INNOVATION COSTS MONEY. The most obvious expense is that of R&D. Total R&D spending by Canadian businesses rose from $176 million in 1963 to $7 billion in 1995. Total R&D spending by Canadian business, governments, universities and institutions is now close to $12 billion per year. Despite this growth, Canada places poorly among industrialized countries in R&D spending (see Figure 4).

Of course the quality of innovation matters at least as much as the quantity of money spent on it. Nevertheless, the R&D gap could give rise to huge problems since innovation kills those who do not innovate. The first firm to apply new information and develop an innovation can obtain ownership of the information via patent, copyright or trade secret protection laws. This gives it a tremendous economic return, along with a tremendous advantage over its previous competitors. If the innovation is important enough it can change the economic landscape, laying waste whole industries, much as the personal computer all but eliminated the entire mechanical typewriter industry. Joseph Schumpeter called this linkage between innovation and obsolescence "creative destruction." Creative destruction is the primary form of competition in an information economy.

The importance of Austrian economics, and especially of creative destruction, is something of an embarrassment to economic theory, where the point of competition is to push prices to just the right levels so that supply and demand balance perfectly. Innovation, patents and obsolescence are dismissed as side issues.

FIGURE 4

SPENDING AS A PERCENTAGE OF GDP



Source: OECD.

Using standard micro-economic theory, economists have urged governments to nationalize or regulate firms with pricing policies that might not match what competitive economic theory prescribes. Telephone companies, power companies and other utilities had their pricing policies set by public authorities, and they often operated on a "cost plus" basis.

From the viewpoint of Austrian economics, these policies are not only ill advised but pernicious. By locking in profit rates, governments stifled competition to innovate in these industries for decades. Innovations to lower costs make little sense in a cost-plus environment. In a state-owned enterprise, innovation and the consequent disruption of established routine are often unwelcome. This was certainly the case in the socialist countries of the former Eastern Bloc, and Western investors there are still confronted with factories that continue to use whatever technology was in place when socialism was established. Factories in China continue to produce coal-fired steam locomotives in the 1990s. Public ownership and regulation turned these businesses into living museums. In retrospect, it is clear that the Soviet Union's low rate of innovation in all areas except armaments (in that field there was a competitive R&D race with foreign rivals) contributed much more to its demise than did inefficiently set prices.

Although Western state-owned corporations and regulated companies have never been as economically insulated as Chinese engine works, the same problems are evident. Telephones and power turbines changed much less between the 1920s and 1970s than did automobiles, airplanes or music recording.

This is not to say that the way businesses set prices is unimportant. It is, however, a sideshow of diminishing consequence in an information economy. As new information and its use in developing innovations assume greater importance, Austrian economics is likely to continue regaining prominence, and the prescriptive advice of traditional economics is likely to be increasingly questioned.

Capitalism's Success Lies in Bringing Together People With Ideas and People With Money

> *Branch banking … will mean, I suggest in all humility, the beginning of the end of the capitalist system.*
>
> — John Flynn, *The Dangers of Branch Banking*, 1933.

Despite the dire predictions, U.S. states that introduce interstate branch banking show subsequent statistically significant per-capita income rises relative to other states, and this phenomenon appears to be because loans are made of better quality rather than in greater volume.[21] In Third World countries, a more sophisticated financial system is known to lead to higher growth.[22] Why?

People with money often have few good ideas about how to spend it, and people with good ideas often have little money to implement them. In business terminology, wealthy people often lack good business ideas and entrepreneurs often start out poor.

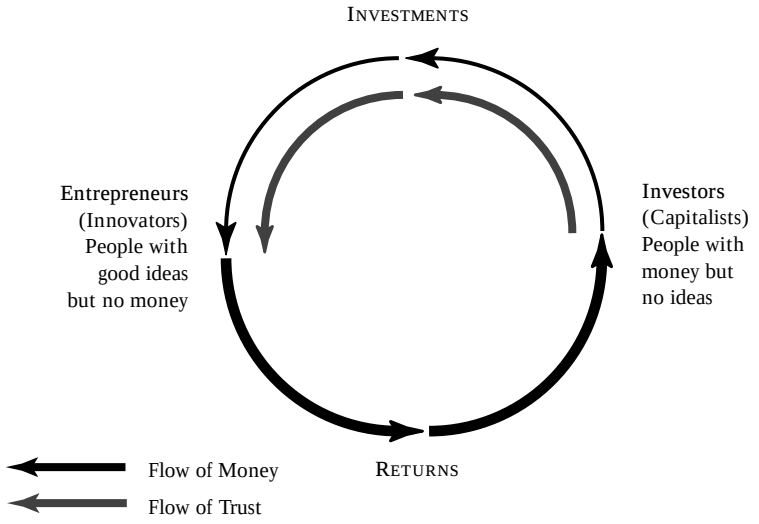
The crowning achievement of modern capitalist economies is that they create an environment where wealthy individuals freely give money to entrepreneurs with no guaranteed return, and where successful entrepreneurs actually pay financiers back. To someone from any pre-capitalist economy, and to visitors from many modern post-socialist or Third World economies, this situation seems not only remarkable but incredible. Why do corporate insiders not simply abscond with the money?

The answer is that capitalism has fostered a previously unheard-of level of trust. This is surprising to most economists, who regard things such as ethics and trust to be the fodder of "softer" disciplines. Yet trust and ethics underlie the most basic functions of capitalism.

In pre-industrial economies, one did not trust strangers. Trust was extended only to family members and long-time acquaintances. Businesses were limited in size by the funds an entrepreneur's relatives or close friends could supply. Most economic activity was undertaken by family businesses, and financial dealings with an outsider were acceptable only after a long-term relationship was established. Business gurus of late have emphasized the importance of relationships in business dealings in Asia and elsewhere, presenting these customs as cultural differences. In fact, they are historical differences. Relationships were central to business dealings in the West until modern times.

FIGURE 5

THE FLOW OF MONEY AND TRUST IN A CAPITALIST ECONOMY.
INVESTORS GIVE ENTREPRENEURS MONEY AND TRUST;
ENTREPRENEURS LATER GIVE INVESTORS MORE MONEY IN RETURN



In modern capitalist countries, trust does not come about because of higher morality. It comes from a credible and reasonably efficient legal and political system, and especially from securities law, bankruptcy law, contract law and fiduciary liabilities. These and other parts of our legal system have developed for the explicit purpose of forcing strangers to be trustworthy. The laws give investors recourse against fraudsters, and this makes investors more willing to entrust their savings to people they do not know well. The result is that capital becomes available to legitimate entrepreneurs. In short, capitalist economies are set up so that people's self-interest will lead them to act honourably (to avoid punishment), and so that they become conditioned to act in this way. Figure 5 illustrates the central role of trust in the most basic metabolic process of a capitalist economy.

The vitality of the flow of trust and money is a primary measure of the health of a capitalist economy. Trustworthy corporations, financial markets and financial institutions, including branch banking, appear to improve capitalism's circulation. This is why good corporate governance has moved to the top of many regulatory agendas.

THE COST OF CONTINUOUS INNOVATION IS INSTABILITY

> *Every act of creation is first of all an act of destruction*.
> — Pablo Picasso (1881–1973).

JOSEPH SCHUMPETER CALLED "CREATIVE DESTRUCTION" the innovative cycle that underlies the prosperity of capitalist economies because the economic destruction triggered by innovations is as important and essential as the creativity that goes into them. Creative firms maintain or increase their profits, stagnant firms' profits fall and corporate survival of the fittest unfolds as it should.

A high rate of innovation logically requires a high rate of obsolescence of equipment, companies, industries and training. In economists' jargon, "depreciation rates rise in response to innovations." This means machines must be junked before they wear out, companies can fail despite responsible management, and industries can falter despite healthy competition. Most disturbingly, people's investments in skills, careers and education can be wiped out virtually overnight.

This is a potential opportunity for government in the coming decade. Can people's lives be made more secure without destroying the engine of creative destruction? Yes, but it must be done carefully, and we return to this issue in more detail later. Ill-informed public policy here could kill the genetically engineered goose that lays the silicon eggs.

GOVERNMENT'S FREEDOM OF ACTION IS LIMITED IN A GLOBAL AUSTRIAN ECONOMY

> *There will not be any violations to speak of*.
> — Col. Daniel Porter, Supervising revenue agent in charge of enforcing prohibition, 1920.

GOVERNMENT POLICIES THAT DO NOT ACCEPT the reality of human nature and economic laws cannot prevail. In a global economy where the reach of national governments is limited, there is great profit in helping people evade their government's grasp — as the Bronfmans, the Kennedys, and others showed during the 1920s.

We believe the world economy is becoming a global Austrian economy. Firms compete with rivals around the world to innovate, and nations compete to host the most innovative firms. Governments of rich countries increasingly see high-technology industries as a way to maintain their people's standards of living in a world where unskilled labour is very cheap. Switzerland is a centre of pharmaceuticals research, Holland of electronics, and governments everywhere strive to find a high-tech niche.

However, the same Austrian perspective of economics that points to innovation as the engine of growth also declares that governments have very limited freedom to influence such matters. The Austrian perspective on public-sector economics has led to a number of insights, among them "public choice theory," which stresses lobbyists' influence and the dynamics of politicians' and bureaucrats' self-interest. In a nutshell, the idea is that politicians, bureaucrats and lobbyists all have the same human nature as everyone else, and that government should be designed with this in mind. For the present purpose, we need only a few basic essentials for government in an Austrian economy.

Basic Principles of Public Policy in an Austrian Economy

1. Government policies should assume that politicians, bureaucrats and people in general have the same human nature. They are self-interested social beings.

2. Governments feel pressure to find ways of encouraging innovation. R&D subsidies (or less politically vulnerable substitutes) will be increasingly popular but are probably not desirable.

3. Policies to correct "non-competitive prices" should be resisted. Setting prices at regulatory hearings creates no incentive for regulated firms to innovate. Lower costs would simply reduce their base for cost-plus pricing or lead to lower set rates in the future.

4. All potential government policies must be evaluated according to how they affect incentives for innovation.

5. Corporate governance laws and practices, which set the level of trust in financial markets, are important.

6. A higher innovation rate necessarily implies a higher obsolescence rate. This creates economic instability, which has real economic costs.

7. In a global economy, a small country such as Canada cannot have innovation policies differing substantially from those of its trading partners.

The most important of these points is probably the first. Politicians and bureaucrats are self-interested social animals like the rest of us. They want to accumulate wealth and understand the need to trade favours. Politicians need funding during elections and at other times. One way they can ensure that they get what they need is by giving large amounts of public funds to likely backers,

or by passing favourable legislation that will generate large profits for probable supporters. These then recycle the money as private election campaign contributions, etc.

Economists call the private individuals who twist public policy in this way "political rent seekers" and their profits "political rents."[23] There is overwhelming empirical evidence that rent seeking occurs on a scale that has macro-economic implications. Rent seeking is known to distort trade policy, public pension fund management and virtually every other aspect of public-sector management. A dedicated and independent public service, generally honest politicians and a free press may limit the scope of rent seeking in Canada but they do not eliminate it.

Political rent seeking is most damaging when corporate managers become conditioned to expect bailouts. Their conditioning may then lead them to respond to competitive pressure by lobbying harder rather than by innovating more.

Information as a Good With a Price

Can governments encourage or discourage innovation? Innovations are information cast in steel and plastic. To understand the economics governing innovation, it is necessary to understand the economics of information.

The value of information, and of the innovations that derive from it, cannot be determined from the same economics that governs the value of ordinary goods. This is because of two special characteristics of information.

Information Is Hard to Trade

> *A thing worth having is a thing worth cheating for.*
> — W. C. Fields (1879–1946).

"I have a wonderful marketing idea that would be worth millions to your firm, and I'll sell it to you for only $1 million!" says the idea man. "Let's hear the idea first," says the CEO. "OK, you just have to...." says the idea man. "Brilliant!" enthuses the CEO. "So how about my million dollars?" presses the idea man. "Oh," says the CEO, "By chance I thought of the very same idea myself — amazing how simultaneous discoveries are happening all the time these days, eh?"

A buyer cannot look over a piece of information before buying it, the way she can look over a used car or an electronic appliance. She cannot assess the value of a piece of information without acquiring it. But once the buyer has the information, the seller has lost possession of it and has no legal right to repayment under many circumstances. Information weighs nothing, has minimal transportation costs and therefore is very difficult to keep in one place. All this makes it very difficult to buy or sell. This "market failure" removes trading of information, or information gelled into innovations, from the normal framework that governs other economic transactions.

Patent and copyright laws make some sorts of information alienable under some circumstances, but they are by no means a solution. First, patent and copyright infringement in many parts of the developing world, especially in China, fuels rapid economic growth. It is highly unlikely that these countries will enforce international patent or copyright conventions except occasionally, when they need to influence the United States or other Western countries. Second, reverse engineering lets rivals dissect innovations and contrive alternative constructions that circumvent patents. And finally, many types of innovation (for example the idea man's marketing plan) can be neither patented nor copyrighted.

Firms often devise clever ways to sidestep this market failure. For example, Coca-Cola keeps the formula for its product a heavily guarded secret, while Microsoft is increasingly including its innovation, software, as part of a package

deal with a more tangible asset, a computer. Marketing and secrecy strategies can mitigate but not cure the problem.

Information Has Many of the Properties of a Public Good

> *The wonderful thing about software is that you only need to buy it once, then you can copy it as much as you want.*
>
> — Russian "biznessman," private conversation, 1995.

Students in introductory economics courses are taught about private and public goods. Private goods, such as apples and pizzas, can be consumed only once. Also, private goods cannot be consumed on the sly: if you eat a piece of pizza, the evidence of your deed is there for all to see in the form of a wedge-shaped gap in the cheese-covered round. The process of consuming private goods destroys them.

Consumption does not destroy public goods and so they can be consumed over and over by different people. They can also be consumed without leaving any evidence. My use of a public library does not prevent you from using it, nor does it change the library enough that you could tell whether I had ever used it or not. Other public goods, such as street lighting, roads and parks, work in the same way.[24]

Public goods provision is usually most efficient when it is for a large number of users. A small city cannot afford as big a library as can a large urban centre. The small city has fewer users to share the cost. Economists call this "increasing returns to scale." The more people who consume the public good, the greater its value to the economy.

Information is usually a public good. If I get a piece of information, that does not destroy it. The blueprints are still there to be copied by someone else.

Since information is a public good, it must have increasing returns to scale too. A piece of information useful to many people is of more social value than a piece of information useful to only a few. An innovation that improves the efficiency of every steel mill in North America is of more value than one that improves the efficiency of only a few mills by the same amount.

The Economics of Information and Innovation

> *A foolish consistency is the hobgoblin of little minds, adored by little statesmen and philosophers and divines.*
>
> — Ralph Waldo Emerson, 1841.

The economics of information is a set of contradictions. Since information is a public good, as many people as possible should be using it. But information is hard to buy and sell, and so innovators want to keep it secret.

The purpose of patent laws, copyright laws and other intellectual property rights is to convert information from a public good (its natural form) into a private good. Intellectual property rights restrict the use of a piece of information to its legal owner. The owner can then sell or grant access to the information, and the law backs up his authority and claim to payment. Here is the policy dilemma in a nutshell: s*tringent intellectual property rights increase innovators' returns but reduce the innovation's use; weak intellectual property rights reduce innovators' returns but increase the innovation's use*.

Strong protection of intellectual property rights means large and secure profits for innovators, and the laws of economics imply that the result should be more innovations. Obviously, this is only true up to a point. If innovations are too well protected, successful innovators will have less incentive to invest in further innovations.

One way to transcend this contradiction is to have really large firms. This is the logic underlying the refrain that Canadian firms must be large to compete in the global economy. Large firms can apply innovations quickly to large-scale operations. They also typically can use profits from previous investments to finance new investments in R&D. Finally, they have more resources to protect their intellectual property rights in court.

Despite this logically pleasing solution, many researchers feel that large bureaucratic firms are poor human environments for innovators. This is in part because large firms' hierarchical management and emphasis on routine both discourage innovation, just as central planning did in command economies. Innovation is an individualistic undertaking and fits poorly into corporate organizational diagrams. One prominent CEO has likened the task of managing researchers to herding cats. In contrast, the more flexible and informal environments of smaller firms may be more conducive to ideas. Also, although large firms may be in better positions to retain intellectual property rights, the innovators that work within them may not be. An employee whose reward for devising an innovation is a 2-per-cent bonus has less incentive to be creative than an entrepreneur who retains full ownership of the innovation. There are, therefore, good theoretical reasons not to rely on larger corporations as radical innovators.

Public Policy in an Information Economy

We have outlined some changes that we expect in the corporate environment, and have imposed upon the reader a few pages of Austrian economics and a discussion of the unique economic properties of information. We are now ready to examine some popular public policy prescriptions and, hopefully, to separate the penicillin from the snake oil.

Financing Initiatives From Small Firms

> *If you're small, you've got to be good!*
> — Billie Jean King (1943–).

One perennial public policy proposal is that governments should subsidize small businesses to foster innovation. The previous section showed how large and small firms both have advantages and disadvantages as focal points for innovation. We are skeptical because of public policy basics point 1: human nature.

Managers of small corporations often argue that small businesses have trouble obtaining financing in Canada. The reason private-sector financing is expensive for small innovative firms is because investors often cannot distinguish good innovators from poor ones, or even honest innovators from frauds. This sort of financing exposes investors' money to high risks. Since investors are risk-averse, high-risk projects must promise them very high returns to be attractive. For example suppose 9 out of every 10 high-tech firms fail and thus generate no returns. For the average return on all 10 projects to be a modest 15 percent, the sole successful project must generate a return of 150 percent. Initially, a venture capital fund would require a projected 150 percent return on all the projects it finances, but it would expect to realize a return of only 15 percent after 90 percent of its ventures fail. This leads to perceptions by businesses of an overly restrictive financing policy.

The basic problem is an information gap, and consequently a low level of trust and high perceived risk. Investors cannot tell good innovators from poor ones, or even honest innovators from crooks. We see no innate advantage governments have that would let them succeed where private investors such as banks, venture capital funds and the like fail.

Nutty inventors and scam artists aside, the vast majority of small firms produce no viable innovations and so general subsidies for small firms are unwarranted. Taxing individuals and large employers to subsidize shopkeepers, restaurant owners and other typical small business owners does little to foster important innovations on a macro-economic scale. Since such a policy would also attract fraud and subsidize useless innovations, it would appear economically inadvisable. It may be appealing to politicians anxious to attract the support of small business people, but it serves no higher purpose.

Instead, the best way for the government to help small firms with genuinely valuable innovations grow rapidly is by fostering more competitive, efficient and innovative financial institutions and markets. In an Austrian economy, we saw that the finance business is especially important because it brings together people with money and people with ideas.

Among the ways of doing this is establishing credible, well-enforced securities laws, meaningful disclosure rules and sound corporate governance laws for small as well as large firms. Since small firms are often financed with loans, protecting creditors' rights is a crucial component of good corporate governance legislation in this context.

But competition is perhaps more important. Private venture capital funds are a huge business in the United States but not in Canada. Our financial institutions see no reason to expand into such a risky area when profits from captive investors are there to be gleaned. Canadian mutual funds can charge higher management fees than U.S. funds and impose more onerous load restrictions yet still prosper. To many, Canada's banks are a paragon of cosy corporate safety — too big to fail and exploiting the fact to the utmost. Allowing Canadians to invest their savings and pension fund wealth abroad with no tax or other penalty would perhaps bring some needed life to Canadian financial markets, and make both Canadian investors and small Canadian corporations better off. The cost of a lazy financial sector is simply too high for the current situation to continue.

> Prediction: Business groups will lobby for subsidies to small firms. Government should resist. If viable small firms cannot raise funds, the real issue is that banking and finance industries need more competition.

INDUSTRIAL R&D POLICY

> *The income tax returns would indicate that there is untold wealth in Canada*.
> — Bob Edwards (ed.), *The Calgary Eye Opener,* 1920.

IF SMALL FIRMS ARE NOT A SPECIAL CASE, should government not subsidize all corporate R&D? Again, governments' options for supporting R&D are limited, first by the growing unwillingness of Canadians to pay high taxes and second by increasing global integration. The first effect is fairly straightforward. Industrial policy generally means taxing consumers, investors and some firms to subsidize other firms. Taxing individuals more heavily is politically unattractive, and so industrial policies must tax business. In a global economy, business can move to where taxes are lower. The move can be direct, with a company relocating to a friendlier fiscal regime; or it can be indirect, with a Canadian company losing business to foreign firms having lower tax costs. Globalization restricts governments' ability to undertake such policies.

In the information age, governments are no longer monopolies that can move supply and demand curves back and forth to adjust the economy. Governments are in a competitive business to provide the best assortment of public goods for the lowest taxes. It should be emphasized that competitive government does not mean small government, any more than competitive auto making means small autos. Arkansas has lower taxes and fewer public services than Minnesota, yet Minnesota firms are not rushing to relocate to Little Rock. Presumably, the better services in Minnesota are worth the taxes.

Is an industrial policy worth higher taxes? The evidence is unambiguously negative. Industrial policies in every country, including Japan, have been largely ineffective and have invited corruption.[25] The corporations that participated often became very innovative only at extracting government funds.

In fact, some economists argue that innovation in extracting money from government can actually crowd out real innovation.[26] Innovators understandably go where the profit is. If coming up with a new proposal to get a government subsidy is more lucrative than building a new plant, the entrepreneur will hustle for the subsidy and forget the plant.

Several subtler arguments for a government role in fostering R&D are based on various facets of economic theory. The firmest of these, which have long been part of mainstream economics, propose a key role for public education in training the skilled technical workers and researchers that a knowledge-based economy needs. Firms are unlikely to train workers when they are not sure the workers will remain with them. No one from Firm A wants to explain that the path-breaking innovation of its rival, Firm B, is due to the superb training that Firm A gave a former employee. However, the theoretical arguments justify subsidizing schools, colleges and universities, or giving students tuition vouchers. They are not arguments for subsidies to firms conducting R&D.

Another set of theoretical arguments highlights the distinction between basic research and research with apparent commercial applications. Basic research is often a necessary foundation for later applied work. However, *the financial returns from basic research are usually scant*. This is an argument for subsidies to university research and research institutes. It is, again, not an argument for subsidies to businesses. This is because it is usually in the public interest to have the results of basic research published as widely as possible. Its societal value is lessened when basic research is the property of one firm only.

Yet another set of theoretical arguments assumes that shareholders have short time horizons, thereby limiting a firm's ability to undertake long-term investments such as R&D. Empirical studies using U.S. firm-level data find that shareholders value long-term investments positively.[27] Press announcements of increased R&D spending by firms are associated with stock price increases.[28] It should be noted that such studies use only R&D announcements made on days when press reports contain no other new information about the firm, such as Defense Department subsidies, changes in marketing strategy, etc. Other U.S. studies show that a corporate history of R&D spending is closely correlated to

high *q* ratios (roughly, market-to-book ratios).[29] This is true both in industries that receive Defense Department subsidies and in industries that do not. In short, shareholders in the United States like R&D spending and would like to see more of it. Thus, theoretical economic models positing a role for government on the basis of a short-term bias in financial markets are on rather shaky empirical ground. At best, one can argue that patent law limits the viability of long-term R&D investments by ending firms' property rights over innovations after 20 years (the patent life specified as an international standard under the WTO). R&D that would not lead to financial gain within that time is understandably unattractive to individual firms, and thus might require government support.

Another set of arguments is based less on economic theory than on interpretations of the culture of Japan and related countries; it calls for government to orchestrate economic growth through an "industrial policy." In the Western world, governments are notoriously poor at picking winners. Even Japan, which once had a unique reputation for close co-operation between industry and government, is sullied by closer inspection of the hard facts. In the first-ever econometric study of the details of Japan's industrial policy, Beason and Weinstein (1995) examine the Japanese government's subsidy decisions in detail; they conclude that most subsidies went to losers, and that the performance of subsidy recipients actually declined after they received subsidies.[30] The reputation Japan enjoyed for running an effective industrial policy was due to selective information release for political reasons by the Japanese government, and to the gullibility of some Western academics. Theoretical economic models calling for government strategic planning are also on slippery empirical footing.

Other economic theories propose a role for clusters of R&D firms. The intuition underlying these theories is that a concentration of skilled experts is needed for high-tech firms to be viable. R&D ventures are risky, and moving home and family long distances to other jobs is costly for all concerned. Skilled R&D workers are attracted to clusters of similar firms because the failure of one employer is less catastrophic when other potential employers are nearby. New firms are attracted to clusters because it is easier to hire skilled workers there. People who live close to each other talk, share ideas and inspire each other. Economists call this positive feedback loop of economic growth a "spillover" effect. There is some empirical evidence that such effects are real and economically important, at least at some times for some industries.[31]

Last, we should not dismiss out of hand the argument that, since everyone else is doing it, we have to also. Despite the highly tenuous nature of arguments for government subsidies to corporate R&D, such subsidies are ubiquitous. If Canada is to attract and retain innovative businesses, we have to treat R&D-intensive firms as well as competing jurisdictions do. Although a good education system, good infrastructure, and a sound fiscal and monetary policy go some distance in this regard, some sort of R&D subsidy program might be necessary as well. However, a better approach would be to try to get such subsidy programs banned totally under international trade conventions. Unfortunately,

international agreements of this sort are unlikely to materialize in the near future. Indeed, even the most recent Uruguay Round of GATT agreements still allow subsidies for "economic development," under which heading governments can easily hide various forms of R&D subsidies.

From an Austrian economics perspective, it is not improbable that R&D subsidies are on many political agendas because corporate managers and politicians regard them as a politically acceptable opportunity to trade favours with each other. The politician can arrange an R&D subsidy now, and the corporation can make a smaller (but much-needed) campaign contribution later. Although it sounds jaded to the layperson, this sort of argument is quite credible among public finance economists.[32] Of course, stories about myopic shareholders, innovative small firms and so on do much to ease everyone's cognitive dissonance.

Another possibility is that R&D subsidies become "beggar thy neighbour" policies, where different political jurisdictions try to steal each others' R&D-related firms. Attracting many high-tech firms certainly adds to a politician's glory, but if these are not "new" high-tech firms the taxpayer's sacrifice has no value for the global economy as a whole. If other jurisdictions counter with even more tempting subsidies and lure the high-tech firms to relocate again, there is not even a local benefit. It is clearly not in Canada's interests to promote such a competition. We could not win. Our taxpayers are less docile than those of European countries, and our tax base is much smaller than those of our chief trading partners.

> Prediction: Lobbying by corporations and corporate interest groups for direct government R&D subsidies will intensify over the next decade. Governments should resist this pressure, except in the following cases:
>
> 1. Government can foster innovation by subsidizing education and training, something corporations are understandably reluctant to do so since employees who benefit may subsequently leave the firm. The funds should be paid to individuals, not corporations or educational institutions. Government should press educational institutions to improve their governance.
> 2. Policies to foster "clusters" may be defensible. Again, the emphasis should be on subsidizing training and education in specific areas for individuals, not on providing subsidies to corporations.
> 3. Government funding of basic research is also defensible. In a tighter fiscal environment, it may make sense to scrutinize current granting procedures to find more accurate and cost-effective ways of allocating government support than the procedures now in use.

PUBLIC-SECTOR R&D POLICY

Money is the mother's milk of politics.
— Tip O'Neill, former Speaker, U.S. House of Representatives.

SINCE INFORMATION AND INNOVATIONS HAVE PUBLIC GOOD PROPERTIES, should they not be produced using public money? Why can't the state finance research and then license innovations to Canadian corporations for minimal fees?

The first problem with this approach is that it severs innovation from market signals that encourage innovation where it is needed and discourage it elsewhere. Free markets are surprisingly effective information-processing devices. Traditional economics emphasizes markets' roles in adjusting supply and demand to efficient levels.

However, Austrian economics suggests that market prices' more important information-processing role is directing innovation. If copper is rare but in demand, the resulting high price makes valuable an innovation in refining lower-grade ores and innovative substitutes for copper. Privately financed innovation seeks out valuable niches and therefore works to satisfy public needs. State-financed research could turn up an innovation in copper-refining, or an innovation that increases demand for copper — or neither.

The second problem is that researchers, politicians and bureaucrats are self-interested social animals like the rest of us. State-sponsored applied R&D can be a political slush fund par excellence. The information gap that makes good innovators hard to distinguish from poor ones and frustrates private-sector R&D financing now becomes an advantage, at least to the insiders. Politicians can direct funds toward supporters, and who is to say they are not potentially good innovators too? In short, there is too much scope for rent seeking in a large-scale industrial policy.

One of government's greatest successes in the 20th century is universal public education. This role for government is not seriously questioned, even by the most ardent free marketers. We believe educational reform in the coming years will have to deal explicitly with the problem of entrenched vested interests and rent seeking in the public education establishment. De facto voucher programs have been implemented successfully in Edmonton and other cities, and appear to counter such problems nicely. Perhaps voucher programs should be used more widely in public and parochial schools, and perhaps similar programs should be considered for advanced education.

Prediction: New government programs will increasingly be assessed for their rent-seeking vulnerability.

1. Government financing for education, training and basic research will continue, but pressure will grow to limit rent seeking by entrenched vested interests.

2. Large-scale government funding of applied R&D will be too prone to rent seeking to gain the favour of honest politicians, and too conspicuous to gain support from corrupt politicians.

There may be ethically defensible reasons for government to seek a wider use of new technology than market forces allow. For instance, there may be a social benefit to making generic copies of patented drugs available. An alternative use of government funds toward this end might be to buy patents from innovators at a market price and then make the technology freely available. This approach rewards the innovator while allowing widespread use of the technology. It creates some scope for patronage through patent purchases at inflated prices, but it is more transparent than standard subsidy programs and therefore less open to abuse.

Fiscal Policy

> *The production of too many useful things results in too many useless people*.
> — Karl Marx, *Economic and Philosophic Manuscripts*, 1844.

Traditional economics presents fiscal policy in an equality-versus-efficiency trade-off. Taxes distort prices and therefore the allocation of goods, but if the government redistributes the money, equality is enhanced through social assistance programs. Tax policy and government spending must reflect the voters' preferences in this trade-off.[33]

In an Austrian economy, this view misses the point entirely. The trade-off is not between efficiency and equality but between innovation and stability. High incomes go to innovators; those with low incomes are the obsolete, the losers in the process of creative destruction. Equality supported by high and progressive taxes is essentially partial expropriation of innovators' returns (i.e., of their intellectual property) to compensate those whose skills or other investments have been made obsolete by innovation.[34] This is an indirect way of weakening intellectual property rights.

As macro-economists have learned, fiscal policy is not really a purely discretionary variable. Government spending and tax rates are often political racquet balls. Proportionally, Canada had a larger postwar baby boom than any other industrialized country.[35] As Canada's baby boomers age, there may be repercussions. In their teens and twenties, when baby boomers were in low tax brackets or untaxed niches of the economy, such as entry-level work or university studies, they tended to have leftist views. When they began paying taxes, their views shifted rightward. Cognitive dissonance may cause the baby boomers to rediscover the values of the 1960s when they are close to retirement, and it is in their economic self-interest to do so. This shift could precipitate a period of higher taxes and higher spending, which might compromise Canadian firms' ability to innovate at a globally competitive rate.

Prediction: The political left will espouse high income taxes and public employment or support for those made obsolete by innovation. The approach may cause leftists some consternation as they will be arguing for greater stability.

1. A small country will not be able to set a "socially optimal innovation rate" as a matter of public policy, any more than it can set traditional macro-economic variables such as interest rates. If Canada's economy is to be competitive in general, its innovation rate must be competitive with that of other countries.
2. If high income taxes push innovators out of Canada and/or lower the country's innovation rate by reducing the returns to innovators, there could be heavy costs to bear in the longer term.

The more Canada can resist the temptation to punish winners and reward losers, the faster it will grow. If income redistribution is important politically, some way should be found to excuse innovators. Perhaps more reliance on consumption taxes, wealth taxes or inheritance taxes should be considered. These taxes may also have negative effects but they are less directly targeted at innovators than is a steeply progressive income tax. At the very least, these options deserve more serious study.[36]

Conservative rightists and leftists may be uncomfortable bedfellows in arguing for high income taxes. Yet old-money conservatives see high income taxes, both personal and corporate, as ways to lock in their positions. (They vigorously oppose wealth and inheritance taxes, however.) Lowering the innovation rate is a way for them to maintain the value of their assets, as well as their social and political positions.

The full implications of fiscal policy issues in an Austrian economy are beyond the scope of this paper. Our intention here is merely to show that the issues must be approached from a fresh perspective in the information age.

MONETARY POLICY

The best way to destroy the capitalist system is to debauch the currency.
— John Maynard Keynes, *Essays in Persuasion*, 1931.

NOWADAYS IN THE ADVANCED INDUSTRIAL ECONOMIES, the purpose of monetary policy is to avoid inflation. Before 1979, monetary policy was a way of avoiding deficits. When governments spent more than they took in, they simply printed enough money to make up the difference. Keynesian macro-economists called this an "accommodative" monetary policy. The result was, unsurprisingly, inflation. When public concerns about inflation became politically important, accommodative monetary policy was replaced by the current approach, and the age of deficits began.

Might accommodative monetary policy and inflation return? Many politicians chaff at excessive fiscal discipline and also believe the public's memory to be short. There will be calls for accommodative monetary policies and there will certainly be calls for generally looser monetary policies.

A higher business failure rate is a necessary by-product of a higher innovation rate. Business failures may be misinterpreted or misrepresented as indicating weakened aggregate demand. Corporate failure in the context of an Austrian economy is indeed a reflection of weakened demand, but only for the products of firms that have failed to innovate enough. Monetary stimulation will not solve the problem.

Indeed, inflationary monetary policy may actually worsen it. When corporations evaluate new capital expenditures (such as building new factories), they forecast the prices of their inputs and outputs over the expected lifetime of the new assets. High inflation makes this difficult to do. Inflation is theoretically a uniform increase in all prices and wages, but in practice it is nothing of the kind. Some prices and wages rise quickly while others fall behind, only to overtake the first batch a few years later. The instability in relative prices, along with tax distortions created by inflation, makes predicting prices hard.

Good corporate governance means that corporations must act on behalf of their shareholders. Shareholders are happy to add high-risk investments to their portfolios if they get high returns. However, inflation increases the risk of corporate investments but does little to change the real returns.[37] All told, capital expenditures are riskier and no more lucrative in high- inflation economies. This is why corporate investment declines in periods of high inflation. Such a situation would only further compromise Canada's competitive position.

> Prediction: Political support for a low inflation policy will remain strong. Consumers fear inflation. Baby boomers, within sight of retirement, are heavily investing in the stock market. High inflation is correlated with stock price declines, and so it would risk their wrath at the polls. Innovators and innovative firms dislike inflation because it makes forecasting harder. The returns from future use of an innovation become more uncertain, and thus corporations are less willing to invest in innovations. Governments face pressure to lower taxes and increase spending, and thus to incur budget deficits; accordingly, they will see increasing appeal in the idea of monetizing those deficits with a bout of inflation. Any future bout of inflation would have to be large enough to erode the value of government debts substantially, but quick enough to be over early in a government's term of office. Given the Bank of Canada's structure, such a situation would seem unlikely.

Again, monetary policy is not normally thought of in terms of its effect on innovations. We do not claim that our interpretation is the final word; we merely point out the need to think harder about the link.

TRADE POLICY

> *It was floated through on champagne!*
> — Taunt by protectionists against reciprocity, 1854.

MANY CANADIANS SEEM UNCOMFORTABLE with the idea of free trade. We speculate that this is because Canadians, especially those who style themselves progressives, are actually deeply conservative: they dislike change and the instability it brings. The basic link between trade and innovation (discussed earlier in this paper) may partly explain why free trade is so contentious an issue. Free trade favours innovation and protectionism favours stability. Nationalism remains foreign to most Canadians. We suggest that nationalism is not the real issue in free trade debates. Instead it is a handy peg on which defenders of vested interests hang their cognitive dissonance, fooling a few deluded souls.

This is unfortunate because it obscures a deep and important question. What is the proper trade-off between innovation and stability? Is there an "optimal" amount of protection? These are difficult and (thus far) little-studied problems, yet they are important. Despite economists' limited grasp of the issues, the United States made international co-operation in enforcing intellectual property rights a key part of the recent WTO agreement.

> Prediction: Most corporate lobbying on trade issues will be by non-innovative firms seeking protection. Lobbying politicians will be the highest-return investment open to them. Innovative firms will have better uses for their money, such as R&D and capital plant expansions.

SOCIAL POLICY

> *So here is the Great Society. It's the time — and it's going to be soon — when nobody in this country is poor.*
> — Lyndon B. Johnson, 1965.

OVER THE YEARS, GOVERNMENTS HAVE ACQUIRED HUMILITY. However, there are clearly social policy problems in an information economy. The flip side of a high innovation rate is a high obsolescence rate. Workers at non-innovative firms will be hurt by their managers' failures when their corporations sink. We argued earlier that bailing out such corporations is dangerous because it reduces

the return to innovation by preventing innovators from gaining market share[38]; it also may condition managers to expect bailouts.

It is critically important that government bail out neither corporations nor their managers. Social policy should properly focus on the individual workers affected. If the most cost-effective way to assist them is to keep their employer afloat, this should be done as part of a bankruptcy procedure. The managers and shareholders of the company should be removed from the picture, and the creditors should take over. If liquidating the business is more attractive to creditors but the government wants the business to remain operating, it should require the creditors to sell the business as a going concern and then compensate them for the losses thereby created.

> Prediction: Innovations will put people out of work. Workers will find that skills they have invested heavily in developing have suddenly lost their economic value. Calls for government action to compensate them may be ethically irresistible. Compensation should be to workers, not corporations or their top managers.

The links between social policy and innovation are clearly important and merit much more study than they have received. We believe social policy in coming years will increasingly become an inseparable companion of innovation.

Canadian Corporations in the Global Information Economy

Snake Oil

Cures Palsies, Cramps, Constipation and Baldness
— Advertisement for Carlton's & Fs.' Miracle Tonic, 1895.

Many corporate managers are dangerously dependent on routine. They have been conditioned to believe that management techniques they have relied on in the past are optimal, and have given little thought to why those techniques worked and what might happen under different circumstances. Firms run by such managers will face severe pressure. The managers may understandably panic and seek quick fixes.

> Prediction: Desperate managers of non-innovative Canadian corporations will invest millions in implementing the untested ideas of management gurus in hopes of miracle cures.

Corporate Culture

Without freedom, no art.
— Albert Camus, interview in *Demain*, February 21, 1957.

The laws of economics, based on the principles of human behaviour listed in the first part of this paper, are quite clear about how to fix an ailing corporation: develop a way of producing something consumers want at a lower cost than any other firm! But doing this is difficult and requires money; it also may require hierarchical changes in the way the firm is run; and so it is politically unpopular within many corporations. As we said, this is a good decade for the gurus.

The only really reliable corporate advantage in an information economy is the ability to collect, process and digest information continuously to create innovations. This takes the combined effort of every part of a company: research, marketing, finance, production workers, etc. How? Let us not forget the power of self-interest and the innate tendency to co-operate. When a company is run like a command economy, its demise in the innovation race may be predicted, just as Hayek predicted the demise of command economies. Current thinking is that a company should have an organizational architecture that rewards people for taking initiative, protects individual property rights and enforces rules of behaviour promoting effective co-operation. In short, the more a firm generally mimics a market economy, the better its chances of prospering in the information economy. The theory is that a free market is an efficient information-processing and information-generating machine for satisfying

consumers' wants, and that precisely the same words describe a successful company in the information age.

No one knows precisely how to perform this trick. Firms are trying employee empowerment, continuous workshops to facilitate exchange of ideas and information, entrepreneurial encouragement and other approaches. Some corporations have even taken the prescription to turn the firm into a market economy literally. They have turned to franchising: they allow employees to form their own subsidiary companies to do the work they previously did for the parent company.

As of now, no empirical evidence exists as to which approach works better for which sorts of companies. While the right governance system is unknown, it is certain that successful companies will not have command economy attitudes because these are known to impede innovation. It is also certain that successful companies will find some way to foster market economy thinking, which allows for decentralization, fee-based intracorporate transactions and merit-based compensation.

> Prediction: Canadian firms will move toward decentralization and more performance-linked pay.

We argued above that the Siamese twins of globalization and the information age go together. There is a Chinese saying that explains how to be truly learned: "Read ten thousand books and travel ten thousand miles." To be truly successful as an information processor and innovation creator, a company must scan the world.

> Prediction: Companies that prosper in the information age will need significant international experience.

Corporate managers with experience in foreign cultures will be increasingly in demand. Canada's immigrant population will be an especially useful resource. We would not be surprised if firms run by recent immigrants grow to national prominence much faster than in the past.

We do not know what the right governance structure is in the long run for making a company a successful information processor and innovator, but it is safe to predict that firms finding the right formula will prosper wildly, while those that do not find it or refuse to adopt it will fail. There will be intense political pressure to tax the successful firms and bail out the failing firms. It is important not to do this.

Corporate Canada and Emerging Markets

Danger is a blind man riding a blind horse next to a steep cliff at midnight.
— Ancient Chinese saying.

HIGH-GROWTH AREAS WITH POTENTIALLY LARGE MARKETS attract business. No doubt, China and Eastern Europe fit the bill. These markets are hard to crack and few firms have made much money in them yet. Then why have Canadian corporations flocked there?

One possibility is that corporate managers, being social animals, move in herds. Since few foreign corporations investing in China or other emerging markets have earned big profits yet, this explanation cannot be dismissed.

A more flattering appraisal is that the potential of these markets is great enough to justify years of losses while establishing a corporate presence. Large markets naturally attract manufacturing and regional head office activities. Distant manufacturing centres cause unnecessary transportation costs. Distant head offices limit a firm's ability to serve customers. This clustering of corporate activity is called "agglomeration" by international trade theorists. Large demand centres cause agglomeration, which leads to further concentration of corporate activity by facilitating information spillovers between firms. Companies in agglomeration centres prosper, while those located elsewhere fail. Although there is limited empirical evidence about how this agglomeration theory works, it has strong proponents in academia.[39] As communications become cheaper and easier, the importance of proximity for information flow may be more questionable and the basis of the theory less credible. We are frankly skeptical of agglomeration theory as a justification for foreign direct investment.

A third reason, which we believe to be more plausible, is that these economies were behind in using public information and that foreign firms had temporary opportunities to profit by introducing innovations. These profits disappeared as soon as enough firms, foreign or domestic, entered the market using the same technology and information.

This pattern of development is called "convergence" by economists. Once an economy has a minimally honest legal and political system that restricts political rent seeking and allows investors to place money safely with entrepreneurs, the growth cycle shown in Figure 5 begins.[40] Economies can grow quickly as corporations operating in them generate huge profits by applying publicly available technology and information that previously were unused locally.[41] The high growth rate can be maintained only until the economy has incorporated all public information. To grow further, its firms must compete with those in other developed countries to develop entirely new technologies and ideas. This is much more difficult than simply catching up.

> Prediction: The high growth rates of emerging economies will stall when they pull even with currently developed economies.

The legal and political systems of many emerging economies are turning out to be less mature than many Canadian corporate managers had hoped. Bribes, kickbacks and other forms of overt political rent seeking are common in virtually all emerging economies, and the rule of law is much less secure than

in the West. This is certain to lead to high-profile instances of dishonest corporate governance, along with pervasive poor corporate governance. We would not be surprised to see countries where these problems are biggest, such as China, follow erratic growth paths marked by periodic collapses of major industrial sectors. Government subsidies make rent seeking a highly profitable business in such countries, and the practice is as harmful there as here. Global competition will punish countries that let it get out of hand.

> Prediction: Emerging markets will become less attractive over time. There will be periodic high-profile crises, in which some Canadian corporations may be caught. Hedging against political risk in these countries will become a hot topic.

Many critics of free trade argue that Canadian corporations can get a competitive edge by evading Canada's costly environmental regulations and producing in Third World countries with irresponsible, corrupt or inefficient governments. The evidence is that lax environmental standards do not attract foreign firms.[42] The same irresponsibility, corruption and inefficiency that lead to lax environmental standards also make these countries difficult places in which to do any sort of business.

Another alleged attraction of developing countries is their cheap, readily exploitable labour. It is true that Third World countries such as Taiwan attracted foreign firms with cheap, well-educated labour. However, these firms quickly learned that well-educated labour is hard to exploit. Wages in countries with productive labour forces quickly rose to market levels. Countries with cheap, unproductive labour failed to attract foreign firms at all. A working paper by Stephen Golub of Pennsylvania's Swarthmore College finds that the so-called unfair advantage conferred on developing countries by low wages is illusory. Across a range of developed and developing countries, he finds a broad correlation between wage levels and productivity.[43]

In short, the advantages of Third World countries are greatly exaggerated and their disadvantages even more understated.

> Prediction: We see no mass migration of Canadian manufacturers to developing countries.

If Canadian firms relocate out of the country, we believe that they are more likely to go to other rich countries where acceptable physical, legal and social infrastructures exist but where the cost of government is lower.

These somewhat downbeat forecasts do not mean that emerging markets are unimportant but simply that they are subject to the same laws of economics and regularities of human nature as we are. Clearly, if we say that China will grow no faster than Canada once it has adopted best global practices through-

out its economy, we are implicitly saying that it will also have a huge economy by that point.

> Prediction: Emerging economies, especially China's, will become more and more important. Their cultures will increasingly influence global business practices.

At present, Chinese companies that want to enter the global market must adhere to Western customs and practices. This situation is not likely to persist once Asian economies have grown larger.

Demography and the Corporation

> *Immigration is the sincerest form of flattery.*
> — Jack Paar (1918–).

Of any nation, Canada has the most extreme baby boom bulge in its population. In 1996, there were approximately 550,000 Canadians who were 35 years of age but only 400,000 who were 20 years old. This demographic bulge is likely to cause severe strain on Canada's pension and social systems. The one way to ease the strain is through increased immigration of young people. We believe an immigration boom to be virtually inevitable. It will be politically attractive when baby boomers are old enough to fear insecurity in their retirement more than they fear job competition from immigrants.

Much of the immigration will be of visible minorities. Chinese Canadians are the fastest-growing minority in the country. They now number about 800,000, and a recent Statistics Canada study projects (in a high immigration scenario) that their number could reach 2 million by 2016.[44] This population will be concentrated in British Columbia, Alberta and Ontario, where Canadian business is also concentrated. Thirty-eight percent of Chinese Canadians have chosen to pursue careers in business management or the professions, a figure markedly higher than that for Canadians in general.

Most immigrants come because they are attracted to Canada's customs and lifestyle. This means that they expect to abandon many of their former ways. However, Canada is perhaps uniquely supportive of immigrants who seek to retain many elements of their old countries' cultures.

Together, these observations point to an interesting edge that Canadian companies may have in the near future.

> Prediction: An increasing Chinese Canadian flavour in Canadian corporate management is not improbable. Since China will undoubtedly influence international business culture when it fully joins the world economy, Canadian firms may find themselves with an advantage over many competitors in other Western countries.

BUSINESS-GOVERNMENT PARTNERSHIPS

CANADIAN CORPORATIONS THAT FAIL TO INNOVATE will be challenged by new Canadian firms, including firms run by immigrant entrepreneurs with non-Canadian mind sets as well as foreign firms from traditional trading partners or previously unheard-of places. Beyond a certain point, Canadian corporations' old reliable tools for competition (e.g., access to natural resources) will be insufficient to compensate for lack of innovation. After that, stagnant Canadian firms will confront the reality of global competition, as opposed to merely its rhetoric. Government handouts, market guarantees and other forms of protection can postpone this day of reckoning but cannot avert it altogether. On that day, Canadian corporate managers conditioned to believe in concepts such as "government-business partnership," "socially equitable regulations" and a slower pace of change as a valued characteristic of "Canadian culture" will be paralysed like a moose dazzled by headlights, and with the same ultimate result. They are not alone: many American, European and Japanese managers are in a similar position. Nobody really knows how to prepare for the unpreparable.

But beyond Canadian corporate conditioning, human self-interest and cognitive dissonance dictate one response:

> Prediction: Many with economic stakes in non-innovative Canadian corporations will develop enthusiasm for "government-business partnerships" providing financial assistance. A host of disguised government bailouts will find their way onto the political agenda.

Cognitive dissonance will make it difficult for some managers, who have espoused free enterprise in the past, to accept direct government bailouts. Therefore, there will be a soul-searching quest for an ideologically acceptable way of accomplishing the same thing. "Industrial policies," "government-aided international expansion programs," "orderly marketing arrangements," "preservation of Canadian jobs," "security nets to encourage investment," "regulations to protect Canadian culture, business and consumers," "regulations for market stability" and numerous other innovative constructs will surface.

The corporate lobbyists who push for such concessions will espouse noble motives of protecting jobs, communities and Canadian culture; through the power of cognitive dissonance, they may believe their own rhetoric. It may even be true, as far as it goes. However, the ultimate cause of failure will be that the afflicted corporation's managers failed to innovate and became too comfortable with established routines. This is bad corporate governance and should not be rewarded. Governments contemplating such bailouts should at the very least insist that the managers responsible not share in the manna. Since continued bailouts may condition corporate managers and shareholders to expect more bailouts in the future, they may lead to a rising spiral of lobbying.

A Potentially Bright Future for Resource Corporations

> *Ye stand before the Lord … from the hewer of thy wood unto the drawer of thy water.*
>
> — Deuteronomy, 29:11.

For natural resource companies, the end is probably not nigh. The demand for raw commodities by rapidly growing firms in Asia is likely to be considerable. This bodes well for Canadian resource-sector firms. Canada is politically stable and rich in resources, an enduring source of income. As other parts of the world adopt market economies and more stable political regimes emerge, Canadian firms' expertise could provide an initial edge in developing natural resources abroad. However, Canadian resource firms that fail to innovate will quickly lose their advantage.

> Prediction: Large Canadian resource firms able to create an internal environment conducive to innovation will prosper. Those that do not will be acquired by those that succeed, in some cases foreign owners.

Corporate Careers in the Global Information Economy

Blue-Collar Corporate Employees and Labour Organizations

> *At the age of 40 a man's mind sets like plaster of Paris.*
> — John Stewart Mill (1806–73).

Blue-collar workers typically learn a set of skills particular to a certain technology. An increased rate of technological obsolescence therefore poses the threat of unexpectedly rendering those skills obsolete. Also, while wages in emerging economies are catching up with wages in the West, blue-collar workers in Canada may be overpriced in the global economy. When mandated employee benefits are included in labour costs, the overpricing is even more prominent. These factors have caused Canadian union leaders to champion trade barriers.

We believe this to be a short-sighted policy, even from the perspective that only labour matters. Blue-collar jobs, even in industries that produce non-traded goods or services, depend on customers in export industries and therefore on healthy export levels. These can only be maintained by keeping pace with the global innovation rate. Economic isolation is not a serious option.

This realization and the need to deal with employee insecurity has led to increasing interest in "labour force retraining programs." Unfortunately, many corporations are finding that such programs are of dubious value.[45] It is difficult to mould 50-year-old pipe fitters into computer nerds who can compete with 20-year-olds.

All this leaves blue-collar workers in an uncomfortable position. Traditionally, seniority rules in layoffs have been central parts of union contracts. (By coincidence, union leaders are usually very senior employees.) This has meant that union leaders have happily accepted layoffs of junior workers to preserve the pay and jobs of senior workers. As the population of 20-year-olds is only about 70 percent that of 35-year-olds, junior workers are likely to become scarcer and job cuts based on seniority will increasingly affect older workers. This may change the priority of labour negotiators.

> Prediction: Blue-collar job security will be a more important issue in labour negotiations. Unions will press corporations to retain or at least retrain redundant workers. This may be of little real help.

WHITE-COLLAR CAREERS

> *Knowledge is a process of piling up facts; wisdom lies in their simplification.*
> — Martin Fischer (1879–1962).

THE SHEER MAGNITUDE OF THE INFORMATION available to a corporate manager makes decision-making difficult. It is not impossible that a new white-collar profession will arise, consisting of specialists in sorting through mounds of data. The job is likely to combine business, computer and librarian's training.

Other new white-collar professions may emerge: specialists in how to present information in usable formats. Governments and corporations need employees who can set up information reservoirs in cyberspace for customers, suppliers, shareholders and others. It will require skill to make these simple to use yet complex enough to be useful.

We very much doubt that traditional management jobs will disappear. Financial decisions can be informed by computer analysis but in essence they are still an art. They require judgment and experience. The same is true of human resource management, marketing or other head office functions.

Traditional middle-management jobs are less secure, and many perhaps should be shed in the name of economic efficiency. Such jobs may also be disproportionately affected by outsourcing. As we argued earlier, this essentially introduces a franchising architecture into corporate governance.

On the plus side, costly benefit packages for full-time employees need not be funded and independent entrepreneurial white-collar workers have strong incentives to innovate. Their contracts usually specify lump-sum payments for particular projects, so if they find more efficient approaches their income rises.

The downside of contracting out features problems of accountability, reduced loyalty and information gaps. Independent contractors who are found to have provided poor quality cannot be punished except by withholding future business. Independent contractors may be less willing to act in the long-term interests of the firm. Companies may be unwilling to give outside contractors the same access to information that employees would have, so the quality of decisions may suffer. We believe the downside to be more important than suggested by the scant attention it has received.

> Prediction: Middle managers may be shed as outsourcing gains popularity, but the downside to such arrangements will become more obvious and the trend will slow. Compromises, neither full-time employment nor independent contractor status, may emerge. These might be akin to franchising arrangements in retailing.

WORKPLACE TRAINING

> *Education costs money, but then so does ignorance*.
> — Sir Claus Moser, *Daily Telegraph*, London, 1990.

IN AN AUSTRIAN WORLD, BOTH BLUE- AND WHITE-COLLAR WORKERS must adopt and adapt to innovations fast. This raises two issues: employee selection and workplace training. Companies will prefer to hire employees who can be easily retrained. We believe these will be people with good training in basics. Corporations will find that they do not need employees with training only in what is "relevant" to their business, because relevance will be a rapidly moving target.

University programs that can genuinely teach students how to learn will be in high demand. Most universities have yet to develop such programs, despite their claims. Rigorous instruction in the liberal arts, languages, the sciences, mathematics and other traditional subjects would seem to be a good starting point. Politically correct fad subjects and narrow professional programs may be poorer investments than many students realize.

Workplace training is attracting attention. Prominent multinationals have built in-house training centres and require employees to enrol in training courses. There are three underlying issues. First, as of now there is no empirical evidence that extensive workplace training improves corporate performance. It may do so but at present we simply do not know. Second, workplace training is costly, both directly and indirectly in terms of lost hours on the job. In an era of tightened global competition, corporations are less able to afford that cost. Finally, as long as slavery remains illegal, managers cannot be certain that employees who have received training at the corporation's expense will not take that training to work for a competitor. Indeed, some corporations may rationally decide that it is cheaper to steal the graduates of a rival's training program than to train workers in-house. This "market failure" may lead firms to underinvest in worker training. One solution is to let firms in an industry jointly finance industry re-training centres or contract with educational institutions to provide such services. If every firm pays a part of every employee's training costs, the problem of footloose employees vanishes.

> Prediction: Corporations will lobby harder for better general education at all levels. They may spend more on in-house training but it will become apparent that broader solutions are needed to the problem of worker training.

A Final Word on Educated Guessing

A severe depression like that of 1920–21 is outside the range of probability.
— Harvard Economic Society, 1929.

Economists need a strong sense of fallibility, and we have perhaps been too bold in our confident prophecies. Yet we feel this to be the most intellectually honest approach. We have listed the most basic laws of economics and described how they derive from essential regularities in human nature. We have argued that these beginnings, vague as they are, are the only sensible basis on which to make long-term forecasts about the economy. In our view, the approach to economics called the Austrian School provides the best framework for describing the current changes in our economy because this approach, almost uniquely in our field, takes the economics of information seriously. From these starting points and taking this perspective on economics, we stick our necks out.

If our predictions do not materialize, understanding why they did not will provide insights into the validity of our assumptions. This is the way science progresses. It may be hoped that this will help us do better in the future. In the event that none of the above predictions materializes, to preserve some rags of our reputations we include the following prophecy pirated from an earlier work of long-expired copyright:

> Prediction: There shall be wars, and rumours of wars, and earthquakes in diverse places.

NOTES

1 For a discussion of Marx's and Veblen's predictions, see R. Heilbroner, *The Worldly Philosophers*, New York: Simon and Schuster, 1986. In the mid-19th century, Marx predicted the spread of capitalism throughout the world, along with socialist uprisings in the most advanced capitalist countries. He distanced himself from "Marxists," saying near the end of his life, "I am not a Marxist," and he did not recommend socialism as a development strategy for backward economies such as Russia or China. At the turn of the century, Veblen predicted much of the subsequent course of consumer-driven capitalism. For a quite accurate prediction of the collapse of communism, see F. A. von Hayek, *The Road to Serfdom*, Chicago: University of Chicago Press, 1944.

2 *Forbes Magazine* actually performed this experiment. The monkey did at least as well as the average professional market analyst. See B. Malkiel, *A Random Walk Down Wall Street*, New York: Norton, 1990.

3 D. Meadows, J. Randers and W. Behrens III, *The Limits to Growth*, New York: Universe Books, 1972.

4 Hayek, *The Road to Serfdom*.

5 Because it began in Vienna in the 1870s, this intellectual tradition is called Austrian economics. Historians regard Carl Menger as its founder and his 1871 *Principles of Economics* as the school's seminal work.

6 See Aristotle's *Nicomachean Ethics*, Vol. E, §1131-1133, esp. §1132b. See also St. Thomas Aquinas, Summa, II, 2, quaest. LXXVIII, art. 1. Schumpeter disputes this conventional interpretation of Aristotle and St. Thomas in his *History of Economic Analysis*, Oxford University Press, 1954; see esp. pp. 6061, 93 and 98-99.

7 On this point, and for a good summary of the experimental and computer simulation evidence discussed in this section, see Robert Axelrod, *The Evolution of Co-operation*, New York: Basic Books, 1982.

8 Much of the work of Kahneman and Tversky, Einhorn, Shoemaker and Thaler points to a deep relevance of conditioning to economic behaviour. For an introduction, see R. Hogarth and M. Reder (eds.), *Rational Choice*, Chicago: University of Chicago Press, 1986.

9 See M. Boycko, A. Shleifer and R. Vishny, *Privatizing Russia*, Cambridge, Mass.: MIT Press, 1995, pp. 53, 60.

10 The concept was originally proposed by Leon Festinger, *A Theory of Cognitive Dissonance*, Palo Alto: Stanford University Press, 1962.

11 Total quality management (TQM) is sold mainly on the basis of anecdotal evidence coming mainly from huge, previously very poorly managed U.S. firms. It is arguable that any shake-up in these firms' routine would have improved things. Florida Power and Light went to great lengths to win the Demming Award for TQM, won it and saw corporate performance subsequently plummet. Huson (1995) presents evidence that "just in time" (JIT) inventory improves performance in firms where inventory management is crucial. There is virtually no independent evidence on other management fads. We know of managers who view quality circles as little more than self-glorifying group therapy.

12 Measures of information storage or processing costs, such as dollars per bit stored, dollars per floating point operation, etc., have decreased exponentially since the late 1970s.

13 Some companies now have minute-by-minute updates of sales information.

14 This "dissipation of factor advantage" is likely to be much faster in the information age, when corporate news travel quickly.

15 There is a popular superstition, promoted by Michael Porter and others, that North American shareholders are fixated on short-term earnings, and that their fixation causes corporate managers to sacrifice sensible long-term investment projects. There is no empirical evidence to support this claim and a substantial body of evidence that refutes it. When a corporation announces long-term capital investments or R&D projects, its share price rises, indicating increased demand from market investors. Firms with high R&D spending have high market-to-book ratios. For an overview, see R. Giamarino, "Patient Capital?" in R. Daniels and R. Morck (eds.), *Corporate Decision Making in Canada*, Industry Canada and the University of Calgary Press, 1995. We speculate that corporate managers with impractical plans spurned by shareholders may be attracted to the "myopia" theory by cognitive dissonance.

16 John Horgan, a science writer, argues in his book *The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age* (Addison-Wesley, 1996) that everything that can be invented has been. We know of no practicing scientists who take this view seriously, and many who regard it as nonsense. For a thoughtful reflection on why science is probably an infinite pursuit, see J. Casti, "Confronting Science's Logical Limits," *Scientific American* (October 1996):102–5. There are, however, many respected scientists who question the fruitfulness of "big science" such as government-funded megaprojects. This is an entirely different question and relates mainly to poor use of funds rather than any innate limitation on the quantity of knowledge in the universe.

17 See Will Mitchell, Randall Morck, J. Myles Shaver and Bernard Yeung, "Causality between International Expansion and Investment in Intangibles, with Implications for Financial Performance and Firm Survival," Ann Arbor: University of Michigan, 1996. This unpublished study confirms earlier results by Mansfield and others.

18 R. Nelson and G. Wright make the point nicely in "The Rise and Fall of American Technological Leadership: The Postwar Era in Historical Perspective," *Journal of Economic Literature*, 30, 4 (December 1992):1931–64. They argue that the postwar U.S. technological lead was eroded by the increasingly transnational nature of commodity and resource trade, business and finance, and technological communities. We believe this to be a direct consequence of the need for large-scale applications of new technologies to justify their costs.

19 In practice, more input variables should enter the function. This is a side issue, and does not alter the basic points discussed in this section.

20 See P. Romer, "The Origins of Endogenous Growth," *Journal of Economic Perspectives*, 8, 1 (winter 1994):3–22; "Increasing Returns and Long Run Growth," *Journal of Political Economy*, 94, 5 (October 1986):1002–37; "Endogenous Technological Change," *Journal of Political Economy*, 98 (1990):71–102; and "Increasing Returns and New Developments in the Theory of Growth," NBER Working Paper 3098 (1989). See also P. Aghion and P. Howitt, "A Model of Growth through Creative Destruction," *Econometrica*, 60 (1992):323–51.

21 J. Jayaratne and P. Strahan, "The Finance Growth Nexus: Evidence from Bank Branch Deregulation," *Quarterly Journal of Economics*, 111 (1996):639–70.

22 R. King and R. Levine, "Finance and Growth: Schumpeter Might Be Right," *Quarterly Journal of Economics*, 108 (1993):717–38.

23 Loosely speaking, economists use the term "rent" to denote unearned income in general, not only lease payments to landlords. Technically, rent is any income above the supplier's costs.

24 Economists are quick to point out that many, and perhaps most, goods fall somewhere between perfectly private and perfectly public goods. If I use the library so much that its collection becomes noticeably depleted, I have eroded its public good characteristics. Similarly, privately produced goods such as television transmissions have public good properties.

25 See R. Beason and D. Weinstein, "Growth, Economies of Scale and Targeting in Japan 1960–1990," *Review of Economics and Statistics*, 1995.

26 K. Murphy, A. Shleifer and R. Vishny, "The Allocation of Talent: Implications for Growth," *Quarterly Journal of Economics* (May 1991):503–30.

27 See J. McConnell and H. Servaes, "Additional Evidence on Equity Ownership and Corporate Value," *Journal of Financial Economics*, 27 (1990):595–610.

28 See S.-H. Chan, J. Martin and I. Kensinger, "Corporate Research and Development Expenditures and Share Value," *Journal of Financial Economics*, 26 (1990):255–66.

29 See Bronwyn H. Hall, Adam Jaffe and Edward Mansfield, "Industrial Research during the 1980s: Did the Rate of Return Fall? Comments and Discussion," *Brookings Papers on Economic Activity*, 2 (1993):289–343.

30 See Beason and Weinstein, "Growth, Economies of Scale and Targeting in Japan," *Review of Economics and Statistics*, 1995.

31 See A. Jaffe, M. Trajtenberg and R. Henderson, "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations," *Quarterly Journal of Economics*, 108, 3 (August 1993):577–98. For evidence against the existence of a cluster effect, see D. Irwin and P. Klenow, "Learning by Doing in the Semi Conductor Industry," J*ournal of Political Economy*, 102, 6:1200–27. This paper finds that employees learn by doing but that they are as likely to learn new techniques from nearby companies as from companies on other continents. It concludes that "cluster" effects and related theories are dubious.

32 See A. Krueger, "The Political Economy of the Rent Seeking Society," *American Economic Review*, June 1974; W. Baumol, "Entrepreneurship: Productive, Unproductive and Destructive," *Journal of Political Economy*, 98 (1990):893–921; Murphy, Shleifer and Vishny, "The Allocation of Talent," *Quarterly Journal of Economics* (May 1991).

33 If government spending funds public goods such as education and health care, it may be efficiency enhancing on its own.

34 Although Figure 4 shows the high-tax countries of Sweden and Germany as leaders in R&D spending, much of it is government R&D and the rest is mainly by very large multinationals. In fact, public and bureaucratic understanding of entrepreneurship is something of a national joke in some high-tax countries. See for example, "For Germany, It's Nothing Ventured ..." in *Euromoney* (February 1986):147–52. Other countries, most notably Sweden, have continued to produce innovations; see for example, T. Wallmark, "One Hundred Major Swedish Technical Innovations, from 1945 to 1980," *Research Policy*, 20, 4 (August 1991):325–44. More research is clearly needed on the relationship between taxes and innovation.

35 David K. Foot and Daniel Stoffman, *Boom, Bust and Echo: How to Profit from the Coming Demographic Shift*, Toronto: Macfarlane, Walter & Ross, 1996.

36 There is empirical evidence that bequests may be important to older people as a way of influencing the behaviour of potential heirs; see B. D. Bernheim, A. Shleifer and L. Summers, "The Strategic Bequest Motive," *Journal of Political Economy*, 93, 6 (December 1985):1045–76. Evidence on the overall importance of bequests as a motive for savings is mixed. B. D. Bernheim, in "How Strong Are Bequest Motives? Evidence Based Estimates of the Demand for Life Insurance and Annuities," *Journal of Political Economy*, 99, 5 (October 1991):899–927, finds that social security benefits raise life insurance holdings and depress private annuity holdings, and concludes that this implies a strong bequest motive. B. D. Bernheim and L. Levin, in "Social Security and Personal Saving: An Analysis of Expectations," *American Economic Review*, 79, 2 (May 1989):97–102, find that social security depresses personal savings roughly dollar for dollar for single individuals but not for married couples; this finding suggests that bequests to spouses may be the dominant factor.

37 Unexpected inflation reduces the real value of past corporate debts but also reduces the real value of tax deductions for depreciation. The result is often that the loss virtually cancels out the gain.

38 There is empirical evidence from the United States that the practice of bailing out domestic firms facing severe foreign competition reduces the returns for spending on innovation. See S. Lenway, R. Morck and B. Yeung, "Rent Seeking, Protection and Innovation in the American Steel Industry," *Economic Journal*, 106 (1996):410–21.

39 "Agglomeration" is closely related to the idea of "clustering" among R&D firms, and the empirical studies cited to support or debunk one theory are also used for the other (see note 31). The idea of agglomeration was initially proposed by A. Marshal in *Principles of Economics*, New York: MacMillan, 1985, Ch. 10.

40 See J. Sachs and A. Warner, "Economic Convergence and Economic Policies," NBER Working Paper 5039, 1995.

41 For example, in recent years, China has been the world's largest recipient of foreign direct investment; and in the last three years, FDI to developing countries has exceeded FDI to developed countries. This reverses a longstanding pattern of FDI flows mainly between developed countries, and it corresponds with the adoption by developing countries of new free market-oriented legal systems and public policies. Economists call profits of the sort discussed here "quasi-rents." They are profits that exceed costs but are temporary and disappear quickly.

42 For a review of the empirical literature, see A. Jaffe et al., "Environmental Regulations and International Competitiveness: What Does the Evidence Tell Us?", *Journal of Economic Literature*, 1996.

43 For a non-technical review of this paper, see *"Not so Absolutely Fabulous," The Economist*, 337, 7939 (November 4, 1995):86.

44 Statistics Canada, Publication 91-541-XPE, *Projections of Visible Minority Population Groups*.

45 The econometric evidence is incomplete. In "Technological Change and Retirement Decisions of Older Workers," *Journal of Labor Economics*, 11, 1 (Part 1, January 1993):162–83, A. Bartel and N. Sicherman present evidence of a positive correlation between rates of technical change and retraining across industries, but they also find that many older workers prefer early retirement to retraining. In "The Nonequivalence of High School Equivalents," *Journal of Labor Economics*, 11, 1 (Part 1, January 1993):1–47, S. Cameron and J. Heckman find that high school drop-outs with certified equivalency are statistically indistinguishable from other high school drop-outs in U.S. labour markets.

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Session 8

The Private Sector Response to Economic Challenges Facing Canadians

R. Martin Thank you. I'm Roger Martin from the Rotman School of Management. And I will try and be brief and stick to my 10 minutes.

The first thing I'd say is congratulations to you Randall and your co-author. I think it's a well framed and valuable argument you make in your paper. Perhaps I come to the paper with a biased point of view. I don't carry around a rabbit's foot for good luck, but I always make sure to keep a first edition copy of The Road to Serfdom within arm's length of me in my office. So you've found a receptive audience in me. Though I would argue that the authors implicitly found that the normative output of the Austrian school probably doesn't match its descriptive elegance. It contains a whole lot of "don't dos" to which I subscribe: don't subsidize small businesses, pick winners, etc.

But it doesn't provide as much provide as much help as I wish it did to the question of what do you do, especially if you're in Canada and you are obviously and clearly dropping back in the global competitiveness race. And that answer is not a trivial answer. I don't think Randall said it's a trivial answer, and I think the authors make some very helpful points in the article on that question. Helpful point one is the importance of innovation and in particular the importance of distinctiveness. All the research work I've done and my colleagues have done would confirm the notion that distinctiveness is absolutely critical to firms moving ahead, economies moving ahead and to prosperity. We know this from work that my colleague Mike Porter has done on the competitive advantage of nations where the model of prosperity is built on the constant upgrading of capabilities of firms that otherwise have the same endowment of resources, same labour costs, etc. The pressures to upgrade and create a distinctive product or process are what move them ahead. We know this from the most recent work that he and I have done on firm level strategy that stresses the value of creating distinctive activity systems as Southwest Airlines or Progressive Insurance have done.

The one place where I would actually beg to differ considerably is the "winner take all" notion. That has not really proven to be the case and all the Santa Fe folks I think are a little bit too captured by the notion of increasing returns. Our research finds that the push for distinctiveness tends to create more ways to satisfy the various segments of the market. Markets are rarely homogenous; they're not monolithic. Coming up with a distinctive edge often captures, if you will, *all* of only a *piece* of the market. You have many firms that can prosper simultaneously in that

world. To give a somewhat trite example, Pepsi is the "winner takes all" for those who are part of the *Pepsi generation* and Coke is the "winner takes all" for those who believe *Coke and a smile* is an attractive slogan. So they're both making lots of money and they're both showing distinctiveness in their markets. If you want to make the increasing returns argument, not in terms of market segmentation, but in terms of product segmentation you could say that IBM was the winner take all in the computer business. They benefited from increasing returns, got gigantic scale and, IBM is now worth $180 billion. But it turns out that they turned their back on 2 tiny little pieces of that market, one called PC operating systems and the other called computer logic chips. And we now have a $500 billion company called Microsoft, which hasn't taken all either because Intel, the logic chip company is worth another $250 billion. So I see innovation as actually not having the harsh result of driving other firms out of the business, but rather of pushing firms into different parts of the market, whether by product, whether by customer, geography or, etc. And so for me innovation and distinctiveness are unalloyed goods rather than problems that get created.

The second thing I found very helpful in the paper is discussion about competition among governments. I think this is a great concept and we should focus on it more. I would argue that this is a field that has not gotten nearly enough work: the emerging competition for governments. They will compete for the products and services they offer. James Buchanan, who I love dearly, is absolutely right on that point and I would argue that with only 3 exceptions that I can think of, the governments of Canada have not been distinctive or unique. They were distinctive and unique with the National Policy designed to protect our economy. This was distinctiveness of the sort we don't want to have; that is, an utter disaster for us that we'll live with for another century. The second one was the National Energy Policy, which encouraged Canadians to buy into the energy sector at its highest real cost per BTU in the history of human endeavor. The third though was a very distinctive move that we should be proud of I think. That is the indexation of tax brackets in the early 1970's that caused us to have a better economic performance than the United States during the 1970's, until we reversed course and de-indexed in the 1980's. So I believe that thinking about how governments can be actually more distinctive and not patting ourselves on the back for matching other governments will be a key part of getting competitive advantage for Canada.

The third contribution that I saw in the paper is bringing public choice theory to bear. Probably after von Hayek and Stigler, my favourite economist is James Buchanan for actually a different thing than what Randall showed. Buchanan provides us with a fabulous yardstick for every time we want to do something from a public policy standpoint. He

notes that we find it quite easy to declare private market failures. For example, we say there isn't enough low cost housing – a private market failure. Then we create a public market solution that we do not subject at all to the same analysis to which we subjected to private market when we declared it to be a failure. And this is what causes us to come up with incredibly stupid public choice ideas like rent control that have nothing but a pernicious affect on markets, being for example highly correlated with homelessness. So if we keep Buchanan's yardstick in mind – that is: use a public choice mechanism to solve a private choice failure only if you subject that public choice mechanism to the same standard to which you submitted the private choice- I think we'd have lots fewer misguided policies as we pursue competitiveness policies. In a world of increasing global competitiveness where our government policy has to compete with those of others, we'll need to have yardsticks like that to help us make better choices.

The fourth thing that I thought was a contribution was highlighting the importance of corporate culture using the Milgram experiment as your illustration. That is an area of fruitful work actually and, and there is a lot of good work going on in this area. Two professors who I work with, Chris Argyris and Mike Jenson, a Chicago trained Austrian school finance theorist, are working together to understand what it is about managers that causes them to consistently avoid short-tem pain, even though their actions produce greater long-term pain than they avoided in the short-term. We are trying to understand what it is about the way that they work and the kind of environment in which they work that causes that to be the case. There is good work underway there and it will help us understand why Canadian companies find being innovative in the short-term to be painful, and even though it's obvious they need to be innovative, they avoid such innovation only to suffer greater pain long-term. It seems illogical, but there is a set of mechanisms that cause that to be the case.

So I would say those are four things that I found to be very helpful in moving the ball forward on Canadian competitiveness. I think the challenge for Canada is that we do have a managerial problem and it's a managerial problem both at the firm level and the government level. Neither level has a history or practice in seeking distinctiveness. And seeking distinctiveness is something that takes practice. I think managers in our corporations have not sought distinctiveness enough because we have a huge per capita natural resources endowment, great proximity to a the great US market and have had protection of the Canadian economy for so very long. Those historical factors are borne out in some of the initial data that's coming out in the work that my colleague Mike Porter is doing with the World Competitiveness Forum. The initial data shows Canadian managers pursuing competitive advantage based on low cost labour and/or low cost raw materials to a much greater extent than on the basis of unique

products and processes. In fact we ranked 21st in the world in his survey on that dimension behind such superpowers as Iceland and New Zealand. Until we get that turned around, we're not going to have the kind of innovation that we need.

So I think in summary, I think the paper makes an excellent advance in the competitiveness debate. It digs around in the right area. There remains a lot of work to be done and I'm glad to be a part of the work ahead.

APPLAUSE

The Response of Government to the Economic Challenges Facing Canadians
Closing Session

Remarks by Keith Banting

K. Lynch Fred thank you very, very much for that. Our next speaker is Keith Banting. Keith is the Director of the School of Policy Studies at Queens University and the holder of the Stauffer-Dunning Chair on Policy Studies. He has been at Queens since 1986. Prior to that he had taught in the Department of Political Science at the University of British Columbia. He has focused throughout most of his career on public policy issues in Canada and elsewhere. He's worked on a number of, or at least one, Royal Commission on the Economic Union. A year back he was a visiting Fellow at Harvard. He's one of our most distinguished observers of the public policy scene in Canada. Please welcome Keith Banting.

K. Banting I've entitled my comments this afternoon "What's a Country For?" And in tackling that question I'm not going to focus particularly on Ron Daniels' paper, but rather I'm going to take up a number of questions which our Chair sent to us a few days before the session. Being a dutiful person, I will of course do what the Deputy says. The questions I want to ask are: Can government make a difference? In what areas and what issues? How serious are the external constraints on government action? And what are the implications of Canadian/U.S. economic integration for our policies, programs and the scope of possible action in the 21st century?

In tackling these questions, I'm going to look backwards briefly at the post-war period and the basic policy package that emerged in that period. Then I want to discuss how much room for maneuver countries have in the contemporary period and are likely to have in the opening decades of the 21st century. Finally, I'm going to ask how we should use the room for maneuver we possess.

So let me begin with the post-war pattern. One can characterize the post-war pattern across the OECD nations in musical terms. There was a compelling theme, but also a set of rich variations on that theme. The central theme was a policy package that combined a steady liberalization of the international trading regime, with a steady expansion of social security provisions. Under the GATT and other agencies, economic liberalization broke down the barriers to trade that countries had inherited from the first half of the 20th century and that liberalizing effect eventually spilled over into domestic economic policy. But this trend was accompanied by a set of social protections that strove to provide a degree of security to citizens. These social programs protected citizens from the

social risks inherent in a modern society: unemployment and poverty during sickness, disability and old age. Not only did these programs help individual citizens; they also contributed to society's willingness to accept the economic adjustments and disruptions inherent in economic liberalization. Social protection was in effect, a buffer against the kinds of social and political backlashes that had undermined openness in the first half of the 20th century: protectionism, nationalism and international conflict. John Ruggie has labelled this central theme of the postwar era "embedded liberalism", a liberalization of the economy but a process still embedded in society.

If that was the central theme of the post-war experience, the post-war era was also characterized by rich variations. Different countries built different systems of social protection. Some countries invested quite heavily, other countries much less so. There was considerable variation in the level of social spending as a proportion of gross domestic product and there was variation in design. There was no single model of the welfare state. In part these differences reflected the location of countries in the international economy. It's not surprising that countries with more open economies, which were heavily dependent on trade and more vulnerable to international economic shocks, tended to develop more expansive systems of social protection. But the rich variations also reflected domestic traditions, domestic cultures, domestic politics within individual western nations. In effect, each country became an instrument for developing policy packages consistent with domestic cultural, political, and social preferences.

Fast forward to today. I don't have to rehearse for you all of the pressures embedded in contemporary economic integration on a global and regional basis. All of these have been discussed here by others more knowledgeable than I am. The issue that I want to tackle is whether these pressures mean that we must move to a new central theme, and whether there's less scope for rich variation. Can we balance, as we did in the post-war period, economic liberalization with social protection? And can different countries build their own variations on the central theme?

I want to tackle the second question first. Will countries be able to continue to develop distinct social futures, or will economic integration compel greater convergence or even harmonization not only in economic instruments, but also in social instruments? Will a form of economic determinism triumph?

There has been an interesting shift in the role of economic determinism in our political discourse. In the 1970s and 1980s, when I started my academic career, neo-Marxism was fashionable on the political left. Advocates of this tradition argued that the central organizing imperatives

implicit in a capitalist economy dominated, shaped and constrained the role that government could play. And it was people on the political right who argued that this analysis overstated the constraints, that there was a rich variety of policy stances in different countries, and that there was real autonomy for politics in contemporary societies. What I find rather curious is that there has been in a reversal of the role of economic determinism in our political discourse. Some commentators on the political right today insist that economic and technological imperatives compel a convergence or harmonization in our policy regimes, certainly among trading partners. Convergence is inevitable. This was the language made famous first by Mrs. Thatcher who argued that there is no alternative, or TINA for short. Today it is the political centre and the left that argue that there's room for distinctive variations in the contemporary world.

For me, the contemporary determinism of TINA is no more persuasive than the old Marxism of the left. So far at least, predictions of an inevitable convergence in social programs are not sustained by the evidence. Social spending across, as a proportion of GDP across OECD nations continues to be as diverse as in the past. Nancy Olewiler's survey of taxation policies across OECD nations demonstrates that there's no powerful process of convergence in taxation regimes. John Kesselman's recent survey of recent studies concludes that there is not any robust or systematic relationship between social spending or tax burdens on one side and the rate of economic growth on the other side.

But what about within trading blocks? If there is no general pattern of OECD countries converging on a single social model, what about within trading blocks such as the EU and NAFTA? Here the question is tougher because there are only two cases and the kind of evidence one can bring to bear is less compelling. But I would argue that, on balance, the answer is no. There is not a powerful convergence going on. Despite the distinctive political commitment within the European Union to "an ever closer union," European social policy is still marked by national variation. There is some convergence in spending levels as a proportion of GDP, but that is driven as much by the growth of social spending in the poorer countries of the south, such as Portugal and Spain which are in catch-up mode, as it is by constraints in northern Europe. A recent study by the European Commission looked at policy design and concluded that there was no consistent pattern of convergence in the social policy design of the countries of the the union.

In the case of Canada and the United States I would also argue that the answer, on balance, is again no. There is no consistent pattern of convergence in the social policy regimes of these two countries, despite deepening economic integration. Social programs have been restructured,

and benefits in many cases have been reduced in both countries. But restructuring is not necessarily convergence. Although there are certain areas of convergence such as employment benefits and child benefits, in other areas the gap between the two countries is at least as great or perhaps greater than in the past.

Admittedly, this is a little simplistic. Long-established programs such as pensions and health care are moving along distinctive paths in the two countries; there is sort of a path dependency effect here. It is in the newer areas of social policy, such as child care or homecare, where one sees more commonality between the two countries. So one finds sort of a rich mix of path dependent differentiation and new areas of similarity. But overall, I am prepared to argue that the Canadian and American welfare states are as different today as they were in 1975, the high-water mark of the postwar welfare state.

And as final evidence I'd like to offer two slides that demonstrate that government can make a difference and that there is a distinctive approach on the two sides of the border. This is probably a familiar slide to people in this room. It simply measures the distribution of income in Canada, using Gini coefficients. The top line is market income and shows an increase in the level of inequality between 1971 and 1997. The next line the level of total income, which includes not only market income, but also government transfers; here you can see a moderating effect in the level of inequality. The bottom line is after tax income, which includes the effects of both government transfers and taxes. As you can see, there has been virtually no increase in the level of inequality in Canada between 1971 and 1997 by that measure.

My second slide complements the first by comparing this pattern with the United States. And this simply makes the point which you've undoubtedly heard in many other places that the level of inequality in the United States has risen sharply, but in Canada tax and transfer programs have offset this trend. As a result and there has been a marked divergence between the two countries in levels of inequality in after-government income. Surely this is evidence that there is still a distinctive society on the northern half of the North American continent.

So far at least, there is clearly still room for rich variations on common themes. But some would argue it's not sustainable. Some might argue that we've moved into a new paradigm, that the evidence of the last 20 years doesn't tell us much about the next 20 years. In making judgments such as this, one has to fall back as much on personal conviction and intuition as on evidence. This debate is engaged on the tax side at the moment, and I have largely the same views on this issue as expressed earlier in this session by Fred Gorbet. We may well need to restructure to position

ourselves well. But it's not clear, as Hufbauer said this morning, that we have to reduce the total level of resources available for social transfers. If we choose convergence in the future it will have been a political choice, not a product of economic necessity.

If there is still significant room for rich variation around common themes, what then should be the common theme of the early part of the next century? This clearly is the single most important question that's posed here. The economic and social conditions which underpinned the common theme of the post-war period have changed significantly, and the central theme must change. The primary source of personal and collective security in the new world is to be found in human capital and in investment in human capital. Clearly this is the central theme for the early part of the next century.

I'd add a number of personal refinements. First, I tend to think of investment in human capital very broadly, to include things like early childhood development and childcare, as well as education and training. We also need to think about human investment or investment in human capital in more collective terms. The postwar generation thought about security as something that should be offered to everyone. Their conception of security was based on income transfers and was perhaps too often a way of protecting people from change, rather than helping people to change. But it was a conception of security that was in one sense universal. Everyone was to have access to the instruments of security as it was understood in that generation. I don't think we're having the same debate today. If the source of security in the economy of the future is investment in human capital, are we really having a debate about universal access to the opportunity to invest in human capital? Are we giving the same sort of collective commitment that everyone in Canada should have the ability to prepare effectively for the economy of the next century? I'm not convinced we are. Rob Pritchard, President of the University of Toronto said a few years ago, it's a lot easier for a poor person to go to Harvard than to U of T. I'm tempted to take a cheap shot and suggest that governments tend to talk the talk, but they do not walk the walk.

Finally, human capital investment is not enough. We're going to need to employ the tax/transfer system to mitigate the growth of inequality implicit in the knowledge-based economy. We're going to want a society which is steadily polarized. I would invite any of you who have not done so to read the paper prepared by Beaudry and Green for this conference, especially the last couple of pages on the prospects for unskilled labour and the social tensions and conflict implicit their scenarios. I remind you of the original logic of embedded liberalism in the post-war period. The original policy package said that economic liberalization needs to be premised on or conditioned by a sense of security so that the public will

continue to support the liberalization process. A society that is increasingly polarized is a society which risks higher levels of social and political tension. In many ways the recent election in Saskatchewan underlines the point because, although the voters there were voting about a number of things, one of the issues they were voting on was the international context in agriculture. Governments cannot and will not ignore the political dynamics generated by the lack of a sense of security.

So in conclusion, I would argue governments can make a difference, Although the constraints are real, they do not justify a sort of economic determinism. They don't justify a sort of Marxism of the right. There is room for national variations around the common themes of modern life. We need to use our degrees of freedom to develop universal access to the instruments and security of the next century. In effect, we need to redefine the question. We too often ask what are the constraints. We need to ask the obverse of that question. Where are the areas of room for maneuver? And where can we expand our room for maneuver? I know this is really the distinction between a glass half full and a glass half empty. But I would prefer a definition of the problem which sets the analytical task as generating a search for the ways in which we Canadians can bring distinctive variations to the common themes of the 21st century. Ones that reflect Canadian traditions and Canadian values. After all, what's a country for? Thank you.

Closing Session

The Response of Government to the Economic Challenges Facing Canadians

K. Lynch … that is facing Canadians. I'm also the, the Deputy Minister of the Department of Industry, Industry Canada. And as the latter, Industry Canada is certainly very pleased it had the opportunity to co-host this conference with the Centre for the Study of Living Standards and I particularly kind of appreciate the cooperation we've had, Ian Stewart and particularly Andrew Sharp who've kind of, have worked extremely hard with everyone else to make this joint venture conference happen. The theme ladies and gentlemen of the conference is certainly challenging, as is should be, "Canada in the 21st century, a time for vision"; that's not a modest theme. And one challenge, our challenge as economists and researchers and policy makers in many ways is to live up to the challenge of the theme. Not just at this conference today. As Fred was saying, you know, the discussion yesterday and today is an incredibly good start, but it is just a start. And these can't just be once off, we've got to carry this understanding forward and turn it into potential areas of action, not just for the public sector, but also for the private sector. And I believe strongly - and that's one of the reasons we co-hosted this conference – that good public policy requires research excellence under PANAN. Equally, and I think the last sessioin showed that, a dynamic private sector requires research excellence in understanding markets, technology, management and global behaviour. Now the purpose of this session is "the response of government to the economic challenges facing Canadians". Again, that's not a modest title. And a pessimist might say that it's highly unlikely even if you only had one economist here in the room you'd have trouble getting agreement on what the list of challenges is, let alone what the data allows us to say about them and certainly not what the responses should be. But I'm not a pessimist, I'm an optimist and I think that economic and policy understanding has moved a long way in recent years. And I think just the, the crux of this conference has shown, I know we're moving I think relatively quickly towards a much greater consensus on what the key economic challenges facing Canada are. What the interrelationships among them are, and I think that certainly will come out on this panel, and what can be done about them, which we'll be starting today. But I think that's going to have to unfold in, in future ones. In this vein let me modestly suggest 3 possible economic challenges facing Canada and other countries to just contribute to part of the discussion. And they pick up on topics that came up through the course of yesterday and today and I hope it comes up in this session. First is the issue of improving the standards of living and quality of life through higher productivity. As you know and the research certainly pointed out yesterday and today, I mean a key issue

for us is how do we improve the living standards of Canadians. They want higher standards of living, they want higher quality of life, how do we do it and how important is productivity to achieving that aim? And second, and again came up in the previous session and through the course of the last 2 days, is how do we get greater business dynamism in Canada? How do we have Canada and Canadian business and Canadians at the leading edge of high value added opportunites. As Dan Tefler said, how do we actually focus on product innovation as a key aspect of our productivity enhancement? And third, how do we manage increasing, and it really is increasing, international integration and particularly Canada, U.S. to Canada's maximum advantage. It's a reality and it's happening, but how do we make sure that we have the maximum advantage for Canada from it? But look, those are just 3 among many possible economic challenges and the objective of this session, both from the 3 panelists and from all of you, is to sort out what the key pressure points are, what the key opportunities are and what can be done about them. What are our priorities and where do we have to move next. And we have 3 very distinguished panelists who can do just that. The 3 people who can answer that challenge. Each panelist is going to speak for about 15 minutes and that'll follow, leave us probably about 20 to 30 minutes for discussion from the floor and else. Now I've been asked by the organizers to do something that I've never attempted before and that's to actually end the session on time. And I'm going to try and do that and set a first. So we will end at 5:00. Alice Nakamora will then come up to close the conference and allow everyone to meet their various appointments. If I can then turn to our, the 3 panelists that we, we have today. And they will speak in the folowoing order. First panelist today will be Fred Gorbet. Fred is a principle in Strategy Solutions, a public policy consulting firm he founded in January '97 after a very long and extraordinarily distinguished career in both the public and the private sector. He concluded in, recently a 20 month assignment as the Executive Director in the Task Force on the Future of the Canadian Financial Service Sector, the Ian McKay Task Force. Prior to that he worked in various positions in government in the OECD. His last position there was as Deputy Minister of Finance from 1988 to 1992. He's also held a number of positions in the private sector and I must say as a personal note, I thing Fred is one of our most distinguished public servants and I certainly was honoured to work for him in the Department of Finance. Fred.

F. Gorbet Kevin thank you very much. When somebody like Kevin, who I have worked closely with and have tremendous respect for, says something like that about me you can understand why I am delighted to be at this conference. I thank Andrew Sharpe for the invitation and I commend Industry Canada on the excellent job it is doing in supporting this type of research in Canada and in finding opportunities to disseminate it widely.

I'm sorry that, that Ron Daniels isn't here to deliver his paper. I commend it to you. It is a good paper, as are all the papers in this series. I'm really not going to comment directly on the paper, except in a couple of particular instances. What I want to do is to talk about how I think government can respond in some areas to the kinds of challenges we've talked about yesterday and today. I'm going to go first because I'm going to be at a pretty high level. I'm sure that my fellow two panelists will begin to drill down, but if they don't drill down far enough we'll try and get through in time to leave some time for commentary and questions.

The list of challenges is impressive. We talked about them for the past two days. In addition to the ones Kevin mentioned and the ones that are focused on in the papers, there are others. It is hard to go through a day without reading in the newspaper or listening on newscasts to questions about the stagnation of real disposable incomes in Canada over the past decade; the increasing polarization of income distribution; child poverty and questions about our social programs and Medicare in particular. Our health system, which only a few short years ago was given the status of a defining element in the Canadian identity (a status neither it nor Canada deserved) is now under enough pressure that 50% of people in a recent poll are prepared to consider the introduction of a private tier in the health care system.

The list of challenges goes on. My challenge is to get focused and talk about the government response. I'm going to begin by making three assertions that really remind us about some realities of governance. Not just now, but always. I want to talk about a couple of constraints and then I want to talk about four areas where I think government can and should act in the next while to address some of these issues.

My first assertion is that for many of these issues it's important to recognize that there are no silver bullets. Government can make a difference, government has a role to play, but very often that role is the net result of doing a lot of little things right that don't always get the headlines. Searching for one big answer that may make good headlines might be politically attractive, but more often than not it may do more harm than good. And the flip side of that coin, of doing a lot of little things right is trying to avoid doing the wrong things. There is a lot government can do to make things worse and we've heard in the course of the discussion earlier today examples of particular policies that government has introduced -- most specifically in the industrial policy area that have ended up doing just that.

My second assertion is we should remember that government is a messy business. It's not neat. It's messy for at least three reasons. First, whether one talks about special interests or whether one uses Ron Daniel's

terminology of rent seeking behaviour, the reality is that there will always be more people seeking to share the pie than there is pie to be shared. And there is no objective utility function that helps government make choices in a very clear or a very precise way. The flip side of that coin is that a lot of those interests are vested and again, as we heard this morning when Don McFetridge talked the difficulty of bringing about change in education, it is often very difficult to try to effect change without running into constitutional, institutional or vested interest constraints. The tyranny of the status quo is a problem everywhere, but it appears to be more entrenched in public policy than in other areas.

The second reason why government is messy is that in many instances we have what I call a knowledge deficit, or at least an understanding deficit in the broad public about some of important public policy issues. Two examples:

- we often seem to be debating public policy in an environment where we have an abundance of information but a lack of understanding. To a large extent the recent debates on productivity and the brain drain in terms of policy implications are examples that indicate that where there's a lot of heat there's not always light.
- a second example is where government does not provide basic information that can help to illuminate debate on public policy issues. An example I would use here is the federal budget, which continues to forecast balanced budgets when everyone in the country knows that we're looking at major surpluses year after year after year. This has even led some commentators to opine that the old adage "where there's smoke there's fire" should be restated -- for government work -- as "where there's smoke there's mirrors".

I will come back to this knowledge deficit or understanding deficit a little later. Suffice it to say for now that the implication is that very often we have public policy debates that although well motivated may be ill-informed.

The third reason why government is a messy business is that politics is a blood sport. I said before that governments don't have a clearly defined, objective utility function but in fact they do. All governments that I have served would acknowledge that their prime objective, based on a profound, sincere and deeply held belief about what is best for the country, is to be reelected next time out. And most governments would claim, and indeed have claimed, that good policy is good politics. In fact, I believe that it is, but that is sometimes true only in the longer term and in the short run good policy is not necessarily good politics. Where there is a conflict

politics generally trumps policy and that also makes government a messy business.

My third assertion is that government today is better placed than it has been in decades to address in a constructive way the economic challenges that are confronting us. And here I take some issue with Ron Daniel's paper. I think the paper is a little too backward-looking, kind of a rearview mirror perspective, in terms of being premised on the notion that resources are still quite scarce and that we really can't make a lot of choices that I believe we can make. I think that with the discipline we've had in monetary policy, and with a return to fiscal health, we do have choices that we have not had for a long time now. And how we make them and what we decide will matter very much.

Now, against this background of internal complexity and opportunity there are constraints on what government can do. I want to recognize two important constraints that we talked about through the course of the day. They both derive from globalization and the integration of economies. Globalization, particularly in the last 10 years, has taken on dramatic dimensions. It is still not quite a decade since the Berlin Wall came down. Technology and globalization are not only shrinking the world, but they are changing it in very fundamental ways. About 10 or 12 years ago, only about a billion people in the world lived in a market economy and now we've got more than 5 billion people living in a market economy. Some of them are struggling and all of us are learning some important lessons about the necessary conditions -- legal, political and cultural -- for market-based economies to function well. But at this moment in history it does not appear to me that we are going to retreat from that continuing integration through trade, through investment, through the globalization of financial markets that we've seen pick up steam over the past decade.

There are two kinds of constraints that this imposes: one is the constraint on sovereignty that we voluntarily engage in when we enter into international agreements that limit our autonomy. We've talked about that through the course of the day. Canada has operated for a long time now on the premise that as an outward looking country, relatively small, we do better in a rules-based system than we do when we can be sideswiped by arbitrary political action. That has been a conscious tradeoff, an approach that I believe has been appropriate, and an approach that I believe government must continue. I think Michael Hart's comments this morning are very relevant. I agree that the nature of the game will change qualitatively, and that we may well find future international agreements seeing to intrude into areas where we have not traditionally been willing to consider ceding sovereignty. But I don't think we have an option to exit the game. This does not mean that we should negotiate blindly and naively or without regard to Canadian interests. But it does mean that we

have got to be at the tables that matter to us, and we have got to live with the results of the agreements that we do negotiate. That is one constraint. The other constraint that arises from globalization is related to what Ron Giammarino talked about this morning. The fact that we are facing mobile pools of capital, and with globalization mobile resources are more footloose, means that we have competition in public policy that can be very important in locational decisions. My comment on this is that the debate about the international competitiveness of the policy framework seems to me, at least, to focus too much on tax levels and structures. This may be because, as Hufbauer said this morning, they are found to be important in a lot of the empirical work. But it may also be simply because we can measure them better. And what we tend to be able to measure better often gets more attention. It does seem to me that we should not lose sight of the principle that what is important in a logical location decision is the total net return to mobile resources and that is influenced by more than relative tax schedules. The point was made very well by Morck in his remarks when he cited Buchanan, and by David Slater in his intervention from the floor just before lunch, so I won't belabour it.

Perhaps in the general context of globalization I could make a comment on the brain drain. We all recognize that the plural of anecdote is not data, but anecdotes can nevertheless provide important information. My anecdotal evidence, based on two of my three sons who are now living and working in the United States, suggests to me that U.S. opportunities and salary levels are much more important magnets than tax structure. This does not mean that our tax levels and structure are appropriate or should not be lowered. Indeed I believe that substantial tax cuts are warranted. But it does suggest to me that the focus of some on broad income tax reductions as a solution to all of our productivity and brain drain problems is squarely in the category of searching for that magic silver bullet that really doesn't exist.

So, in this messy complex constrained framework what should government do? Let me discuss four areas.

First, government can, and it must, focus on the fundamentals of good macroeconomic policy. Repairing the dysfunctional conditions of the 1970's and the 1980's has exacted a heavy price from Canadians and we must not allow ourselves to return to either high inflation or chronic government deficits. Monetary policy must continue to be focused on domestic price stability and the Bank of Canada must continue to receive strong support from the Prime Minister and from the Minister of Finance. Fiscal policy needs to be managed in a way that ensures that we do not once again slip into structural deficits. But we are a long way from that today. And one issue that ought to be considered now that options exist is

whether the mix of monetary and fiscal policy is optimal or even most appropriate for our circumstances. I don't know if Tom Courchene is still here. I delight in listening to Tom speak about North American monetary union. The first time I heard him give his talk my reaction was -- interesting, but not in my lifetime. I still don't agree with him, but every time I hear him give it again I think maybe I'm going to live a little longer than I thought I was. But one of the points Tom made in passing, which I would echo, is that while we were constrained on the fiscal side we put a tremendous amount of reliance on monetary policy to try to sustain aggregate demand because we did not have fiscal options. And I think that it is the case that this has put added pressure on the currency and introduced added volatility in our currency markets. And I think there is also a case that the structural implications of a persistently undervalued or unnecessarily volatile currency can be serious. So it does seem to me that, given where we are now, it would be useful to have more discussion and debate about whether a looser fiscal policy and tighter monetary policy would have important structural implications over the longer term.

The second area I want to comment on is the policy agenda itself. It seems to me that government can and should play a much more assertive role in defining the economic policy agenda. And I interpret the economic policy agenda quite broadly to include issues of human capital, including education, health and other social programs, as well as sustainability. One of the problems we continue to have is that we live and work too much in silos. I believe that government is well positioned, has the opportunity and should take it as a responsibility to try to break those silos down and to encourage multi-disciplinary approaches to issue of sustainable increases in our standard of living and quality of life. Government should be at the leading edge here.

Kevin Lynch talked about the big issues of productivity, dynamism and innovation, and our relations with the United States. I have my biases about what we should do to meet these challenges, as I suppose each of you does. I think personally that we could use a flatter tax structure. We could use greater returns to risk taking. We could use more resources more innovatively deployed in education and health. We could use better physical infrastructure than we have now. But quite frankly, my biases, while possibly interesting to you and certainly interesting to me, are not as relevant as the pressing need to create and sustain an informed debate on the issues and the choices.

I commented earlier to Kevin that the work that is being done through Industry Canada at this conference is tremendously important. But it has to be taken out of this environment and into an environment where it can be exposed to broader public debate and comment in a way that can help shape a policy agenda. And government should lead that process, or cause

it to happen. It may well be that the time has come to think about a rerun of the Macdonald Royal Commission of the mid-1980s, or some kind of Task Force that could examine where we have come from in the past decade, take our experience and research, and build a public policy agenda that can be the focus of some debate. And if I were going to start that process, I would put as its first term of reference to try to get a better understanding of how we have performed across a number of critical areas relative to the U.S. economy over the past decade. I think that would be an interesting and helpful comparison.

I can't leave the issue of leadership in agenda building without talking again about the budget. And I don't want to leave this notion of "smoke and mirrors" just hanging out there. The budget is an important vehicle for defining priorities and for making choices and we have important choices to make now. I have two observations in this regard.

- The first relates back to the comments I made earlier about the knowledge deficit, or the understanding deficit. I think the government needs to do a better job of trying to get its own act together on some of these critical issues. Groups like the Centre for the Study of Canadian Living Standards, which focuses on productivity, and the Institute for Research on Public Policy, which has just published an excellent issue of Policy Options dealing with the brain drain, are making an important, solid contribution. But it's hard to achieve consensus in the country on these difficult issues when there's not only no consensus in the Cabinet, but when senior Ministers are publicly disagreeing with each other about what the facts mean. When I ask myself why this happens my answer is that it seems to be because the acknowledgement of a problem in the public mind has automatically become identified with a solution. In this case tax cuts. And if you don't happen to like the solution then you try to deny the existence of the problem. This is not a very effective way to have a serious public policy debate. We need to distinguish between diagnosis and prescription and we need seriously to work to ensure that the tax cut issue is not allowed to be positioned as a moral issue or an ideological issue as opposed to an economic issue. I take some considerable comfort from the fact that the NDP and the CLC have both put tax cuts back on their agenda. This may allow a no less heated but more informed debate about what kind of tax cuts we should pursue, and why, which I believe is the real issue.

- My second comment on the budget process is that the government has a responsibility to assist this debate by providing a hard look and an honest look at what resources it believes we have available to allocate over a reasonable timeframe. Now, I think that when Mr. Martin was dealing with the deficits he had to manage he was absolutely right to

maintain short-term focus, to under-promise and over-deliver and to build credibility and momentum in the way he did. But dealing with surpluses is not the same. What we have now is a medium-term budget outlook that is not only not credible, but that actually biases the decision making process away from tax cuts and towards expenditure decisions. This happens because the failure to recognize an ex-ante surplus over a period of years does not allow sustained tax cuts to be considered as fiscally responsible. And when the surplus magically shows up at the end of the year, the easy option to dispose of it is to offload it as expenditures. Millennium scholarship funds, innovation foundations and one-off increases in the CHST may all be good things, and indeed I believe they are good things, but their substance and their form are driven by a process that is less than ideal. I am encouraged by recent press0 reports that suggest that this time around the Minister of Finance is sharing forecasts with private sector economists as he prepares his pre-budget presentation. I think this is good, and I am hopeful it will provide a set of public estimates prior to the upcoming budget that will assist a more rational discussion about the choices that we have.

So far I've talked about focusing on macroeconomic fundamentals, and playing a more assertive leadership role in shaping the public policy agenda. A third area where I think government can do more than it's doing now is to be a little clearer on industrial policy issues, and one one aspect of industrial policy that I particularly want to mention. I agree very much with the comments made in the previous session about industrial policy generally. In fact, when I was in the Department of Finance we had a saying that trying to successfully execute industrial policy was similar to trying to win the Stanley Cup by putting the Montreal Expos on the ice. Nevertheless, the way the world works is such that government does have considerable flexibility and it has discretion in some very important industrial policy decisions. I'm not really talking now about the subsidization aspect of it. I agree very much with Ron Daniels and his paper that we've got to try to get neutrality in the policy framework. But even with a neutral policy framework there will continue to be big issues like bank mergers and airline mergers where the nature of the policy framework is going to require government action of one sort or another. I believe that this kind of flexibility in the framework, coupled with the exercise of government discretion, will continue and it may indeed become relatively more important as globalization intensifies. But I also believe that it carries with it a responsibility to be transparent and open with regard to the public policy imperatives that condition proposed transactions. It will be important to make the rules of the road as clear as possible so that participants in the marketplace have a good idea of the probable decision process they will have to go through and the kinds of outcomes they might reasonably expect.

Let me conclude with my fourth point.
My final observation is about people. The overall theme of my remarks is that the challenges are multifaceted, they're complex and they're going to continue to increase in complexity. The basic task of good government is to anticipate and understand these challenges, to demonstrate their importance to the public, to develop measures appropriate in the circumstances and to lead a public dialogue that can be inclusive and that can build consensus for action. To do that consistently across a range of issues, and to do it well, requires exceptional people. People who are not just competent, but who excel at what they do. People who understand the complex issues and can distill them to their essence, communicate them well and lead in promoting understanding. People who are innovative in their thinking and above all, people who are committed to public service. These observations apply equally to our elected representatives and to the public servants that support them. The most critical challenge government will face will be attracting and retaining the people that it needs to govern well.

My sense – I've been away for a while – my sense is that the malaise that has afflicted the public service for so long has indeed bottomed out. I think opportunities are increasing, conditions are improving. I think morale is on the way back up. But I also believe there is a long way to go to get back to the level that the country deserves. This is going to be a continuing challenge and a demanding one. But putting in place the culture and the reward system that will encourage a strong, professional, dedicated public service is undoubtedly one of the most important ways in which government can address the economic challenges of the next millennium. Thank you.

APPLAUSE

The Response of Government to the Economic Challenges Facing Canadians
Closing Session

Remarks by Jim Lahey

K. Lynch Keith, thank you very much. That was excellent. Our third speaker is Mr. Jim Lahey. Jim is the Associate Deputy Minister for Human Resources Development Canada and the Vice-Chairperson of the Canada Employment Insurance Commission. Prior to that Jim served as the Deputy Secretary, Intergovernmental Policy in the Privy Council Office and prior to that he held a number of positions in the Human Resources Development Canada including Assistant Deputy Minister for Strategic Policy. He also was the co-chairperson of the Federal Government's Policy Research Initiative and has spent a lot of his time in the last couple of years on increasing the research capacity in the Government of Canada. Jim, welcome.

J. Lahey The only thing worse at a conference than being the first speaker is being the last speaker. Assuming that the Chairman means what he says about ending on time more or less, I shall have to be rather sketchy, so you'll forgive me. There are two points that I want to talk about briefly. The first one is that social infrastructure is critical to quality of life, both in itself and because of its impact on productivity and economic growth. And secondly, picking up the theme of institutions that is in Daniels' paper, in our federation the quality of social infrastructure depends importantly on constructive relationships between governments.

First, then on social infrastructure. Well, it's pretty obvious that an effective health care system, education system, crime free communities, etc., is almost by definition what you mean by quality of life. It's less obvious, but I think increasingly recognized, that there's in effect a feedback loop between the social and the economic domains. So much so that even economists, some economists, are starting to notice it. I refer to a paper by Robert Hall and Charles Jones of Stanford University, published in 1998 called "Why Do Some Countries Produce So Much More Output Per Worker Than Others". I really like that title. The quote is, "Differences in physical capital and educational attainment can only partly explain the variation in output per worker. At a deeper level differences in capital accumulation, productivity and therefore output per worker are driven by differences in institutions and government policies which we call social infrastructure."

Now, again I have to be brief, but it seems to me that the basic social and institutional infrastructure of society comprises the state, which creates a legal framework and provides certain programming and so on and that interacts with civil society, NGOs and communities, with firms and with

the family. Now the interaction of all of these yields what we could call social assets. An example is trust. If you have a society where trust prevails you can get things done. If you have a society where trust doesn't prevail you can't get things done. Physical safety, the health of the population, security of property rights, acceptance of change, networking capability, these are social assets. These social assets in turn contribute directly, it seems to me, to the capacity to accumulate human and physical capital and to the streamlining of our capacity to combine those for outputs of two types, both market outputs, straight production of goods and services, but also non-market outputs. And this in turn creates some degree of social cohesion, which then feeds back into the capacity to maintain and embellish the social and institutional infrastructure.

Now, with that as a backdrop, I can defer at least to one of the questions that were posed: what can government do. It seems to me that I would highlight, in the context of human capital in particular which has been mentioned by the other two speakers, the development of children and the development of skills and action to improve inclusion. Now I'm not going to go on about this in policy terms because there simply isn't time. However, I think it is becoming increasingly recognized that the development of children is not just something that starts when people get to school, it's something that starts much earlier on. It has to do (and there's a whole set of physical scientific literature around it), with the development of neurons and so on, which leads us to understand that it's critical that proper kinds of stimulation be available to children in their early years. And so this has investment implications for government, as well as for families obviously.

Secondly, in the area of skills, with all its warts we have a pretty good educational system in Canada that certainly churns out a lot of graduates. As I understand it, we produce more than anybody else proportionately. The problem though is that some of them don't actually learn that much and the literacy tests indicate that a significant portion of our graduates don't actually achieve the kind of literacy that you need to be effective. But secondly, of course, you have to keep learning. So this whole task of getting learning right in the first place and fixing our mistakes more effectively is an area where government needs to be involved as well.

And then thirdly. My former Minister, Pierre Pettigrew has stated recently an interesting point. Keith was talking about history and, in the old sort of Marxist context the workers were exploited and that was the bad thing. Well, in the modern world the problem which is worse, is to be excluded because we actually have the phenomenon of people who don't fit in the economy and in the society. So that's the other area which I think we need to address.

Now, what's the nature of the difference that governments can make? Well it seems to me that the basic thing that governments need to be trying to do is adopting policies which can make what I might call doing the right thing by individuals and firms and institutions easier. And so for example, in the National Child Benefit the aim is to assist people to be able to go into the labour market without having to penalize their children because they lose secondary benefits or they lose income associated with being on welfare. Or another example would be the provision of information in an accessible and useable form so that people can make intelligent choices, and so on.

So I'm going to stop there. But just to reiterate: the social infrastructure is critical in itself to quality of life as well as to improving the economic performance; in order to enhance that in the world that we're moving into it seems to me that selected emphasis in the areas of kids, skills and inclusion ought to be the priorities; and the way it should be done is not to substitute for the action of individuals, but to make it easier for individuals, families and firms to make the right choices.

So, moving onto the second point I wanted to discuss. I reiterate the point that in our federation, given the roles of the federal government and the provinces, being effective requires constructive relations between governments. Now, I understand that Professor Gilles Paquet yesterday basically was arguing that the social union framework agreement that was concluded by all but Quebec among the provinces and the federal government in February was a step backward because it would give the federal government the opportunity to "stick its nose" into more and more areas of social policy and that this was bad. Well I don't agree.

It seems to me in general that the argument that what we need to do is clarify roles and responsibilities and somehow or other create watertight compartments where it's really clear who's accountable for what and people get on with doing what is needed and we're all going to live happily ever after isn't realistic. Which isn't to say that we couldn't clean up our act in some areas. It's true that in some areas the two orders of government do have competing and overlapping programming which is confusing. Clearing that up would be in the public interest. But more generally, all aspects of policy are so interconnected that you can keep clarifying roles and responsibilities, but you keep running into areas of interaction. For example, it was said that the federal government should get out of manpower training, as it was called in the past, and the provinces should do that because they run the education system and they should run systems to improve skills as well. And so we'll clarify things and the provinces will do that and the federal government will get out. So that's a clarification, except that the federal government still runs the income-support system for unemployment insurance. And of course

there's a big connection between when you're on unemployment and when you need skills so there needs to be coordination. Well then, some people say, let's get the feds out of unemployment insurance. Let's put it together in the provinces that would all have their independent systems and so on and so forth and we'd clarify that. Well, once you do that you still have a problem because the federal government still runs the tax system, which affects everybody and it still runs the immigration system and as you see it's not so easy to make these watertight compartments. So, if you accept this logic it seems to me that trying to restructure, except at the margin, is essentially a diversion of energy.

What we need is to work on how to improve coherence. Now coherence doesn't mean uniformity. I think at the minimum coherence means the absence of contradiction. I mean we do have in our system instances where the 2 orders of government adopt policies which cancel each other out, both of them costing money. These are probably not good investments for either. It is good to benefit from the opportunities that federalism provides to have experimentation, variation among provinces and so forth. But it is critical to have some institutional support for coherence. And it's in that context that the social union framework agreement crystallizes some principles that I think can move us in the right direction. And very briefly, because I'm really in trouble now as it gets to 5:00, joint objective setting and priority setting is one of the underlying themes. The federal government and the provinces should try to agree on what should the priorities be, what should the objectives be. The idea of notice on both sides before taking action allows there to be adjustment, discussion, dialogue and reduce the probability of adopting contradictory policies. A recognition of the value of local variation on the hows as opposed to the whats offers increased effectiveness. And finally a focus on results and reporting on results publicly, learning from experience and accountability complete the basics. Obviously, the social union framework agreement in seven months hasn't proven itself yet, but I think it's a necessary step towards the kind of coherence we require in order to ensure that we have the social infrastructure which will allow us to improve our quality of life. Thank you.

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Programme des publications
de recherche d'Industrie Canada

LE CANADA AU 21e SIÈCLE

I. MISE EN SITUATION

LES TENDANCES DÉMOGRAPHIQUES AU CANADA, 1996-2006 : LES RÉPERCUSSIONS SUR LES SECTEURS PUBLIC ET PRIVÉ

Par David K. Foot, Richard A. Loreto et Thomas W. McCormack, Madison Avenue Demographics Group

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PRÉFACE

À L'APPROCHE DU NOUVEAU MILLÉNAIRE, les Canadiens assistent à une transformation radicale des paramètres de l'économie. La tendance à la mondialisation des marchés et à l'intégration de plus en plus poussée de l'activité économique entre les nations s'accentue. Les progrès spectaculaires de l'informatique et des communications facilitent ce mouvement de mondialisation et changent fondamentalement le milieu de travail et le mode de vie des Canadiens. Du même coup, et comme conséquence première de la révolution de l'information, les activités axées sur le savoir occupent une place sans cesse plus grande dans notre économie et celle des autres pays industrialisés.

Cette mutation fondamentale de l'économie nous incite à faire une comparaison avec la révolution industrielle du 19e siècle. Comme à cette époque, les grands changements structurels engendrent des incertitudes. Les entreprises et les travailleurs luttent pour se tailler une place dans ce nouvel ordre économique. Les Canadiens se demandent si les ressources matérielles, humaines et institutionnelles de leur pays constituent une assise suffisamment solide pour garantir leur prospérité future. Beaucoup estiment que les perspectives qui s'offrent au Canada sont beaucoup moins sûres qu'à l'époque où les richesses naturelles jouaient un rôle clé dans l'édification de l'économie du pays.

Afin d'explorer plus à fond les possibilités et les défis que laissent entrevoir ces développements à moyen et à long terme, la Direction de l'analyse de la politique micro-économique d'Industrie Canada a invité un groupe de spécialistes à présenter leur « vision » du Canada au 21e siècle dans un certain nombre de domaines importants. Chaque auteur devait s'attaquer à deux tâches redoutables : d'abord dégager les grandes tendances historiques en vue d'élaborer des scénarios illustrant comment les choses évolueront vraisemblablement au cours des dix à quinze prochaines années dans le domaine qui lui avait été assigné, puis examiner les conséquences à moyen terme de cette évolution pour l'économie canadienne.

Les essais qui découlent de cet exercice sont en voie de publication sous le thème général « Le Canada au 21e siècle ». La collection englobe onze documents traitant des perspectives qui s'offrent au Canada à moyen terme dans différents domaines. Ces documents sont répartis en trois volets. Le premier, *Mise en situation*, est consacré aux tendances fondamentales qui façonneront le contexte économique à moyen terme au Canada. Le second volet, *Ressources et technologie*, traite de l'évolution de certains facteurs importants sur le plan de la création de la richesse au Canada, ainsi que des mesures requises pour leur donner un solide fondement en vue d'assurer la prospérité du pays. Le troisième et dernier volet, *Relever le défi*, scrute les réactions des particuliers, des entreprises et des gouvernements aux défis qui se présenteront à moyen terme et propose certains éléments de solution en vue d'orienter le pays sur la bonne voie.

Dernier exposé du volet *Mise en situation*, l'étude de David Foot, Richard Loreto et Tom McCormack, de Madison Avenue Demographics Group, s'intéresse aux répercussions du vieillissement de la population canadienne sur le contexte économique national. Les auteurs affirment qu'en 2006, des pénuries sérieuses de travailleurs de moins de 35 ans séviront dans certaines industries de services où la technologie ne peut se substituer à la main-d'oeuvre. En outre, l'emploi autonome devrait progresser au cours des prochaines années à mesure que la génération du boum des naissances traversera la période où le travail autonome atteint un sommet parmi ses membres. Cette évolution structurelle de l'offre de main-d'oeuvre s'accompagnera vraisemblablement de certains déplacements importants – d'origine démographique – dans les profils de dépenses, vers les loisirs, les soins de santé et les services financiers.

INTRODUCTION[1]

L'OBJET DE CE DOCUMENT est de décrire et d'analyser les tendances démographiques au Canada, et d'examiner leurs répercussions sur les activités des secteurs public et privé au cours des 10 prochaines années. Même si les constatations et les conclusions qui y sont présentées se fondent sur une somme considérable de travaux empiriques – dont vous trouverez la liste à la section « Bibliographie » –, il importe de souligner qu'Industrie Canada, notre client, souhaitait obtenir un document non technique dans le but de susciter la discussion parmi toutes les parties intéressées. Voilà pourquoi ce document compte peu de données statistiques et que les renvois à des sources de référence précises sont inexistants. À ce dernier égard, vous pourrez consulter la liste des références ou communiquer avec les auteurs.

Ce document est subdivisé en quatre parties. Dans la première, vous sont présentés l'objet de l'étude, l'approche empruntée et la structure du document. Vous trouverez, dans la partie suivante, les tendances démographiques aux échelles nationale, provinciale et urbaine, tendances présentées dans des perspectives rétrospective et prospective. Dans la troisième partie, les auteurs explorent les répercussions générales de l'évolution démographique sur un ensemble de produits et de services des secteurs public et privé. Enfin, vous sont exposées des conclusions générales concernant l'importance relative de l'analyse démographique lors de la détermination, par les secteurs public et privé, des politiques et orientations à retenir.

LA « LEÇON DÉMOGRAPHIQUE »

APERÇU DES TENDANCES DÉMOGRAPHIQUES[2]

HABITUELLEMENT, LA DÉMOGRAPHIE SE PRÉOCCUPE des effets réciproques de nombreuses variables, dont l'ethnicité et le sexe. Dans cette analyse, c'est à l'âge que l'on accorde la plus grande importance, car l'âge, tout au long du cycle de la vie, est la variable démographique la plus déterminante du comportement économique des gens. L'âge explique presque tout quand vient le temps d'analyser, dans une perspective démographique, les comportements économiques de la population.

La population du Canada est vieillissante. Cela tient à une longue période marquée par un faible taux de fécondité – situation qui perdurera sans aucun doute – et par l'accroissement de l'espérance de vie. Cette situation se traduira par des répercussions importantes sur la fourniture de produits et de services par les secteurs public et privé.

La croissance de la population canadienne découle de deux facteurs :

- le taux net d'accroissement naturel – la différence entre les naissances et les décès;
- la balance migratoire – la différence entre l' immigration et l'émigration.

FIGURE 1

INCIDENCE SYNTHÉTIQUE DE FÉCONDITÉ ET NOMBRE DE NAISSANCES (EN MILLIERS), 1921-1995

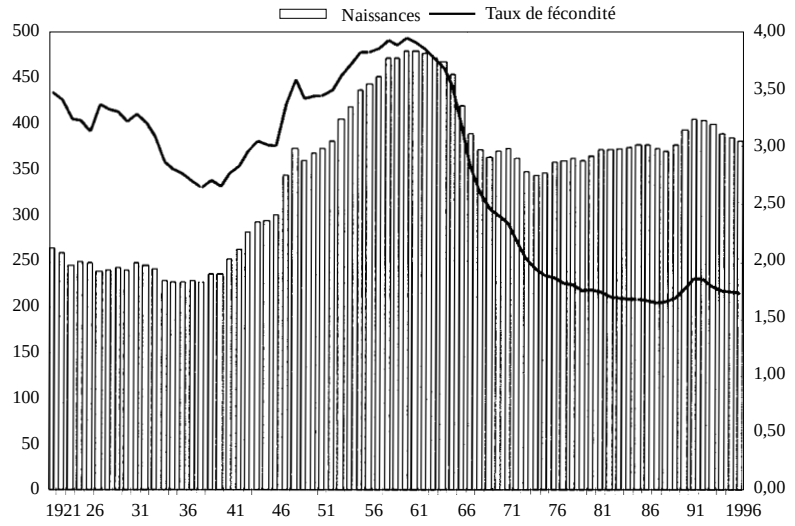
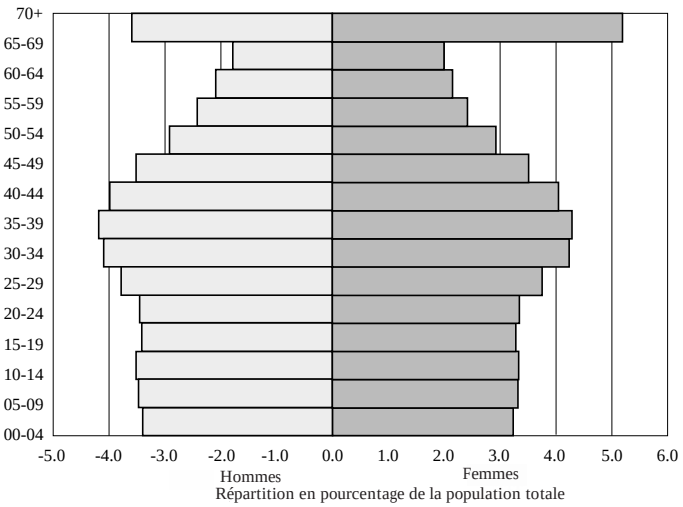


FIGURE 2

LA POPULATION DU CANADA SELON LA COMPOSITION PAR ÂGE, 1996



Pour bien saisir la notion de « naissances », il est utile de faire la distinction entre « taux de fécondité » et « taux de natalité ». Le taux de fécondité exprime le nombre moyen de naissances par femme au cours de leur vie. Il s'agit d'un indicateur de la taille moyenne des familles. Le taux de natalité exprime le rapport entre le nombre des naissances et le chiffre de la population dans une période déterminée.

Au Canada, depuis les années 60, le taux de fécondité est à la baisse. Il s'établit, à l'heure actuelle, à 1,7 enfant par femme. Ce taux est inférieur au taux de reproduction de la population, qui est de 2,1. Toutes les provinces justifient de taux de fertilité inférieurs au taux de reproduction, Terre-Neuve affichant le taux le plus bas jamais constaté pour une province, à savoir 1,3 en 1993. Au Canada, seules les collectivités autochtones justifient d'un taux de fécondité bien supérieur au taux de reproduction.

En dépit de ce faible taux de fécondité, le nombre annuel de naissances a augmenté tout au long des années 80, la génération des « baby-boomers » de l'après-guerre franchissant sa période de fécondité la plus intense. Le nombre de naissances a atteint son point culminant en 1990, accusant une tendance à la baisse depuis (diminution de 4,7 p. 100 de 1990 à 1994).

Au plan du taux net d'accroissement naturel de la population, le modèle des générations « du baby-boom, du baby-bust et de l'écho » constitue la cadre d'analyse par excellence pour bien comprendre les cinquante dernière années et les dix prochaines. Les enfants de la génération du baby-boom, nés entre 1947

et 1966, comptent pour près du tiers (9,8 millions) de la population actuelle du Canada (30 millions). (Veuillez consulter la note 2.) Une importante cohorte de cette génération du baby-boom se compose des personnes nées entre 1960 (au sommet du boom) et 1966 – la soi-disant « génération X » qui compte environ 2,6 millions d'individus. La cohorte de la génération du baby-bust, les enfants nés entre 1967 et 1979 – période au cours de laquelle le taux de fécondité était à la baisse – regroupe quelque 5,4 millions de Canadiens (environ 55 p. 100 de la cohorte du baby-boom). La génération de l'écho, les enfants nés au cours des années 80 et au début des années 90, sont les enfants de la génération des baby-boomers. Ce groupe est plus nombreux (6,9 millions ou environ 70 p. 100 de la cohorte du baby-boom) que le groupe de la génération précédente, celle du baby-bust. Cela tient non pas au relèvement du taux de fécondité, mais plutôt à la seule taille de la génération des baby-boomers. Si l'on se tourne vers l'avenir, il est maintenant possible de déterminer l'importance du groupe qui composera la prochaine génération, « les enfants du millénaire », ceux qui sont nés ou naîtront entre 1995 et 2010. Il s'agira essentiellement des enfants de la génération du baby-bust qui, ultimement, compteront pour un pourcentage relativement faible de la population canadienne.

Le modèle du « baby-boom, du baby-bust et de l'écho » est manifeste au Canada dans son ensemble, de même qu'en Ontario et dans les provinces de l'Ouest. La génération de l'écho ne constitue pas un facteur démographique important ni au Québec ni dans les provinces des Maritimes en raison de taux relativement élevés de migration de la génération du baby-boom au cours des dernières décennies, les baby-boomers ayant quitté ces provinces.

Relativement parlant, c'est au Canada que s'est manifesté le plus, dans la période de l'après-guerre, le phénomène des baby-boomers, lorsque l'on compare la situation du Canada à celle des autres pays développés, y compris les États-Unis, l'Australie et la Nouvelle-Zélande. La taille énorme de la génération du baby-boom, la taille considérablement plus petite de la génération du baby-bust et la dimension « intermédiaire » de la génération de l'écho (plus petite que la génération du baby-boom mais plus grande que la génération du baby-bust) constituent des facteurs démographiques déterminants qui facilitent la compréhension des tendances – passées et futures – en ce qui concerne les orientations des organisations publiques et le comportement des marchés au Canada. Compte tenu de l'importance déterminante de la variable « âge » sur le comportement économique, ces différentes cohortes exerceront une influence considérable, à tous les stades de leur cycle de vie, sur l'offre et la demande de services et de produits des organisations publiques et privées.

Malgré le fléchissement des taux de mortalité, le nombre de décès s'est accru de façon constante au cours des cinquante dernières années et cet accroissement se poursuivra en raison du vieillissement de la population. Qui plus est, à la lumière des taux de mortalité actuels, on constate qu'un « écart numérique se creuse entre les sexes », c'est-à-dire qu'en moyenne les femmes vivent plus longtemps que les hommes (81 ans par rapport à 75 ans). Il demeure

qu'en dépit de l'accroissement, à long terme, du nombre de décès, on a constaté au Canada, en 1994, presque deux fois plus de naissances (386 550) que de décès (211 535).

À la lumière de ces courbes de fécondité et de mortalité, il s' ensuit que la croissance nette de la population canadienne attribuable aux naissances sera nulle d' ici la seconde décennie du XXI^{e} siècle. En l'absence de gains découlant de l'immigration, la population canadienne amorcerait alors une longue période de fléchissement graduel.

L'immigration a toujours constitué un facteur important de la croissance et de la vitalité de la population canadienne. Au fil des ans, l'immigration a été utilisée à titre d'outil de développement économique – taux plus élevés au cours des périodes fastes, où l'économie était en mesure d'absorber un plus grand nombre d'arrivants, et taux plus faibles en périodes de croissance économique modérée. Toutefois, ce lien entre la santé économique du pays et la politique d'immigration du Canada s'est estompé dans les années 90. En dépit du faible rendement économique du Canada depuis le début de la dernière décennie, les taux d'immigration ont été maintenus à des niveaux relativement élevés si on les situe dans une perspective historique.

À l'heure actuelle, un peu plus de 200 000 immigrants viennent s'établir au Canada chaque année. Lorsque l'on tient compte de l'émigration, on obtient un gain net d'environ 150 000 personnes au plan de la population canadienne. En conséquence, la balance migratoire contribue à peine moins que l'accroissement naturel à la croissance de la population.

L'âge des immigrants qui viennent s'établir au Canada varie, la plupart ayant entre 20 et 44 ans. C'est la période de la vie où les gens sont les plus mobiles, et cela s'applique autant à la migration internationale qu'à la migration interne. En conséquence, le facteur de la balance migratoire nette quant à la croissance de la population est davantage pertinent pour certaines cohortes, et l'est moins pour d'autres.

Aussi, la migration nette affecte également la distribution régionale de la population tant entre les provinces qu'à l'intérieur d'une province donnée. Par exemple, la destination canadienne la plus fréquente pour les immigrants est l'Ontario (51,9 p. 100 en 1994), tout particulièrement l'agglomération métropolitaine de Toronto.

Au cours des années 50 et 60, le gros des immigrants au Canada venait d'Europe. Au cours des 25 dernières années, le gros des immigrants provenait de l'Asie, des Caraïbes, de l'Amérique du Sud et de l'Amérique centrale. Cette constatation témoigne du vieillissement (et, d'emblée, du taux moindre de mobilité) de la population européenne et des taux de fécondité et de mobilité plus élevés des populations des pays de l'Asie, des Caraïbes, de l'Amérique du Sud et de l'Amérique centrale. À la lumière des courbes mondiales de fécondité et de mortalité, non seulement l'immigration contribuera à la croissance de la population canadienne, mais elle favorisera la diversité ethnique et raciale, marque de commerce de la société canadienne.

La démographie sert de fondement à l'établissement de projections – et non de prédictions – quant aux tendances de l'avenir. Les projections découlent d'hypothèses quant aux taux de fécondité, de mortalité et de migration nette (tant internationale qu'interne). On peut ainsi imaginer des scénarios à l'égard des cinq, dix ou vingt prochaines années. Or, même s'il est possible de faire des projections à l'égard de périodes encore plus lointaines, il est plus difficile de bien gérer l'autre « tiers » des variables qui ont une incidence sur le comportement économique. En conséquence, si elles découlent d'hypothèses plausibles, les projections démographiques sont plus réalistes lorsqu'elles concernent des périodes de cinq à quinze ans.

Les projections présentées dans cette étude reposent sur le maintien des taux de fécondité, de mortalité et de migration nette (environ 150 000 immigrants par année) actuels. On obtient alors un scénario où le nombre de naissances demeure à la baisse et le nombre de décès demeure à la hausse. En conséquence, le taux de croissance de la population fléchit et, au fil des ans, la part de la migration nette devient plus importante que celle du taux net d'accroissement naturel en ce qui concerne la croissance de la population.

La population du Canada par province en 1996

Depuis 1991, la population du Canada s'est accrue de 6,4 p. 100, passant de 27 296 900 à 29 033 500 personnes (se reporter à la note 2). La répartition de la population canadienne parmi ses régions est inégale. L'Ontario, la province la plus peuplée, comptait environ 10 823 300 personnes en 1996, soit 37,3 p. 100 de la population du pays. Le Québec, la province se classant au second rang, comptait environ 7 187 300 personnes (24,8 p. 100 de la population totale). La Colombie-Britannique, au troisième rang, comptait environ 3 731 200 personnes (12,9 p. 100) et l'Alberta, au quatrième rang, environ 2 717 400 personnes (9,4 p. 100). Ces quatre provinces regroupent 84,2 p. 100 de tous les Canadiens. Le reste de la population — 4 574 300 personnes (ou 15,8 p. 100 du total) — est réparti parmi les six autres provinces et les deux territoires.

Le taux de croissance par province a varié énormément depuis le recensement de 1991. Le taux de croissance de la Colombie-Britannique est le plus élevé (13,7 p. 100 au cours de cette période de cinq ans); elle est suivie des Territoires du Nord-Ouest (9,2), de l'Ontario (7,3), de l'Alberta (6,7), de l'Île-du-Prince-Édouard (4,8), du Québec (4,2), du Yukon (4,1), du Manitoba (2,7), de la Nouvelle-Écosse (2,6), du Nouveau-Brunswick (1,9), de la Saskatchewan (1,2) et de Terre-Neuve (-1,0).

La variation des taux de croissance des provinces au cours de cette période tient aux raisons suivantes: variation des taux de fécondité et de mortalité; variation de la composition par âge des populations auxquelles ces taux s'appliquent; et variation de la mesure dans laquelle chaque province parvient à recruter des migrants de l'étranger et des autres provinces et territoires.

TABLEAU 1

LA POPULATION DU CANADA, PAR PROVINCE, 1996

Province	Population 1996	Évolution (en %) 1991-1996	Part (en %) 1996
Terre-Neuve	563 009	-1,0	1,9
Île-du-Prince-Édouard	135 978	4,8	0,5
Nouvelle-Écosse	923 615	2,6	3,2
Nouveau-Brunswick	737 635	1,9	2,5
Québec	7 187 252	4,2	24,8
Ontario	10 823 307	7,3	37,3
Manitoba	1 121 821	2,7	3,9
Saskatchewan	1 000 439	1,2	3,4
Alberta	2 717 369	6,7	9,4
Colombie-Britannique	3 731 184	13,7	12,9
Yukon	28 954	4,1	0,1
Territoires du Nord-Ouest	62 916	9,2	0,2
Canada	29 033 478	6,4	100,0

TABLEAU 2

FACTEURS INFLUANT SUR LA CROISSANCE DE LA POPULATION DU CANADA, PAR PROVINCE, 1991-1996

	Naissances	Décès	Taux net d'accroissement naturel	Migration nette	Évolution cumulative
Terre-Neuve	31 031	19 280	11 752	-17 228	-5 476
Île-du-Prince-Édouard	8 737	5 719	3 017	3 210	6 228
Nouvelle-Écosse	56 451	37 530	18 920	4 755	23 675
Nouveau-Brunswick	43 105	28 674	14 431	-681	13 750
Québec	446 222	257 429	188 793	102 488	291 282
Ontario	697 258	376 347	320 911	417 497	738 407
Manitoba	81 702	46 129	35 574	-5 703	29 871
Saskatchewan	70 689	40 617	30 073	-18 564	11 509
Alberta	194 191	75 898	118 293	53 521	171 814
Colombie-Britannique	219 154	127 867	91 287	357 842	449 129
Yukon	2 250	629	1 621	-492	1 129
Territoires du Nord-Ouest	7 061	1 300	5 761	-480	5 281
Canada	1 857 851	1 017 419	840 433	896 165	1 736 598

Ce dernier tableau montre que les provinces et les territoires qui justifient des taux de croissance les plus élevés jouissent aussi des taux de migration nette les plus élevés. Par exemple, la population de la Colombie-Britannique s'est accrue de 449 100 personnes au cours des cinq dernières années, et 79,7 p. 100 de cette croissance tient à la migration nette. Par ailleurs, la population du Québec s'est accrue de 291 300 personnes, dont seulement 35,2 p. 100 découle de la migration nette. La population de Terre-Neuve a fléchi de 5,500 personnes – malgré un gain de 11 800 personnes au plan du taux net d'accroissement naturel – en raison d'une perte de 17 200 personnes au titre de la migration nette.

LA POPULATION DU CANADA PAR RÉGION URBAINE EN 1996

EN 1996, LA VASTE MAJORITÉ DE LA POPULATION DU CANADA – 29 033 500 personnes – résidait dans les plus grandes régions urbaines du pays. En voici la ventilation :

- Les 54 plus grandes régions urbaines au Canada – englobant toutes les régions métropolitaines de recensement et les agglomérations de recensement comptant, en 1991, plus de 50 000 personnes – regroupaient, en 1996, 69,8 p. 100 de l'ensemble de la population canadienne.
- Collectivement, de 1991 à 1996, la population de ces 54 régions urbaines s'est accrue de 1 329 700 personnes, ce qui représente 76,6 p. 100 – un taux disproportionné – de la croissance totale de la population canadienne au cours de cette période.
- Ces 54 régions urbaines présentent un taux collectif de croissance de 7,0 p. 100 au cours de la période de 1991 à 1996, contraste marqué par rapport au taux de croissance – seulement 4,9 p. 100 – du reste du Canada (le taux national étant de 6,4 p. 100).
- Les quatre plus grandes régions urbaines – chacune comptant plus de 1 000 000 de personnes – regroupent 35,4 p. 100 de la population canadienne totale.
- Les 16 plus grandes régions urbaines – chacune comptant 250 000 personnes ou plus – regroupent 56,2 p. 100 de l'ensemble de la population canadienne.

Le taux de croissance de la population des régions urbaines du Canada a été inégal au cours de la période de 1991 à 1996, passant de 27,7 p. 100 à Barrie, région urbaine de l'Ontario (taux de croissance annuel composé de 4,2 p. 100) à 0,4 p. 100 à Thunder Bay, une autre région urbaine de l'Ontario (taux de croissance annuel composé de 0,0 p. 100).

TABLEAU 3

LA POPULATION DU CANADA PAR RÉGION URBAINE SELON LA TAILLE DE LEUR POPULATION, 1996

Région urbaine	Province	Population 1996	Évolution (en %) 1991-1996	Part (en %) 1996
Toronto	Ont.	4 222 790	8,5	14,5
Montréal	Qc.	3 258 915	4,2	11,2
Vancouver	C.-B.	1 811 962	13,1	6,2
Ottawa-Hull	Ont.	1 005 150	9,2	3,5
Edmonton	Alb.	869 029	3,5	3,0
Calgary	Alb.	827 567	9,8	2,9
Québec	Qc.	677 155	4,9	2,3
Winnipeg	Man.	669 587	2,6	2,3
Hamilton	Ont.	626 076	4,4	2,2
London	Ont.	406 395	6,5	1,4
Kitchener	Ont.	387 501	8,7	1,3
St. Catharines-Niagara	Ont.	379 310	4,0	1,3
Halifax	N.-É.	336 291	4,9	1,2
Victoria	C.-B.	306 830	6,6	1,1
Windsor	Ont.	278 924	6,4	1,0
Oshawa	Ont.	258 618	7,7	0,9
Saskatoon	Sask.	220 998	5,2	0,8
Regina	Sask.	196 746	2,6	0,7
St. John's	T.-N.	177 239	3,1	0,6
Chicoutimi-Jonquière	Qc.	165 372	2,8	0,6
Sudbury	Ont.	161 914	2,7	0,6
Sherbrooke	Qc.	145 468	4,5	0,5
Kingston	Ont.	143 317	5,1	0,5
Trois-Rivières	Qc.	139 817	2,6	0,5
Kelowna	C.-B.	136 629	22,2	0,5
Abbotsford	C.-B.	135 383	19,2	0,5
Saint John	N.-B.	126 687	1,4	0,4
Thunder Bay	Ont	124 951	0,4	0,4
Sydney	N.-É.	117 052	0,8	0,4
Barrie	Ont.	113 070	22,7	0,4
Moncton	N.-B.	111 542	4,7	0,4
Guelph	Ont.	104 201	7,2	0,4
Brantford	Ont.	102 319	5,4	0,4
Peterborough	Ont.	101 188	3,2	0,3
Belleville	Ont.	100 293	5,6	0,3
Sault Ste-Marie	Ont.	91 416	7,5	0,3
Nanaimo	C.-B.	89 285	21,5	0,3
Sarnia-Clearwater	Ont.	88 928	1,2	0,3
Kamloops	C.-B.	80 193	18,2	0,3
Prince George	C.-B.	77 095	10,7	0,3

TABLEAU 3 (SUITE)

Saint-Jean-sur-Richelieu	Qc.	76 941	12,6	0,3
Fredericton	N.-B.	76 450	6,5	0,3
Chilliwack	C.-B.	73 928	23,0	0,3
North Bay	Ont.	66 647	5,3	0,2
Lethbridge	Alb.	66 206	8,6	0,2
Granby	Qc.	64 135	8,0	0,2
Drummondville	Qc.	63 931	6,4	0,2
Red Deer	Alb.	63 350	9,0	0,2
Shawinigan	Qc.	62 002	0,4	0,2
Charlottetown	Î.-P.-É.	60 631	5,6	0,2
Saint-Jérôme	Qc.	59 975	15,4	0,2
Medicine Hat	Alb.	58 334	10,8	0,2
Cornwall	Ont.	55 768	4,1	0,2
Saint-Hyacinthe	Qc.	51 146	1,9	0,2
Total partiel		20 272 645	7,0	69,8
Reste du Canada		8 760 833	4,9	30,2
Canada		29 033 478	6,4	100,0

LA CROISSANCE DE LA POPULATION DU CANADA DE 1996 À 2006

AU COURS DE LA PROCHAINE DÉCENNIE, les projections indiquent que la population du Canada s'accroîtra de 2 593 000 personnes. Ces projections reposent sur les hypothèses suivantes :

- l'indice synthétique de fécondité se maintiendra au taux de 1,74 naissance vivante par femme;
- les taux de mortalité par âge et par sexe demeureront constants et identiques aux taux constatés au début des années 90; et
- la migration internationale nette s'établira en moyenne à 150 000 personnes par année (c'est-à-dire, immigration moyenne de 200 000 personnes par année, nombre conforme aux objectifs actuels du gouvernement fédéral, et émigration moyenne de 50 000 personnes par année, moyenne établie d'après les données historiques).

La stabilité prévue quant à l'indice synthétique de fécondité au cours de la prochaine décennie suppose que le nombre annuel de naissances se situera entre 370 000 et 380 000 au cours de la période de 1996 à 2006.

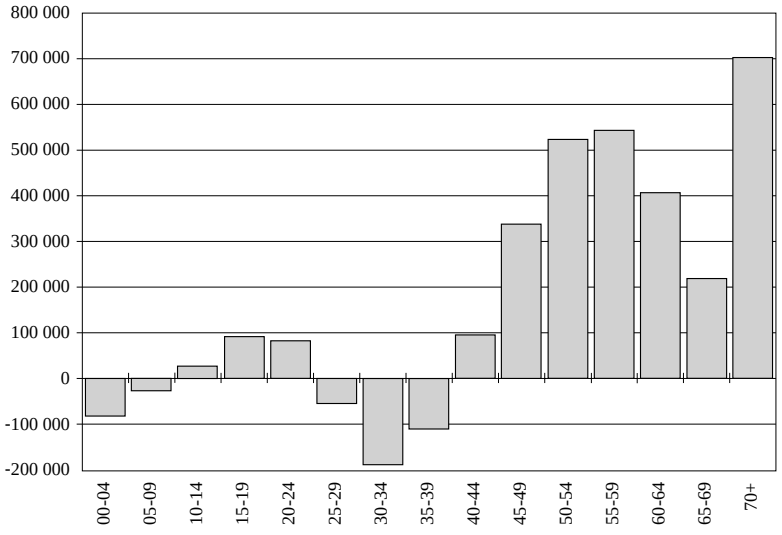
CROISSANCE DE LA POPULATION DU CANADA PAR GROUPE D'ÂGE DE 1996 À 2006

LA CROISSANCE PROJETÉE DE 2 593 000 PERSONNES de la population du Canada au cours de la prochaine décennie devrait se faire de façon inégale selon les groupes d'âge. Cette étude propose les projections suivantes pour cette période :

- Le groupe d'âge qui, en termes absolus, devrait afficher le taux de croissance le plus élevé au cours de cette période est celui des personnes âgées de 70 ans et plus. Il devrait s'élargir d'environ 705 000 personnes au cours de la prochaine décennie, ce qui représentera 27 p. 100 de la croissance totale de la population canadienne.
- Le groupe des 55 à 59 ans devrait s'élargir de 548 000 personnes et celui des 50 à 54 ans, de 529 000. Il faut donc s'attendre à ce que le groupe des cinquantenaires s'élargisse de 1 077 000 personnes, à savoir environ 42 p. 100 de la croissance projetée de la population canadienne – 2 593 000 personnes – au cours de cette période. Ce groupe constitue la première vague de la génération du baby-boom dont les membres s'inscrivent, à l'heure actuelle, dans le groupe d'âge des 40 à 49 ans.

FIGURE 3

CROISSANCE DE LA POPULATION DU CANADA PAR GROUPE D'ÂGE, 1996-2006



- On trouve ensuite, dans l'ordre, le groupe des 60 à 64 ans (hausse de 407 000 personnes), le groupe des 45 à 49 ans (hausse de 339 000 personnes) et le groupe des 65 à 69 ans (hausse de 233 000 personnes). Le groupe des 45 à 49 ans est composé des personnes nés au sommet ou presque du baby-boom.
- La croissance de tous les groupes de moins de 45 ans – subdivisés en tranches de cinq ans – devrait être moindre que celle des groupes de 45 ans et plus. Dans certains cas, des baisses marquées sont prévues. Ces cohortes sont celles de la génération X, ainsi que celles des générations du baby-bust et de l'écho.
- Il faut s'attendre à ce que parmi les groupes d'âge qui accuseront un déclin, les 30 à 39 ans soient les plus touchés. Ce groupe, qui, en 1996, réunissait les personnes âgées de 20 à 29 ans, est celui de la génération du baby-bust, les personnes nées entre 1967 et 1976, époque où le nombre de naissances a été considérablement moindre que celui de la décennie précédente.
- Les groupes réunissant les Canadiens âgés de moins de 45 ans afficheront, au cours de la prochaine décennie, soit une faible hausse, soit une baisse en dépit de l'arrivée d'un nombre important d'immigrants, hypothèse retenue aux fins de nos projections. Règle générale, les immigrants sont relativement jeunes, la plupart s'inscrivant dans le groupe des 22 à 44 ans (57 p. 100 des immigrants, de 1990 à 1992, faisaient partie de ce groupe d'âge). Souvent, ces personnes ont de jeunes enfants. Sans cet afflux d'immigrants au cours de la prochaine décennie, la croissance de la tranche de la population canadienne composée des moins de 45 ans serait encore plus faible que celle prévue à l'heure actuelle.

LA CROISSANCE DE LA POPULATION DU CANADA PAR PROVINCE DE 1996 À 2006

DANS CETTE ÉTUDE, LES PROJECTIONS CONCERNANT la prochaine décennie reposent sur le maintien des taux provinciaux de fécondité et de mortalité récemment constatés et sur une migration nette – le nombre net d'arrivants de l'étranger et d'autres provinces – favorisant grandement l'Ontario et la Colombie-Britannique, ainsi que, dans une moindre mesure, l'Alberta. Le Québec ne tirera profit que de la migration internationale nette, car il sort perdant de la migration interprovinciale nette. Les provinces de l'Ontario, de la Colombie-Britannique et de l'Alberta seront gagnantes sur les deux tableaux de la migration car elles proposent des niveaux de vie et des avenues de développement économique supérieurs à ceux des autres provinces. La migration nette constituera aussi un facteur positif de croissance de la population pour les provinces de la Nouvelle-Écosse, du Nouveau- Brunswick et de l'Île-du-Prince-

TABLEAU 4
FACTEURS INFLUANT SUR LA CROISSANCE DE LA POPULATION DU CANADA PAR PROVINCE, ÉVOLUTION CUMULATIVE, 1996-2006

	Naissances	Décès	Taux net d'accroissement naturel	Migration nette	Évolution
Terre-Neuve	57 432	44 518	12 914	-21 091	-8 177
Île-du-Prince-Édouard	17 583	12 580	5 003	4 296	9 299
Nouvelle-Écosse	104 757	84 363	20 394	14 957	35 350
Nouveau-Brunswick	80 723	65 234	15 489	5 042	20 531
Québec	821 374	632 375	188 999	245 929	434 929
Ontario	1 335 339	922 400	412 938	689 618	1 102 556
Manitoba	153 632	102 015	51 617	-7 015	44 602
Saskatchewan	136 603	88 620	47 983	-30 799	17 184
Alberta	368 497	190 758	177 739	78 806	256 545
Colombie-Britannique	466 580	319 081	147 499	523 120	670 619
Yukon	3 965	1 804	2 161	-476	1 686
Territoires du Nord-Ouest	14 203	3 550	10 653	-2 767	7 885
Canada	3 560 687	2 467 298	1 093 389	1 499 620	2 593 009

Édouard. Cependant, elle affectera négativement la Saskatchewan, Terre-Neuve, le Manitoba, les Territoires du Nord-Ouest et le Yukon. Voici un tableau présentant la croissance prévue de la population des provinces, des territoires et du Canada au cours de la prochaine décennie.

LA CROISSANCE DE LA POPULATION DU CANADA PAR RÉGION URBAINE DE 1996 À 2006

RÈGLE GÉNÉRALE, IL EST À PRÉVOIR QUE LES RÉGIONS URBAINES qui ont présenté la croissance absolue la plus rapide ou la plus importante au cours de la période de 1991 à 1996 poursuivront sur leur lancée au cours de la prochaine décennie. On s'attend à ce que les dix régions urbaines qui auront le taux de croissance le plus élevé seront les suivantes : Barrie, en Ontario, suivie de Chilliwack, Kelowna, Nanaimo, Kamloops et Abbotsford, en Colombie-Britannique, Saint-Jérôme, au Québec, Vancouver, en Colombie-Britannique, Saint-Jean-sur-Richelieu, au Québec, et Prince George, en Colombie-Britannique.

Les dix régions urbaines qui, en termes absolus, devraient contribuer le plus à la croissance de la population du Canada sont les suivantes : Toronto, en Ontario, Montréal, au Québec, Vancouver, en Colombie-Britannique, Ottawa-Hull, en Ontario et au Québec, Calgary et Edmonton, en Alberta, la ville de Québec, au Québec, Winnipeg, au Manitoba, Hamilton, en Ontario, et Kelowna, en Colombie-Britannique.

TABLEAU 5

LA CROISSANCE DE LA POPULATION AU CANADA PAR GRANDE RÉGION URBAINE, 1996-2006

	1996	2006	1996-1906	Évolution (en %) 1996-1906
Toronto	4 222 791	4 720 406	497 614	11,8
Montréal	3 258 907	3 456 544	197 637	6,1
Vancouver	1 811 934	2 124 981	313 047	17,3
Ottawa-Hull	1 005 187	1 131 547	126 361	12,6
Edmonton	869 003	912 409	43 406	5,0
Calgary	827 570	936 966	109 396	13,2
Québec	677 165	724 665	47 500	7,0
Winnipeg	669 586	696 033	26 448	3,9
Hamilton	626 051	664 169	38 118	6,1
London	406 402	443 268	36 866	9,1
Kitchener	387 517	433 815	46 298	11,9
St. Catharines-Niagara	379 302	401 021	21 719	5,7
Halifax	336 297	360 168	23 870	7,1
Victoria	306 817	334 819	28 002	9,1
Windsor	278 909	303 654	24 746	8,9
Oshawa	258 617	283 395	24 778	9,6
Saskatoon	221 006	238 447	17 442	7,9
Regina	196 743	204 656	7 913	4,0
St. John's	177 238	187 310	10 072	5,7
Chicoutimi-Jonquière	165 385	172 381	6 996	4,2
Sudbury	161 892	168 364	6 473	4,0
Sherbrooke	145 457	155 325	9 868	6,8
Kingston	143 313	153 477	10 164	7,1
Trois-Rivières	139 815	145 610	5 794	4,1
Kelowna	136 625	173 625	36 999	27,1
Matsqui	135 365	167 592	32 227	23,8
Saint John	126 688	129 423	2 735	2,2
Thunder Bay	124 973	125 493	520	0,4
Sydney	116,977	118 317	1 340	1,1
Barrie	113,050	146 513	33 463	29,6
Moncton	111 535	119 561	8 027	7,2
Guelph	104 204	114 311	10 106	9,7
Brantford	102 305	109 805	7 501	7,3
Peterborough	101 198	105 572	4 374	4,3
Belleville	100 293	107 645	7 352	7,3
Sault Ste-Marie	91 419	100 714	9 295	10,2
Nanaimo	89 337	112 492	23 155	25,9
Sarnia-Clearwater	88 918	90 128	1 210	1,4
Kamloops	80 194	99 456	19 262	24,0
Prince George	77 108	89 048	11 940	15,5
Saint-Jean-sur-Richelieu	76 994	90 129	13 136	17,1

TABLEAU 5 (SUITE)

Fredericton	76 524	83 878	7 354	9,6
Chilliwack	74 089	95 021	20 931	28,3
North Bay	66 637	72 132	5 496	8,2
Lethbridge	66 215	74 277	8 062	12,2
Granby	64 175	71 530	7 356	11,5
Drummondville	63 943	69 885	5 943	9,3
Red Deer	63 354	71 240	7 886	12,4
Shawinigan	61 949	62 109	159	0,3
Charlottetown	60,668	65 607	4 939	8,1
Saint-Jérome	59 981	71 779	11 799	19,7
Medicine Hat	58 355	67 141	8 786	15,1
Cornwall	55 748	58 592	2 844	5,1
Saint-Hyacinthe	51 139	52 383	1 243	2,4
Total partiel	20 272 862	22 268 828	1 995 966	9,8
Autres	8 760 595	9 357 638	597 043	6,8
Canada	29 033 457	31 626 466	2 593 009	8,9

Nos projections quant à la croissance des régions urbaines au Canada au cours de la prochaine décennie sont résumées dans le tableau 5.

CROISSANCE DE LA POPULATION ACTIVE DU CANADA PAR GROUPE D'ÂGE ET PAR SEXE DE 1996 À 2006

EN PRINCIPE, LE TAUX D'ACTIVITÉ DE LA POPULATION ACTIVE augmente d'abord avec l'âge, puis fléchit encore selon l'âge (rapport en U inversé). En conséquence, de 1996 à 2001 (et jusqu'en 2021 et au-delà), on s'attend à ce que les taux globaux de participation soient à la baisse. Or, les taux d'activité selon le sexe pourraient présenter des particularités différentes. De façon générale, les taux d'activité des femmes de plus de 35 ans seront à la hausse, et ceux des hommes de plus de 35 ans seront à la baisse. Cela tient à l'arrivée plus tardive des femmes sur le marché du travail au cours de la période de l'après-guerre et à la présence prédominante des hommes dans les secteurs primaires et secondaires, secteurs visés par d'importants exercices de réduction des effectifs.

De 1981 à 1991, le taux d'activité au Canada est passé de 65,3 p. 100 à 66,7 p. 100. Cependant, compte tenu des faibles perspectives d'emploi au cours des cinq dernières années, ce taux est passé à 64,8 p. 100, un taux inférieur à celui de 1981. Cette baisse s'est fait sentir chez les hommes de tous les groupes d'âge et chez les femmes de moins de 35 ans. Il importe de noter que le taux d'activité des femmes de plus de 35 ans a poursuivi sa montée pendant la récession.

TABLEAU 6

TAUX D'ACTIVITÉ SELON L'ÂGE ET LE SEXE, 1981-2021

	1981	1986	1991	1996	2001	2006	2011	2016	2021
Hommes 15-19	58,4	56,1	55,9	50,0	55,0	55,0	55,0	55,0	55,0
Hommes 20-24	86,6	84,8	81,5	78,6	80,3	78,8	77,3	75,8	74,3
Hommes 25-34	95,3	94,3	92,6	91,0	92,7	92,0	91,4	90,7	90,1
Hommes 35-44	96,0	94,9	93,7	92,1	93,7	93,0	92,4	91,7	91,1
Hommes 45-54	92,7	91,6	90,6	89,4	88,6	87,8	86,9	86,1	85,3
Hommes 55-59	83,1	79,2	76,1	72,7	72,5	71,4	70,3	69,2	68,2
Hommes 60-64	65,5	56,8	48,2	44,0	40,0	36,0	32,1	28,1	24,1
Hommes 65-69	21,8	18,6	17,6	17,1	16,6	16,2	15,7	15,3	14,8
Hommes 70 et plus	9,0	7,6	7,4	6,1	5,6	5,1	4,5	4,0	3,5
Femmes 15-19	53,4	53,1	54,0	48,0	53,0	53,0	53,0	53,0	53,0
Femmes 20-24	73,9	77,2	75,9	72,4	74,8	73,2	71,7	70,1	68,5
Femmes 25-34	66,4	74,0	77,5	76,7	78,8	79,8	80,8	81,8	82,8
Femmes 35-44	64,7	72,4	78,4	78,4	80,3	81,3	82,3	83,3	84,3
Femmes 45-54	55,6	60,8	70,0	72,6	75,8	79,1	82,4	85,6	85,3
Femmes 55-59	40,1	42,3	46,5	48,8	51,0	53,2	55,5	57,7	59,9
Femmes 60-64	26,2	24,3	24,5	23,3	22,1	20,9	19,7	18,5	17,3
Femmes 65-69	7,9	7,2	7,0	7,4	7,5	7,7	7,9	8,0	8,2
Femmes 70 et plus	2,5	1,9	1,7	1,5	1,3	1,1	0,9	0,7	0,5
Hommes	78,7	77,1	75,1	72,4	72,2	70,0	67,7	65,4	63,3
Femmes	52,3	55,8	58,5	57,5	58,4	57,9	57,2	56,5	55,3
Total	65,3	66,3	66,7	64,8	65,2	63,9	62,3	60,8	59,2

Voici, pour l'avenir, les tendances propres aux taux d'activité qui devraient se manifester :

- Au cours des cinq prochaines années, on devrait constater un certain rattrapage cyclique quant aux taux d'activité des hommes de moins de 35 ans et des femmes de moins de 25 ans.
- Au-delà de 2001, les taux d'activité de la population active, tant chez les hommes que chez les femmes âgés de 15 à 19 ans, devraient se maintenir, alors que les taux des hommes de 20 à 34 ans et des femmes de 20 à 24 ans devraient revenir aux taux constatés avant la récession, à savoir une baisse graduelle à long terme.
- La baisse à long terme du taux d'activité des hommes actifs âgés de plus de 35 ans, amorcée avant la récession, devrait se poursuivre, mais à un moindre rythme.
- Le taux d'activité des femmes de plus de 35 ans devrait poursuivre son ascension. Toutefois, à mesure que le taux des femmes se rapprochera de celui des hommes du même groupe d'âge, le taux d'activité des deux sexes amorcera un fléchissement.

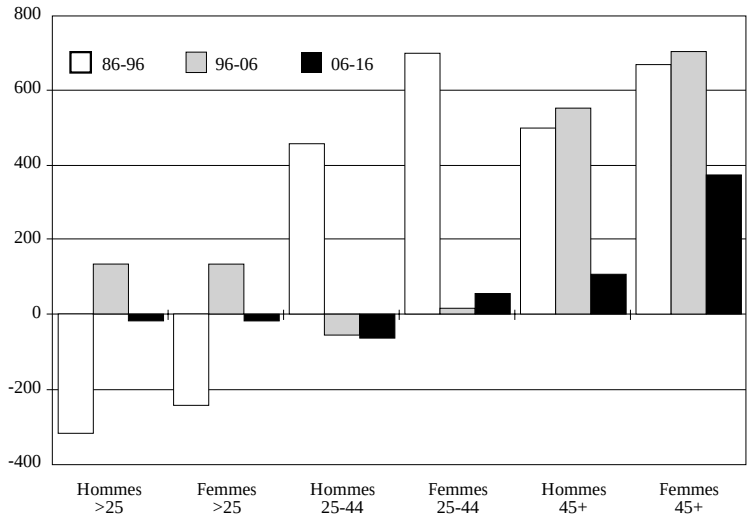
En conséquence de ces variations, le taux d'activité global de la population active du Canada passera de 64,8 p. 100, son taux actuel, à 65,2 p. 100 d'ici 2001. Ensuite, il commencera à fléchir pour atteindre 63,9 p. 100 en 2006 (et 59,2 p. 100 en 2021), une tendance conforme au vieillissement attendu de la population canadienne.

L'analyse concomitante de l'évolution des taux d'activité et des groupes d'âge de la population canadienne, dont il a été question précédemment, indique que les tendances suivantes devraient se manifester quant à la population active :

- Au cours de la prochaine décennie, le nombre de personnes actives parmi les hommes de moins de 25 ans et les femmes du même groupe d'âge ne devrait s'accroître que de 100 000 personnes par sexe. Au cours de la dernière décennie, ces deux groupes d'âge ont connu des baisses importantes. De 2006 à 2016, on ne devrait constater aucune croissance chez ces deux groupes.
- Au cours de chacune des deux prochaines décennies, ni les hommes de 25 à 44 ans ni les femmes de 25 à 44 ans ne devraient contribuer à la croissance de la population active du Canada, virage marqué par rapport à la dernière décennie alors qu'ils figuraient au nombre des principaux groupes qui ont alimenté la croissance de la population active.

FIGURE 4

LA CROISSANCE DE LA POPULATION ACTIVE AU CANADA, 1986-2016
ÉVOLUTION DÉCENNALE (EN MILLIERS)



- Au cours de la prochaine décennie – de 1996 à 2006 –, les groupe des hommes et des femmes de plus de 45 ans seront quasiment les seuls à contribuer à la croissance de la population active. Toutefois, au-delà de 2006, leur contribution s'atténuera de façon considérable, même si, dans l'ensemble, ces groupes demeureront les principaux artisans de la croissance. Ce sont les femmes de ce groupe d'âge qui alimenteront le plus la croissance.

Encore une fois, les tendances des prochaines dix années révèlent l'incidence du vieillissement des générations du baby-boom, du baby-bust et de l'écho. Le plus faible taux de croissance de la population active âgée de moins de 45 ans tient à la prédominance des générations du baby-bust et de l'écho dans ce groupe d'âge. Le taux plus élevé de croissance du groupe des 45 ans et plus traduit la prédominance de la génération du baby-boom, tout particulièrement des cohortes de la première vague et du sommet. Par conséquent, à mesure que la population canadienne vieillit, sa population active subit le même phénomène. L'incidence du vieillissement de la population se reflète dans les tendances concernant la croissance de la population et les taux d'activité de la population active.

TABLEAU 7

LA CROISSANCE DE L'EMPLOI AU CANADA PAR SECTEUR D'ACTIVITÉ, 1985-1995
EN MILLIERS DE PERSONNES

	1985	1995	Évolution 1985-1995	Évolution (en %) 1985-1995	Évolution (en %) 1995
Ensemble des secteurs	11 742	13 506	1 764	15,0	100,0
Primaire	1 074	1 022	-53	-4,9	7,6
Secteur manufacturier	2 064	2 061	-3	-0,1	15,3
Construction	608	724	115	19,0	5,4
Services publics	919	1 033	114	12,4	7,6
Commerce	2 088	2 307	219	10,5	17,1
Finances	660	809	149	22,6	6,0
Services	3 795	5 036	1 241	32,7	37,3
Services aux entreprises	527	867	340	64,4	6,4
Services d'éducation	768	944	176	23,0	7,0
Services sociaux et de santé	1 012	1 340	328	32,4	9,9
Hébergement, aliments et boissons	664	861	197	29,6	6,4
Services, autres secteurs	825	1 025	200	24,3	7,6
Administration publique	830	810	-20	-2,4	6,0

TABLEAU 8

LA CROISSANCE DE L'EMPLOI AU CANADA PAR SECTEUR D'ACTIVITÉ, 1996-2006

	1996	2006	Évolution 1996-1906	Évolution (en %) 1996-1906
Primaire	760 948	792 632	31 684	4,2
Secteur manufacturier	2 070 587	1 865 013	-205 574	-9,9
Construction	764 451	959 568	195 117	25,5
Services publics	1 029 566	1 106 875	77 309	7,5
Commerce	2 313 934	2 408 197	94 264	4,1
Finances	818 675	1 019 955	201 280	24,6
Services	5 120 863	6 193 025	1 072 163	20,9
Administration publique	785 718	800 235	14 517	1,8
Total	13 664 741	15 145 501	1 480 759	10,8

LA CROISSANCE DE L'EMPLOI AU CANADA PAR SECTEUR D'ACTIVITÉ DE 1996 À 2006

L'UNE DES TENDANCES ÉCONOMIQUES qui se manifestent à l'heure actuelle au Canada, est l'évolution du profil des emplois créés. Au cours de la décennie ayant pris fin en 1995, le nombre d'emplois a augmenté de 1 764 000 au Canada. Le secteur primaire – qui englobe l'agriculture, la pêche et la foresterie – accuse une perte de 53 000 emplois au cours de cette période, le secteur manufacturier de 3 000 emplois et l'administration publique de 20 000 emplois. Ces pertes, toutefois, ont été plus que compensées par les gains importants constatés dans les secteurs des services, du commerce, des finances, de la construction et des services publics. Ces tendances relatives à la croissance de l'emploi par secteur d'activité devraient se maintenir dans un avenir prévisible.

L'INCIDENCE DE L'ÉVOLUTION DÉMOGRAPHIQUE

L'APPLICATION DU MODÈLE DU « BABY-BOOM, DU BABY-BUST ET DE L'ÉCHO »

La génération du baby-boom compte pour un tiers de la population actuelle. La taille de la génération du baby-bust est 45 p. 100 plus petite, et celle de la génération de l'écho, qui est plus grande que celle du baby-bust, n'est que de 70 p. 100 de celle de la cohorte des baby-boomers. Au total, ces trois générations comptent pour près du trois-quart de la population canadienne.

Pour bien saisir l'incidence de la démographie et pour appliquer le modèle du « baby-boom, du baby-bust et de l'écho », il importe de situer les groupes d'âge de ces trois cohortes dans une période déterminée. Par exemple, en 1996, le groupe d'âge des baby-boomers s'étale de 30 à 49 ans, celui de la génération du baby-bust de 17 à 29 ans, et celui de la génération de l'écho de 0 à 14 ans.

Cette constatation fait ressortir certaines questions d'ordre économique. Est ce que les besoins en loisirs, en éducation et en logement des trois cohortes sont identiques? Est-ce que les membres de chacune des cohortes épargnent ou dépensent leur argent de la même façon? Si le groupe d' âge de la cohorte la plus importante, la génération du baby-boom, va de 30 à 49 ans, quel sera l'avenir, des secteurs du tourisme et des sports professionnels, ou encore, de l'opéra? Et la population active est-elle en mesure de répondre aux besoins du marché?

LES FACTEURS DE L'OFFRE

Les jeunes et l'emploi

Depuis toujours, lorsqu'il est question du marché de l'emploi des jeunes, on parle des personnes âgées de 15 à 24 ans. Plus récemment, on élargit parfois la cohorte des jeunes pour y regrouper les personnes âgées de 15 à 29 ans. Cette redéfinition du groupe d'âge de la cohorte des jeunes traduit la réalité d'aujourd'hui, à savoir qu'un plus grand nombre d'entre eux poursuivent des études supérieures, parfois jusqu'au doctorat. Cela tient en partie à la situation économique peu réjouissante et, en conséquence, aux faibles perspectives d'emploi à plein temps au Canada au cours de la présente décennie.

La génération X devrait également être comprise dans le marché des jeunes. Ce groupe est constitué du dernier quart de la cohorte des baby-boomers (près de 27 p. 100). Elle ne ressemble en rien à la génération des vingtagénaires que nous présentent les médias. La génération X devrait être incluse dans le cadre de l'analyse démographique du marché de l'emploi des jeunes car c'est cette génération qui a été la plus marquée par les réalités démographiques et économiques des quinze dernières années. Les membres de cette cohorte sont arrivés sur le marché du travail vers la fin des années 70 et ont subi les affres de

la récession du début des années 80. En outre, ils ont été les principales victimes de la réduction des effectifs dans les organisations publiques et privées au cours des années 90.

En 1981, la répartition de la population active du Canada (c'est-à-dire, les 15 à 64 ans) se traduisait par une forme triangulaire, forme manifeste depuis 1921. Une distribution triangulaire signifie que l'on constate à la base un grand nombre de jeunes travailleurs, dont le nombre s'amenuise à mesure que l'on se rapproche du sommet du triangle composé d'un plus petit groupe de travailleurs plus âgés, à l'aube de la retraite. L'année 1981 est fort représentative de la période où le gros des baby-boomers ont fait leur entrée sur le marché du travail.

Au Canada, la population active projetée pour 2006 est totalement différente de celle de 1981. Elle sera composée d'un nombre considérablement moindre de personnes âgées de moins de 35 ans et d'un nombre beaucoup plus élevé de personnes de plus de 35 ans. Cette réduction de la cohorte des moins de 35 ans s'avérera, en dépit de la hausse importante du nombre d'immigrants et de l'arrivée des membres de la génération de l'écho sur le marché du travail. Une partie du fléchissement de la cohorte des moins de 35 ans sera compensée par un recours élargi à la technologie. Cette tendance se manifeste depuis un certain temps déjà dans les grandes entreprises manufacturières, par exemple, les fabricants d'automobiles. Toutefois, on ne sait trop encore si la technologie saura combler les besoins en main d'oeuvre du secteur des services – secteur plus vaste et à plus forte croissance – qui présente de meilleures perspectives d'emploi. Si le recours à la technologie s'avère un échec, alors il y aura une forte demande pour de jeunes travailleurs, à un moment où l'offre sera insuffisante.

Dans les entreprises manufacturières de petite et moyenne taille, dans le secteur de la construction et dans le secteur primaire, on pourrait constater une pénurie de main-d'oeuvre qualifiée. Au cours de la période de l'après-guerre, les jeunes ont occupé les postes d'apprenti et les immigrants, la plupart des Européens, ont grossi les rangs des hommes de métier. À l'avenir, la taille de ces deux groupes sera moindre. Les études démographiques concernant un certain nombre de métiers dans le secteur de la construction en Ontario révèlent que l'âge moyen des travailleurs de ce secteur est, à l'heure actuelle, plus élevé que l'âge moyen de l'ensemble de la population. Deux études indépendantes ont soulevé cette préoccupation relativement aux entreprises établies à Hamilton, en Ontario. TransSkills, un courtier en formation de la région de Hamilton-Wentworth, souligne qu'en raison des facteurs démographiques, il y aura pénurie de main-d'oeuvre qualifiée d'ici 2005. Un sondage mené par les services d'emploi du YMCA de Hamilton révèle que des postes dans des métiers spécialisés étaient vacants dans 26,5 p. 100 des 170 entreprises consultées.

Le travail indépendant

De 1976 à 1987, le nombre de travailleurs indépendants dans la population active est passé de un million à 1,6 million, un taux de croissance de 60 p. 100. En 1987, environ 54 p. 100 des travailleurs indépendants étaient des travailleurs autonomes à leur propre compte, ce qui signifie que, règle générale, ils ne comptaient pas d'employés rémunérés. En 1995, les rangs des travailleurs indépendants avaient énormément grossi, s'établissant à 2,1 millions.

Ces données sont dérivées d'études sur le travail indépendant effectuées par Statistique Canada. Ces études révèlent également que plus le travailleur est âgé, plus il est probable qu'il ou elle quittera son emploi en entreprise pour se lancer à son compte. En 1987, quelque 20 p. 100 des travailleurs âgés de 45 à 64 ans étaient des travailleurs indépendants comparativement à 13 p. 100 des travailleurs âgés de 25 à 44 ans et 5 p. 100 des travailleurs âgés de 15 à 24 ans. Il se dégage le même modèle des données de 1995. Le lien direct entre l'âge et le travail indépendant traduit les différences au plan de l'expérience, des compétences, des ressources et des occasions entre les travailleurs plus âgés et moins âgés.

En 1987, la première vague des baby-boomers a atteint l'âge de 40 ans. Le gros des baby-boomers ayant 36 ans en 1996, la plus grosse tranche de cette énorme cohorte n'en est pas encore au sommet de son cheminement professionnel. Qui plus est, cette tendance du travail indépendant a été accentuée par le grand nombre d'exercices de réduction des effectifs dans les organisations publiques et privées.

Or, ce ne sont pas toutes les victimes de la réduction des effectifs qui sont en mesure de devenir des travailleurs indépendants. Les travailleurs de moins de 35 ans sont moins bien placés que les travailleurs quinquagénaires et sexagénaires qui, il y a fort à parier, quitteront leur emploi auprès d'une organisation publique ou privée avec, en poche, une indemnité de départ appréciable, sans oublier les programmes d'aide à la transition dont ils bénéficient.

Les compétences en informatique

Les données longitudinales obtenues de Statistique Canada révèlent qu'il y a un lien direct entre l'acquisition de compétences en informatique et le revenu du ménage (c'est-à-dire que plus le revenu est élevé, plus grandes sont les compétences) et l'âge (plus la personne est âgée, moins grandes sont ses compétences). Une étude, effectuée en 1989, révèle une baisse marquée des niveaux de compétence chez les gens âgés de 45 ans et plus. Une étude similaire, en 1994, a révélé que le point de chute se situait maintenant à 55 ans, mais que seulement 55 p. 100 des répondants âgés de 45 à 55 ans savaient utiliser un ordinateur. Ce taux se compare au taux de 38 p. 100 constaté en 1989.

Un enquête effectuée en 1996 pour le compte de Statistique Canada par Paul Dickinson, économiste à l'Université McGill, et George Sciadas, un

employé de l'agence, montre que le taux de pénétration des ordinateurs dans les foyers canadiens est passé de 19 p. 100, en 1991, à 28,8 p. 100 en 1995 (25 p. 100 en 1994). L'enquête révèle également la variation des taux de pénétration selon les régions du Canada. Environ un tiers des ménages en Alberta, en Colombie-Britannique et en Ontario possèdent un ordinateur comparativement à un quart des ménages au Québec, en Saskatchewan, au Manitoba et en Nouvelle-Écosse, et à un cinquième des ménages à Terre-Neuve et au Nouveau-Brunswick. L'Île-du-Prince-Édouard affiche le taux de pénétration le plus bas, à savoir 16 p. 100.

Une indication quant au taux d'utilisation d'Internet par les Canadiens ressort d'une enquête récente menée par Gallup Canada et Goldfarb Consultants pour le compte de Andersen Consulting Canada, enquête menée auprès de 1 337 personnes. Cette enquête révèle que plus de gens se sont abonnés à Internet (29 p. 100 en 1996 par rapport à 12 p. 100 en 1995) au cours de la dernière année et qu'Internet est utilisé surtout pour effectuer des transactions. Cependant, les gens hésitent à acheter des biens qu'ils ne peuvent inspecter.

Une autre enquête effectuée cette année nous donne un aperçu de l'utilisation d'Internet par les entreprises. Dans le cadre d'une enquête menée par Compas pour le compte du cabinet de consultants A.T. Kearney Inc., de Toronto, on a consulté des cadres supérieurs de 412 entreprises – de taille différente – de toutes les régions du Canada oeuvrant dans divers secteurs d'activité. Quarante (40) p. 100 des entreprises consultées étaient abonnées à l'Internet comparativement à 20 p. 100 six mois plutôt. Ce taux devrait atteindre 80 p. 100 d'ici 12 mois. Vingt-deux (22) p. 100 des entreprises abonnées ont un site Web, ce nombre devant atteindre 60 p. 100 d'ici 12 mois. Quatre-vingt (80) p. 100 des entreprises ont manifesté un appui fort ou modéré à l'égard de l'Internet à titre d'outil d'affaires important, 12 p. 100 le qualifiant de « mode » et 8 p. 100 étant indécises. Enfin, la mesure dans laquelle les employés des entreprises ont accès à l'Internet varie comme suit :

moins de 10 employés	36 % des entreprises
10 à 25	21 %
26 à 50	24 %
51 à 75	8 %
plus de 75	8 %
Ne sais pas	2 %

Jeffrey Gilchrist, de A.T. Kearney, estime que l'entreprise canadienne moyenne en est à la fin de la première étape de l'exploitation d'Internet – l'étape de la recherche ou de l'extraction d'information. Les étapes à venir englobent la communication d'information aux clients et l'exécution de transactions, comme faire des réservations ou remplir un formulaire. Nadir Desai, président de la filiale canadienne de PSINet Inc., le plus important fournisseur Internet

au monde auprès des entreprises, mentionne qu'à l'heure actuelle les entreprises utilisent l'Internet essentiellement pour communiquer entre elles. Il estime qu'il faudra beaucoup de temps avant que l'Internet se transforme, entre autres, en centre commercial électronique car les gens hésitent à faire l'acquisition de biens qu'ils ne peuvent voir. Une exception à cette tendance pourrait concerner l'achat d'articles de faible valeur, par exemple, l'achat pour un dollar d'une chanson figurant sur un DC. Stephen Kiar, un associé chez A.R. Kearney, estime que les obstacles qui entravent l'élargissement du commerce ne tiennent pas aux coûts, à la protection de la vie privée ou à la nébulosité des avantages économiques, mais plutôt à la complexité de la technologie. En conséquence, les partisans du « Net » devraient axer leurs efforts sur l'éducation.

Le secteur bancaire est le meilleur exemple, dans le secteur des services, du recours à la technologie informatique. Qui plus est, cette technologie est mise en place en pleine période de réduction des effectifs. Braxton Associates (Deloitte & Touche), dans le cadre d'une enquête effectuée, en 1995, auprès de 200 banques au Canada, aux États-Unis, en Grande-Bretagne et en Europe, a constaté que la technologie devrait mener, au cours de la prochaine décennie, à une réduction de la moitié des succursales et du quart des effectifs. Aux États-Unis, 450 000 emplois seront abolis. Une tendance similaire se manifeste au Canada – l'effectif des six plus grandes banques a baissé de 2,5 à 3,0 p. 100 par année au cours des trois dernières années. L'orientation prédominante : les transactions routinières seront effectuées au moyen d'outils technologiques, alors que l'on affectera le personnel aux ventes et aux services aux clients, au profit de ceux qui peuvent s'offrir des services financiers personnels.

Une enquête récente de Payment Systems Inc., cabinet de Tampa, en Floride, se spécialisant dans la recherche commerciale dans le secteur bancaire, a constaté que bien qu'un tiers des ménages ont un ordinateur et que la majorité de ceux-ci disposent d'un modem, seulement 1 p. 100 des consommateurs utilisent à l'heure actuelle des services bancaires informatisés et 18 p. 100 les utiliseraient s'ils étaient accessibles. Des 2 590 personnes consultées, 63 p. 100 d'entre elles ignoraient si leur établissement financier offrait des services bancaires informatisés. Les répondants peu disposés à utiliser de tels services n'en voyaient pas l'utilité ou n'avaient pas confiance au système. Près du quart des répondants étaient préoccupés par des questions de sécurité et de protection de la vie privée. En outre, même si 78 p. 100 des répondants disposaient d'un logiciel de gestion financière personnelle, seulement entre 46 et 59 p. 100 d'entre eux l'utilisaient.

Au Canada, le seul programme national de services bancaires informatisés est le programme CTConnect de Trust Canada. Selon ses recherches, la Banque royale estime que 20 p. 100 de ses clients aimeraient utiliser ce service. Les banques canadiennes ont également constaté que le taux d'utilisation des guichets automatiques bancaires (GAB) est à la baisse en raison de la popularité des cartes de débit, des services bancaires téléphoniques et des programmes de renouvellement des cartes de crédit. D'autres travaux de recherche révèlent

que les clients les plus âgés utilisent peu les GAB. La réaction des banques : élargir la gamme de services des GAB dans l'espoir d'attirer davantage de clients.

Un observateur du milieu bancaire américain suggère que le virage technologique ne sera pas facile. A. Christian Frederick, directeur général de Dove Associates Inc, à Boston, affirme :

> Les établissements financiers éprouveront énormément de difficulté à faire adhérer leur clientèle aux services télébancaires au moyen d'un ordinateur personnel à domicile. Amener les clients à changer leurs habitudes bancaires – exécution de transactions et paiement de factures – présentera un défi de taille et exigera l'élaboration d'une campagne de marketing des plus efficaces.

Dans la présente étude, les auteurs ont formulés deux hypothèses quant à l'incidence de l'âge sur l'acquisition de compétences en informatique et, en général, de compétences technologiques. La première hypothèse est conforme aux constatations se dégageant des études de Statistique Canada selon lesquelles, au cours des dix dernières années, s'est manifestée une relation inverse efficace entre la capacité d'utiliser un ordinateur et l'âge. Selon cette hypothèse, les gens cessent d'enrichir les compétences en informatique qu'ils ont acquises alors qu'ils étaient plus jeunes. Plutôt, les compétences informatiques des personnes dans la quarantaine et la cinquantaine « se figent », d'autres priorités l'emportant. Par exemple, ces personnes pourraient s'intéresser davantage aux voyages, ou encore prendre soin de leur mère malade qui vit dans une autre région. Dans cette perspective, l'analphabète de l'informatique qui a aujourd'hui 73 ans était probablement plus à l'aise, et l'est sûrement encore, avec la technologie de l'information des années 60. Un autre volet de cette hypothèse est l'accent mis par les clients plus âgés sur la qualité des biens et des services qu'ils se procurent. Pour combler ce besoin, il est préférable de faire appel à une personne bien formée qu'à un logiciel de communication d'information ou à un système de messageries vocales.

La seconde hypothèse concerne le taux de pénétration de la technologie informatique dans les foyers et les entreprises. Plusieurs enquêtes citées précédemment nous donnent un aperçu de la mesure dans laquelle les ordinateurs font partie du quotidien des gens et des entreprises. Dans le cadre de cette hypothèse, on compare les taux de pénétration des ordinateurs à ceux d'autres outils technologiques, par exemple, les fours micro-ondes et les lecteurs de DC, pour établir quand leur utilisation se généralisera. On présume que les gens pourront maintenir, voire élargir, leurs compétences en informatique et que les ordinateurs, comme les autres outils technologiques qui sont aujourd'hui monnaie courante, deviendront de plus en plus conviviaux.

L'obligation de rendre les ordinateurs davantage conviviaux constitue le lien entre les deux hypothèses. Or, dans l'hypothèse relative au taux de pénétration, on tient pour acquis que cela se produira au fil des ans, alors que l'hypothèse

concernant le non-enrichissement des compétences en informatique tient pour acquis, à tout le moins de façon implicite, que cela ne se produira pas dans une mesure suffisante.

L'éducation et la formation

Comme les enfants sont tenus, en vertu de la loi, de fréquenter l'école jusqu'à l'âge de 16 ans, il est donc possible de faire des projections démographiques pour établir, avec exactitude, le nombre d'inscriptions. Aussi, moyennant un certain ajustement des données, il serait possible de faire des projections quant au nombre d'inscriptions au-delà de l'âge obligatoire.

L'une des approches à emprunter pour faire des projections quant à la demande future en services d'éducation consiste à établir, à un moment donné, où en sont les cohortes dans leur cheminement scolaire. Au cours des dix prochaines années, les enfants qui s'inscriront au primaire feront partie de la dernière vague de la génération de l'écho et du groupe des « enfants du millénaire ». Il s'agit de cohortes qui sont relativement de petite taille. La dernière vague de la génération de l'écho est constituée des enfants nés après le sommet des naissances en 1990. Les enfants du millénaire sont les enfants de la génération du baby-bust. Les besoins en nouveaux établissements scolaires et en enseignants diminueront donc, tout particulièrement dans les provinces où la cohorte de la génération de l'écho est de plus petite taille.

Les enfants du sommet et de la dernière vague de la génération de l'écho en seront à l'étape des études secondaires au cours de la période de 1996 à 2006. En conséquence, tout particulièrement en Ontario et dans les provinces de l'Ouest, le parc d'établissements scolaires et le bassin de ressources humaines seront exposés à une pression.

Le système d'enseignement postsecondaire constitue un cas unique car sa clientèle proviendra de tous les groupes d'âge. Il faudra composer avec les besoins en cours de recyclage et en ludoéducation d'une population vieillissante. Qui plus est, la réduction des effectifs par les grandes entreprises influe de deux façons sur l'importance de ces besoins. D'abord, les « survivants » des exercices de réduction des effectifs devront enrichir leurs compétences et bénéficier de formation continue pour maintenir leur productivité, tout particulièrement à mesure que s'élargira le volet technologique de leur travail. Ensuite, selon la voie empruntée au moment de leur départ, les « victimes » des exercices de réduction des effectifs deviendront de grands consommateurs de services d'éducation et de formation. Certains devront acquérir de nouvelles compétences pour décrocher un emploi auprès de nouveaux employeurs, ou se lancer à leur compte; d'autres inscriront l'acquisition de nouvelles connaissances au nombre des objectifs à poursuivre au moment de leur retraite.

La question clé : est-ce que les collèges et les universités sont en mesure d'adapter leurs méthodes d'apprentissage et leurs politiques administratives pour répondre aux besoins d'étudiants adultes qui exigeront des niveaux de

qualité et de service très différents de l'étudiant de dix-neuf ans inscrit au baccalauréat. La première vague de la génération de l'écho fera son entrée dans le système d'enseignement postsecondaire à la fin des années 90. Est-ce que les institutions réagiront de façon instinctive et traditionnelle à cet accroissement du nombre d'inscriptions? Laisseront-elles au secteur privé le marché de l'éducation des adultes qui, à première vue, devrait s'avérer plus lucratif?

L'évolution démographique présente également des défis pour la formation en entreprise. Si on les compare aux employeurs de pays tels l'Allemagne ou le Japon, les employeurs canadiens ont été réticents à investir tout autant, voire davantage, dans la formation de leurs employés que dans les machines et l'équipement. Il s'agit d'un problème que d'aucuns ont qualifié d'absence de « culture de la formation ». Les études effectuées en Ontario auxquelles on a fait allusion précédemment (se reporter à la section « Les jeunes et l'emploi ») ont fait ressortir ce problème par rapport aux métiers. Cela pose également problème dans le secteur des services où les entreprises privilégient la réduction des coûts dans le cadre de leurs stratégies de réorganisation.

La restructuration des entreprises et le cheminement de carrière

Pour faire le lien entre la démographie et les tendances propres aux travailleurs du secteur public, nous avons retenu les quatre plans de carrière génériques suivants : constant, linéaire, en spirale et transitoire. L'une des conséquences des tendances démographiques actuelles au Canada, c'est la transition du plan de carrière linéaire aux plans de carrière en spirale ou transitoire. Or, l'importance actuelle attribuée à la réduction des effectifs – l'abolition de postes pour, à court terme, accroître la rentabilité ou réduire les déficits – crée un déséquilibre démographique au sein même des structures des organisations publiques et privées qui, à long terme, réduira la productivité et la rentabilité.

Le plan de carrière en mode « constant » est caractérisé par peu ou pas de mobilité, le travailleur exerçant, tout au long de sa carrière, le même métier ou la même profession. Un professeur d'université en est un bon exemple. La structure organisationnelle qui s'accomode bien du plan de carrière constant est aplatie, presque rectangulaire. Le nombre de niveaux hiérarchiques y est très restreint comparativement à la structure hiérarchique des ministères gouvernementaux et des grandes entreprises. Les possibilités d'avancement sont rares et les systèmes de récompenses privilégient, dans un premier temps, la sécurité d'emploi et, une fois cette sécurité acquise, la rémunération.

Le plan de carrière linéaire est axé sur la mobilité ascendante dans le dédale des nombreux niveaux hiérarchiques d'une structure triangulaire. Les personnes qui empruntent ce mode de carrière pourraient, ultimement, occuper un poste dans l'une des deux catégories suivantes : la prestation de services ou l'équipe de cadres supérieurs. Le système de récompenses se fonde sur l'accumulation progressive de pouvoirs et l'obtention d'une rémunération plus généreuse acquise au moyen de promotions. Une carrière dans les services de

police ou les forces armées illustre bien cette approche linéaire, tout comme une carrière dans les organismes gouvernementaux et les grandes entreprises privées. Pendant presque toute la période de l'après-guerre, des vagues successives de travailleurs ont misé sur un cheminement professionnel linéaire au sein de structures triangulaires.

Le plan de carrière en spirale est caractérisé par une mobilité tant ascendante que latérale. Les personnes qui empruntent ce cheminement de carrière occuperont de nombreux postes au cours de leur vie professionnelle. Par exemple, d'abord comptable, puis directeur des services financiers et, ensuite, cadre supérieur de premier niveau. À cette étape, le prochain poste pourrait être le résultat d'une mutation latérale à titre de directeur de l'évaluation des programmes. En bref, l'avancement de cette personne est tributaire, au fil des ans, d'un ensemble de déplacements verticaux et latéraux.

Un cheminement en spirale exige une structure organisationnelle et un système de récompenses radicalement différents de ceux propres au cheminement linéaire. L'organisation conserve une structure d'allure triangulaire, quoique relativement aplatie. Les employés ne sont pas motivés par la possibilité de promotions continuelles mais plutôt par les défis que présente l'occupation de différents postes et les occasions liées à la formation et au perfectionnement.

Le plan de carrière transitoire privilégie les déplacements latéraux, d'un projet à l'autre, tant au sein d'une seule organisation que de plusieurs. Les personnes qui empruntent ce cheminement de carrière occuperont de nombreux postes au cours de leur carrière. Le recours à des équipes temporaires est l'un des éléments clés de la structure organisationnelle privilégiant le cheminement transitoire. L'autonomie, la diversité et un horaire de travail souple en sont les récompenses. L'absence de sécurité et un niveau de rémunération fixe en sont les conséquences. Les travailleurs à leur compte, au nombre des travailleurs indépendants au Canada, illustrent bien ce mode de cheminement.

On peut caractériser la composition de la main-d'oeuvre du groupe des baby-boomers en la qualifiant de rectangle qui, pendant vingt ans, s'est déplacé dans la structure triangulaire propre aux organisations canadiennes. L'enjeu principal : la génération des baby-boomers met au défi les dirigeants d'organisations ayant une structure traditionnelle, où le plan de carrière linéaire constitue la norme, de déplacer un triangle à l'intérieur d'un rectangle. Le problème c'est le plafonnement professionnel ou le blocage des avenues d'avancement, dont sont victimes de groupes importants de travailleurs pour qui la mobilité ascendante est synonyme de réussite. La solution : la déstratification de la structure hiérarchique et la réingénierie des méthodes de travail aboutissant à une structure plus aplatie et mieux adaptée aux besoins. Or, dans de nombreux cas, on a greffé à cette approche une autre dimension – la réduction des effectifs afin de réduire les coûts. La réingénierie et l'élimination de niveaux hiérarchiques sont des « surprises » incontournables lorsque le plafonnement s'installe, mais non la réduction des effectifs.

L'incidence de la démographie sur les structures organisationnelles et le cheminement de carrière n'est pas un phénomène propre aux années 90. Ce phénomène se manifestera de plus en plus au cours des dix prochaines années. En 1981, alors que les derniers membres de la génération du baby-boom s'intégraient à la population active (les travailleurs âgés de 15 à 64 ans), la composition par âge de la main-d'oeuvre revêtait encore la forme du triangle habituel, c'est-à-dire un grand nombre de jeunes à la base et un nombre de moins en moins grand de travailleurs plus âgés à mesure que l'on se rapproche de la pointe du triangle. D'ici 2006, l'âge des baby-boomers se situera entre 40 et 59 ans, le plus grand nombre ayant 46 ans. Selon nos projections, cette cohorte occupera la partie supérieure la plus large du baril, forme alors revêtue par la population active. Les parties inférieures de l'ancien triangle (les travailleurs de moins de 35 ans) s'amenuiseront contrairement à ce qui se produisait dans le passé. Et la réduction des effectifs, dans sa version actuelle, accentue cette tendance.

Les données sur l'emploi à l'administration fédérale pour 1995-1996 soutiennent cette thèse selon laquelle les baby-boomers dominent les rangs des travailleurs. En 1995-1996, la taille de la fonction publique a été réduite d'un peu moins de 8 p. 100. Sans tenir compte des pertes absolues dans chacune des principales cohortes d'âge, la proportion des travailleurs de moins de 35 ans a chuté de plus de 2 p. 100 alors que celle des 35 ans et plus a augmenté de plus de 2 p. 100. La part plus grande des emplois des travailleurs « plus âgés » favorisait les baby-boomers, ces derniers accroissant leur part d'environ 2,5 p. 100. Qui plus est, la première vague – plus âgée – et la vague du sommet (groupe d'âge des 35 à 49 ans) sont celles qui s'en tiraient le mieux, bénéficiant d'une hausse de plus de 3 p. 100. Les membres de la génération X ont subi une légère baisse.

La conjugaison de l'énorme génération du baby-boom et de la stratégie de réduction des effectifs pratiquée par la gestion soulève un certain nombre de questions importantes pour les gouvernements et entreprises canadiens. Comment les organisations devraient-elles adapter leur structure, leurs politiques et leurs procédures pour gérer la transition – chez les baby-boomers et les prébaby-boomers – du plan de carrière linéaire aux plans de carrière en spirale ou transitoire? Quelle importance attribuera-t-on à la formation de la main-d'oeuvre afin de maintenir le moral et la productivité? Quelles sont les conséquences économiques et sociales à long terme de la réduction des effectifs?

La réduction des effectifs, au lieu de la réingénierie ou en conjugaison avec celle-ci, constitue la solution traditionnelle empreinte de sagesse qu'empruntent les gouvernements et les entreprises pour composer avec leurs problèmes financiers. Alors que les ministres fédéraux et provinciaux sont exposés à la colère des citoyens quant au déficit et à la dette, leur réaction consiste à mettre en oeuvre, au mieux, une solution à court terme.

La réduction des effectifs, la « solution à court terme » souvent privilégiée, réunit habituellement les trois éléments suivants :

1. la réduction – habituellement – générale des effectifs ou selon l'ancienneté;
2. une restructuration organisationnelle visant à centraliser les pouvoirs au niveau de la haute direction;
3. le recours à la technologie en remplacement des employés, en alléguant que cette mesure vise à améliorer la prestation de services.

Bien qu'à court terme la réduction des effectifs puisse se traduire par des avantages financiers, les problèmes à long terme qu'elle crée l'emportent aisément (cet argument est identique à celui avancé dans l'étude effectuée en 1993 par The Wyatt Company aux États-Unis). Le premier problème : les survivants de l'exercice de réduction des effectifs sont souvent démoralisés et, en conséquence, moins productifs. En outre, la « loyauté envers l'organisation » s'évanouit souvent au lendemain d'un exercice de réduction des effectifs.

Les exercices de réduction des effectifs suscitent également d'autres retombées négatives. Les travailleurs de moins de 35 ans étant les premiers visés par les coupures, les organisations publiques et privées courent le risque de disposer d'un effectif maîtrisant moins bien l'informatique. Les études longitudinales effectuées par Statistique Canada ont toujours confirmé la relation inversée entre les compétences informatiques et l'âge (c'est-à-dire plus le travailleur est jeune, plus son niveau de compétence en informatique est élevé). La tendance, lors de la réduction des effectifs, de remplacer des gens par des outils technologiques (quoique certains observateurs affirment que la réduction des effectifs vise essentiellement la réduction, à court terme, des coûts moyennant la réduction du nombre d'employés et qu'il ne s'agit pas d'un investissement technologique stratégique) néglige le fait que les solutions technologiques sont souvent inefficaces dans une société vieillissante, tant pour le client que pour le fournisseur de services. À l'heure actuelle, les machines ne peuvent remplacer adéquatement le personnel de première ligne. La technologie devra devenir extrêmement « conviviale » pour être efficace, voire acceptée par un segment considérable de la population. Qui plus est, la technologie ne peut remplacer tout le monde. Il faudra consacrer des sommes importantes à la formation pour se donner la main d'oeuvre qualifiée appelée à utiliser la technologie. Il en coûtera davantage pour former les travailleurs vieillissants sacrifiés au moment de la réduction des effectifs que de former une population active équilibrée au plan démographique.

Lors d'exercices de réduction des effectifs, les organisations perdent également, de façon aléatoire, certains de leurs meilleurs employés. Cela est le reflet des deux types de travailleurs qui quittent une organisation lors de la réduction des effectifs : les « jeunes » (moins de 35 ans) qui justifient de peu d'ancienneté mais dont les possibilités de rendement et les compétences en informatique sont élevées, et les « plus vieux » (plus de 50 ans) qui possèdent expérience et connaissances. Qui plus est, les auteurs de cette étude estiment, en se fondant sur des renseignements non scientifiques, que ceux qui quittent, sans égard à

leur âge, sont les fonctionnaires manifestant le plus d'esprit d'entrepreneurship et de créativité, des gens qui croient pouvoir réussir par eux mêmes, qu'ils bénéficient ou non d'une indemnité de départ généreuse.

L'exode de ces « bons employés » crée un certain nombre de déficits organisationnels. Une organisation qui ne peut miser sur une cohorte importante de jeunes risque de manquer de dynamisme, d'éprouver de la difficulté à s'adapter aux besoins de ses clients et de présenter un faible niveau de compétences en informatique. À cet égard, les organisations publiques et privées devront, dans l'avenir, non seulement composer avec une vive concurrence lors du recrutement de travailleurs de moins de 35 ans, mais aussi composer avec une concurrence encore plus vive sur le marché des travailleurs les plus qualifiés. Chez les travailleurs plus âgés, le départ de « bons employés » est synonyme d'une perte de compétences stratégiques et de mémoire institutionnelle, déficits qui, souvent, résultent en des pertes d'efficicience et d'efficacité. Dans de nombreux articles de journaux, en Alberta, on a souligné que l'effet cumulatif des réductions salariales et des réductions de ressources opérationnelles incitent les hauts fonctionnaires à postuler – et à décrocher – des emplois beaucoup mieux rémunérés dans le secteur privé. On craint que le gouvernement de l'Alberta ne perde des compétences stratégiques et ses gestionnaires les plus novateurs.

Malheureusement, dans de nombreuses organisations, les « bons employés » limogés lors de la réduction des effectifs ne reviendront probablement jamais. Ceux qui possèdent des compétences professionnelles ou de l'expérience en gestion vont grossir les rangs des travailleurs indépendants et font office de consultants. Ils ne feront pas partie du « noyau » d'employés que les cadres supérieurs des organisations ayant subi une réduction des effectifs estiment suffisant pour parvenir à des niveaux encore plus élevés de productivité. Plutôt, ils tireront profit de la diversité et de la flexibilité que leur procure le cheminement transitoire de leur carrière et ils continueront à contribuer de façon importante à l'économie dans son ensemble.

De fait, de nombreuses administrations publiques rendent la tâche relativement facile aux « bons employés » qui veulent les quitter. L'administration fédérale en est un bon exemple. En 1995-1996, près de 77 p. 100 des employés qui ont quitté la fonction publique l'ont fait aux termes de divers programmes d'encouragement, plus particulièrement le Programme d'encouragement à la retraite anticipée (29 p. 100), le Programme de réduction du personnel civil (20 p. 100) et le Programme d'encouragement au départ anticipé (PEDA) (18 p. 100). Ce dernier programme peut s'avérer très lucratif. Selon le nombre d'années de service et l'âge de la personne, elle pourrait obtenir jusqu'à 90 semaines de salaire et 7 000 dollars en frais de counselling et de formation. Au départ, l'administration fédérale a estimé que 4 000 des 50 000 employés admissibles tireraient profit du PEDA. En 1995-1996, 3 557 employés en ont bénéficié. Le programme « d'échange de postes » est également populaire et le taux de participation témoigne du désir de certains fonctionnaires d'amorcer une nouvelle carrière. En 1995, on a constaté que le rapport propre aux

échanges de postes parmi les membres de l'Institut professionnel de la Fonction publique du Canada était de 2 pour 1 en faveur des départs.

En bref, dans les années 80, de par sa seule taille, la génération du baby-boom a commencé à exercer de la pression sur la structure verticale et le cheminement de carrière linéaire propres aux grandes organisations publiques et privées, rendant inévitable la transition à des structures organisationnelles plus aplaties et aux cheminements de carrière transitoire et en spirale. Dans les années 90, des facteurs économiques, certains d'ampleur universelle, ont accru la pression s'exerçant sur les dirigeants des gouvernements et des entreprises afin qu'ils améliorent les résultats financiers à court terme de leurs organisations. La réduction des effectifs, axée sur la réduction des coûts moyennant la diminution des ressources humaines et d'autres mesures connexes, répond à cet objectif mais crée des problèmes à plus long terme, problèmes que les tendances démographiques exacerberont.

La solution de rechange à la réduction des effectifs, c'est « l' aplatissement du triangle » et le recours, moyennant des pratiques les plus humaines et les plus créatives possible, à des plans de carrière transitoire et en spirale. La réduction des effectifs a aussi pour effet d'aplatir la structure des organisations, tout en se traduisant par l'abolition de postes aux fins de réaliser des gains financiers à court terme. Dans la présente étude, les auteurs ont retenu l'hypothèse que le maintien d'un équilibre démographique au sein des organisations est l'un des principaux ingrédients de la productivité et de la santé financière à long terme. Aussi, elle repose sur la pratique d'une plus grande flexibilité dans les milieux de travail. L'une des approches consisterait à proposer aux membres de la première vague de la génération du baby-boom une réduction salariale de 20 p. 100 assortie d'une réduction équivalente de leur charge de travail. En outre, les employeurs devraient, selon le rendement des intéressés, leur garantir la sécurité d'emploi. L'acceptation de cette option devrait être facultative; elle exige évidemment l'établissement de plans de carrière flexibles et personnalisés. Il serait également utile de proposer des tâches faisant appel à la créativité au personnel chargé de la gestion des ressources humaines. Les économies résultant de cette solution de rechange pourraient être affectées à la fois « au bilan » et à l'avancement de la carrière des membres de la génération X et des vingtenaires d'aujourd'hui. L'adoption de cette option par les secteurs public et privé signifierait qu'ils abordent la productivité dans une perspective à long terme atypique.

LES FACTEURS DE LA DEMANDE – LE SECTEUR PRIVÉ

Les secteurs d'activité primaire, secondaire et tertiaire

Les biens et services utilisés par une population « plus jeune » (moins de 50 ans) sont, pour la plupart, l'oeuvre des secteurs d'activité primaire et secondaire. En conséquence, la demande pour des biens durables – maisons,

automobiles et réfrigérateurs –, de même que pour des aliments et des boissons alcoolisées est élevée. La première vague de la génération du baby-boom est à l'aube d'une période où revêtira une importance capitale pour elle l'épargne en prévision de la retraite et l'acquisition de types particuliers de services, par exemple des services de loisirs et de santé. Par conséquent, « l'économie de services », déjà bien engagée au Canada, prendra une place encore plus grande sur le marché canadien.

À la lumière de l'incidence du vieillissement de la population sur la consommation – essentiellement une réorientation de l'acquisition de biens durables vers l'acquisition de services, le profil des importations et des exportations canadiennes se transformera. Si les industries réussissent à maintenir ou à accroître leur productivité, le Canada exportera des produits manufacturés vers des pays où des populations plus jeunes consomment davantage de biens durables. Au Canada, la consommation de services, dans des domaines comme la santé, les voyages et la planification financière, constituera le moteur de l'économie.

Le recours à la technologie et l'enrichissement des compétences des travailleurs qui seront appelés à utiliser les outils technologiques indiquent que les secteurs primaire et secondaire continueront à accroître leur productivité. Cependant, dans cette perspective technologique, il y a fort à parier que les travailleurs plus âgés seront moins productifs que les plus jeunes qui, de façon générale, justifient de plus grandes compétences en informatique. La productivité relative des travailleurs plus âgés et plus jeunes pourrait aussi être tempérée par des écarts au plan de l'éducation et de l'attitude à l'égard de la formation. Par exemple, diverses études portant sur des métiers de l'industrie de la construction en Ontario révèlent que le niveau d'éducation des travailleurs et l'intérêt qu'ils portent aux programmes de formation sont inversement proportionnels à leur âge. Ainsi, les employeurs devront trouver un juste équilibre entre ces deux préoccupations – le besoin d'assurer la formation continue des travailleurs plus âgés, qui justifient de moins de compétences en informatique et d'un moins grand intérêt, et le besoin de recruter des travailleurs plus jeunes, dont les niveaux de compétences en informatique et d'intérêt sont plus élevés, sur un marché où l'offre sera restreinte.

Quant au secteur des services, les auteurs se sont demandés, dans le présent rapport, si la technologie constitue toujours une solution de rechange appropriée à la main-d'oeuvre. Le seul autre choix consiste à se donner un bassin de travailleurs très compétents et flexibles. Sans négliger ces considérations, dans certains milieux du secteur tertiaire, notamment les banques et les administrations publiques, on a opté pour l'approche « la technologie au service des gens ». À première vue, cette approche d'élargir le recours à la technologie se justifie par l'amélioration escomptée au plan du service aux clients. Le but sous-jacent : une rentabilité plus grande pour les entreprises et une réduction des coûts pour les gouvernements. Or, le principal obstacle que doivent surmonter les industries de service pour atteindre leurs objectifs financiers,

moyennant le recours accru à la technologie, c'est l'importance que revêt, aux yeux du consommateur plus âgé, la qualité des biens et des services. L'option technologique est fondée sur la capacité de la machine de fournir des niveaux de service et de qualité supérieurs, notamment, dans les résidences pour personnes âgées, les bureaux des administrations publiques et les banques.

La qualité et le service

Au cours des dix prochaines années, à mesure que les membres de la génération du baby-boom franchiront le cap de la cinquantaine et de la quarantaine, les entreprises devront composer avec une clientèle qui privilégie la qualité et le service. Cette tendance intègre le fait que le consommateur plus âgé dispose, de plus en plus, d'un revenu discrétionnaire élevé, mais non du temps nécessaire à la recherche du meilleur rapport prix, qualité et service. Les données obtenues de Statistique Canada montrent que le revenu des ménages, ainsi que leurs taux de consommation et d'économie sont à leur apogée vers l'âge de 54 ans. Or, même si l'hypothèque a été réglée et qu'économiser pour la retraite devient la priorité, les chefs de ménage cinquantenaires comptent peut-être des enfants de la génération X, bien éduqués mais sous-employés, qui vivent chez leurs parents pour réduire leurs coûts. Ces chefs de ménage prennent peut-être aussi soin de leurs parents octogénaires malades, qui ne sont plus en mesure de combler la totalité de leurs besoins propres. Lorsque se conjuguent la pression professionnelle et les tracas personnels, il ne reste plus suffisamment de temps pour répondre aux besoins de tous et chacun.

Les conclusions d'une enquête menée auprès de 8 800 Canadiens, en mars 1996, par A.C. Nielson pour le compte de l'Association des consommateurs du Canada et de l'Institut national de la qualité, renforcent cette hypothèse selon laquelle à mesure qu'ils vieillissent, les baby-boomers accordent davantage d'importance à la qualité et au service. Cette enquête était la première du genre effectuée au Canada. La quasi-totalité des répondants ont indiqué que la qualité est importante, et les deux-tiers seraient disposés à payer davantage pour obtenir des produits et des services de meilleure qualité. Les meilleures cotes ont été atrribuées aux pharmacies (93 p. 100), aux caisses populaires et aux petits détaillants; les ministères gouvernementaux, les compagnies de câblodistribution et la Société canadienne des postes se sont classés dans les derniers rangs. Deux facteurs semblent mener à des taux de satisfaction plus élevés chez les consommateurs : la taille de l'entreprise et l'intensité des interactions humaines avec le personnel de première ligne. Qui plus est, environ 70 p. 100 des répondants ont indiqué être insatisfaits de devoir obtenir des renseignements au moyen de services de messagerie vocale, une approche plus susceptible d'être empruntée par les grandes organisations publiques et privées.

Exception faite des constatations se dégageant de cette dernière enquête, toutes les entreprises – petites et grandes – ont la capacité de fournir des produits et services de qualité à leurs clients. Cependant, tant les petites que les

grandes entreprises seront davantage en mesure de répondre à la demande de produits et services de qualité exprimée par les consommateurs plus âgés qui, sous peu, seront roi et maître sur le marché.

Le commerce de détail

Le prix est très important pour une population jeune qui consomme des produits et services essentiels, mais qui est aussi endettée et ne peut financer ces achats. Une population plus âgée est davantage libre de dettes et dispose d'un revenu discrétionnaire plus important. En conséquence, elle a les moyens de se préoccuper davantage de qualité et de service. Cette dernière attitude est le reflet des contraintes de temps, imputables à la conjugaison de ses obligations professionnelles et personnelles, avec lesquelles doit composer le consommateur plus âgé, ainsi que de la « sagesse en matière de consommation » qu'il a acquise au fil des ans. Comment les entreprises de commerce au détail s'adapteront-elles au fait que le plus important segment du marché se procure moins de biens durables et davantage de services, et qu'il attache une très grande valeur aux services et aux produits de qualité? Les auteurs de ce rapport sont d'avis que les boutiques spécialisées de quartier « où tout le monde vous connaît » sont mieux placées pour satisfaire les besoins d'un consommateur plus exigeant que ne le sont les « grandes surfaces » qui pratiquent des prix plus bas moyennant l'achat de gros volumes de produits génériques, le recours à des effectifs réduits peu compétents et peu formés et à des installations très dépouillées. Qui plus est, à l'avenir, les clients des « grandes surfaces » seront moins disposés à se conformer à l'impératif de « l'achat en vrac » (on peut se procurer huit boîtes de soupe identiques, mais non deux ou huit boîtes de soupe différentes). Cette approche convient aux jeunes ménages ayant des enfants, mais moins aux ménages composés d'une ou deux personnes, qui sont plus représentatifs d'une population plus âgée.

Les tendances démographiques se répercutent également sur les produits et services spécifiques que privilégieront une population plus âgée. Lors de travaux de recherche exécutés pour le compte du Bureau de la consommation d'Industrie Canada, une liste des produits et services « gagnants » et « perdants » a été établie pour deux périodes distinctes : 1996 à 2006 et 2006 à 2016. Ces résultats ont été obtenus en appliquant deux méthodes d'analyse. La première se fonde sur le fait que l'âge est le facteur le plus important dans les décisions de consommation. Dans le cadre de cette analyse, le point de repère aux fins de l'évaluation du succès d'un produit ou d'un service consistait à établir si les dépenses prévues à leur égard s'accroîtront à un taux plus élevé que le taux annuel moyen de croissance des ménages. Plus de 400 produits et services ont été analysés pour cerner les préférences de demain du consommateur canadien vieillissant. La seconde méthode visait à faire l'analyse de 130 articles en se fondant sur l'hypothèse que le principal facteur est la croissance du revenu réel disponible (après impôt) des ménages. Dans ce cas, le point de repère consistait

à établir si la demande pour un produit ou un service donné croissait à un taux plus élevé ou plus faible que le taux annuel moyen de croissance du revenu des ménages. En faisant intervenir le revenu dans cette analyse, il ne faudrait pas négliger les observations formulées précédemment concernant les liens entre la consommation, le revenu, les économies et l'âge des ménages.

En utilisant respectivement les facteurs « âge » et « revenu du ménage » pour faire des projections quant aux dépenses de consommation, on obtient, dans une certaine mesure, des listes de produits et de services « gagnants » et « perdants » différents pour les dix à vingt prochaines années. Cependant, les tendances générales en matière de consommation découlant du vieillissement de la population demeurent les mêmes, c'est-à-dire le délaissement des biens durables et des services connexes au profit de produits et services spécialisés, tout particulièrement dans les secteurs des voyages, de la santé et des loisirs. Les conclusions de ces travaux de recherche antérieurs ont été intégrées à l'analyse présentée dans ce rapport concernant les autres facteurs influant sur la demande, tant auprès des secteurs public que privé. L'âge demeure le facteur décisif quant à la détermination des produits et des services de détail « gagnants » et « perdants ».

Les aliments et les boissons

Lorsqu'ils sont dans la vingtaine, la trentaine ou la quarantaine, les gens consomment davantage d'aliments et de boissons que ceux qui sont dans la cinquantaine ou la soixantaine. Et, souvent, c'est leur revenu qui détermine la qualité des produits qu'ils consommeront, et l'endroit où ils se les procureront. Dans les années 70 et 80, le public cible des annonces de bière était, avec raison, les jeunes dans la vingtaine, consommateurs de hamburgers et de grandes quantités de bière – ale et bière blonde – de faibles prix. C'était l'époque où la première vague des baby-boomers étaient à l'âge où ils consomment le plus de bière.

En 1989, *l'Enquête nationale sur l'alcool et les autres drogues*, effectuée par Statistique Canada pour le compte de Santé et Bien-être social Canada, révélait que la proportion de la population canadienne qui, à ce moment, consommait de l'alcool était plus élevée dans les groupes d'âge de 20 à 24 ans (88 p. 100) et de 25 à 34 ans (87 p. 100), et que cette proportion diminuait à mesure que les gens étaient plus âgés. Par exemple, 54 p. 100 des gens de 65 ans et plus consomment de l'alcool. La consommation – exprimée en nombre moyen de consommations par semaine – témoigne des mêmes tendances, même si les taux fléchissent moins rapidement, cette fois, chez les groupes de personnes plus âgées. Les hommes sont plus susceptibles de consommer de l'alcool que les femmes, et ils justifient d'un plus grand nombre de consommations par semaine. Cependant, l'âge où l'on consomme le plus d'alcool est différent selon le sexe. Chez les hommes, c'est lorsqu'ils sont âgés de 20 à 24 ans; chez les

femmes, c'est lorsqu'elles sont âgées de 45 à 54 ans (quoiqu'elles consomment à un rythme deux fois moindre que les hommes du même groupe d'âge).

D'autres travaux de recherche confirment que la consommation d'alcool fléchira à mesure que la population du Canada vieillira au cours des prochaines dix années et au-delà. Les auteurs de ce rapport sont d'avis que les achats de consommations alcoolisées dans des débits de boisson seront à la baisse et que les achats de boissons alcoolisées dans des magasins et boutiques s'accroîtront au même rythme que celui de l'augmentation du nombre de ménages. Il y aura également transformation du type des achats. La consommation de bière fléchira, la consommation de vin se maintiendra au taux de croissance des ménages, et la consommation de spiritueux (achetés davantage en magasin que dans les débits de boisson) s'accroîtra à un rythme beaucoup plus élevé que celui de la croissance des ménages.

Le vieillissement de la population se répercutera également sur les habitudes alimentaires des Canadiens. Des données obtenues de Statistique Canada montrent qu'au cours des quelque dernières décennies, la consommation de viande rouge (surtout du boeuf), d'oeufs, de lait ordinaire et de beurre est à la baisse. Or, la consommation de volaille, de poisson, de lait 2 %, de légumes frais et de céréales est à la hausse. Ces tendances devraient se maintenir au cours des dix prochaines années.

Le vieillissement de la population influe également sur le nombre de repas pris à l'extérieur. Les constatations d'une enquête menée en 1988 par Gallup Canada Inc. révèlent une relation inversée entre le nombre de repas pris à l'extérieur et l'âge. On entend par « repas pris à l'extérieur » la proportion de la population qui a pris un repas à l'extérieur au cours des trois derniers jours. Le taux de participation à ce type d'activité sociale chute avec l'âge. Soixante-trois (63) p. 100 des personnes du groupe des 18 à 24 ans prennent des repas à l'extérieur comparativement à 27 p. 100 des personnes âgées de 65 ans et plus.

Les auteurs de cette étude estiment que cette tendance se maintiendra. En raison du vieillissement de la population, les gens achèteront davantage d'aliments dans les magasins que de repas au restaurant. Cependant, la quantité d'aliments achetés – tant dans les magasins que dans les restaurants – s'accroîtra à un rythme plus rapide que les ménages, lorsque l'on tient compte des déplacements d'un jour ou de plus longue durée. L'achat de repas dans des restaurants alors que les gens sont à l'école ou au travail, ou encore entre les repas, est une activité qui affichera une très faible croissance.

Le logement

La génération du baby-boom a fait des malheurs sur le marché de la location de logements dans les années 70 et sur le marché de l'achat de maisons dans les années 80. Aujourd'hui, le gros de cette génération est bien logé, et on ne devrait constater de l'activité que sur le marché immobilier de haut de gamme et sur le marché de la rénovation, les baby-boomers entendant adapter leur

intérieur aux besoins de leurs adolescents, d'un parent qu'ils accueillent chez eux ou de l'installation d'un bureau à domicile. La génération qui fera son entrée sur le marché du logement au cours des prochaines dix années, c'est la génération du baby-bust, une cohorte de taille beaucoup plus restreinte. Les membres de cette dernière génération et de la première vague de la génération de l'écho feront leurs premiers pas sur le marché de la location.

Les projections révèlent qu'il y aura une forte croissance quant à la création de nouveaux ménages chez les personnes âgées de 45 ans et plus. Les couples (42 p. 100) et les personnes seules (40 p. 100) sont les deux groupes qui contribueront le plus à la formation de ménages. Soulignons que tant le nombre absolu de ménages que la taille des ménages s'amenuiseront à mesure que la population vieillira.

De 1996 à 2006, il faut s'attendre à ce que les dépenses relatives au logement – loué ou acheté – croîtront moins rapidement que les dépenses des ménages. L'écart le plus grand concernera les logements loués. Les dépenses de logement, autres que celles relatives à la résidence principale, s'accroîtront beaucoup plus rapidement que celles des ménages, tout particulièrement les dépenses propres aux résidences secondaires et aux séjours à l'hôtel.

Le développement immobilier commercial, industriel et institutionnel (CII)

Le développement immobilier dans le secteur « CII » a été en plein essor dans les années 70 et 80 à mesure que la génération du baby-boom faisait son entrée sur le marché du travail. Depuis le milieu des années 80, c'est au tour de la génération du baby-bust de faire son entrée sur le marché du travail, la génération de l'écho lui emboîtera le pas au début du prochain siècle. Compte tenu de cette réalité démographique, le fléchissement subi par ce secteur dans les années 90 était prévisible, tout comme le sera la modeste relance dans la première décennie du prochain millénaire (même si la demande devrait être épongée par le parc immobilier existant).

Le secteur CII subit également l'influence de facteurs interreliés, par exemple la réduction des effectifs par les entreprises, l'évolution technologique et le phénomène du travail à domicile. Les victimes de la réduction des effectifs optent de plus en plus, au plan professionnel, pour le travail indépendant. L'abordabilité de la technologie de l'information, tout particulièrement des télécopieurs et des ordinateurs, font du bureau à domicile une solution de rechange très économique si on compare ce choix à la location d'un bureau dans un petit centre commercial ou dans un immeuble de bureaux du centre-ville. Selon Statistique Canada, en 1991, 743 000 travailleurs non agricoles travaillaient à partir de leur domicile. Les deux-tiers étaient des télétravailleurs (le plus souvent à l'emploi de grandes entreprises) et l'autre tiers des travailleurs indépendants. Même si la majorité des travailleurs à domicile étaient des

hommes, les femmes ont opté pour ce choix à un rythme plus élevé entre 1981 et 1991 (69 p. 100 comparativement à 29 p. 100).

Les services financiers

Habituellement, les personnes dans la vingtaine et la trentaine s'endettent pour financer l'obtention d'un diplôme d'études supérieures ou l'acquisition d'une automobile, de mobilier ou d'une maison. Une fois que les enfants ont quitté la maison et que l'hypothèque est payée, il y a augmentation du revenu discrétionnaire. Cette constatation en rejoint une précédente selon laquelle le taux d'épargne des ménages augmente avec l'âge et atteint son sommet vers l'âge de 54 ans. La première vague des baby-boomers aura sous peu cinquante ans. En conséquence, les baby-boomers en sont à la période de leur vie où ils épargnent le plus et où ils planifient leur retraite. C'est ce qui ressort d'une enquête menée en 1996 par Gallup Canada Inc. pour le compte du Groupe Investors Inc., société de fonds communs de placement. Près de 56 p. 100 des répondants détenaient un RÉER ou un FERR. La composition par âge, présentée dans le tableau ci-dessous, témoigne de l'intérêt marqué des baby-boomers pour cet instrument de placement qui a été conçu et dont on a fait la promotion dans les années de l'après-guerre :

18 - 29 ans	43,9 %
30 - 39	69,0 %
40 - 49	64,2 %
50 - 64	59,9 %
65 +	43,2 %

Les données montrent également que, règle générale, le montant placé augmente avec l'âge. Par exemple, environ 40 p. 100 des personnes dans la quarantaine justifiaient d'un placement entre 50 000 et 100 000 dollars comparativement à 5 p. 100 des personnes dans leur trentaine; un peu plus de 15 p. 100 des cinquantenaires avaient placé des montants supérieurs à 100 000 dollars comparativement à un peu plus de 6 p. 100 des gens dans la quarantaine.

Le vieillissement des baby-boomers au cours de la prochaine décennie et au-delà s'avérera très bénéfique pour le secteur des services financiers. Les banques et les compagnies fiduciaires récolteront moins en paiements d'intérêts, les gens remboursant leurs dettes, mais davantage en frais perçus pour les opérations courantes et la prestation de services de planification financière. Les maisons de courtage et les sociétés de fonds communs de placement sont aussi bien placées pour tirer profit d'un environnement où le taux d'épargne plus élevé fera fléchir les taux d'intérêt et où les épargnants rechercheront de meilleurs taux de rendement sur les marchés boursiers.

LES FACTEURS DE LA DEMANDE – LE SECTEUR PUBLIC

Les transports

Des données obtenues du ministère des Transports de l'Ontario portant sur les déplacements dans l'agglomération métropolitaine de Toronto en 1986 révèlent que c'est à l'âge de 40 ans que les gens utilisent le plus leur automobile (évaluation fondée sur le nombre de déplacements par jour). Par ailleurs, ce sont les personnes à la fin de leur adolescence qui utilisent le plus les services de transport en commun, taux d'utilisation qui s'amenuise jusqu'à ce que les gens atteignent un âge supérieur à 70 ans. Les données de l'Enquête sociale générale sur les déplacements domicile-travail soutiennent cette assertion selon laquelle ce sont les gens de 40 ans qui se déplacent le plus en automobile. Les déplacements domicile-travail, la composante la plus importante du temps de déplacement (28 p. 100), sont l'apanage du groupe des 35 à 44 ans (52 p. 100).

Le gros des baby-boomers étant âgé de 36 ans, les problèmes de l'engorgement des routes et des pertes subies par les systèmes de transport en commun des grands centres urbains subsisteront au cours des dix prochaines années. Cependant, il y aura relance des services de transport en commun grâce à la génération de l'écho, dont les membres atteindront l'âge où ils les utilisent le plus. Les projections montrent également une plus grande utilisation des services aériens et des services d'autobus interurbains, la population vieillissante se déplaçant de plus en plus dans le cadre de ses activités de loisir.

La criminalité

La démographie a aussi une incidence importante sur la criminalité. Les homicides, les vols par effraction et les vols de véhicule sont perpétrés par des adolescents et des personnes dans la vingtaine. Par ailleurs, les fraudes sont généralement l'oeuvre de personnes dans la trentaine ou la quarantaine. Dans les années 90, le nombre de crimes déclarés et les taux de criminalité (le nombre de crimes par 100 000 personnes) sont à la baisse en ce qui concerne les crimes avec violence, les crimes contre les biens et les autres infractions au Code criminel. Cette situation tient au vieillissement des baby-boomers, maintenant dans la trentaine et la quarantaine, et à l'arrivée des membres de la génération du baby-bust à la période de leur vie où ils commettent le plus de crimes.

Les données provenant du fichier Recherche par incident du *Programme de déclaration uniforme de la criminalité de 1995*, données recueillies par le Centre canadien de la statistique juridique et réunissant 46 p. 100 du nombre de crimes déclarés à l'échelle nationale, illustrent bien ces faits. L'âge médian des personnes accusées d'infractions graves au Code criminel varie de 19 ans pour les vols avec effraction et les vols de véhicules à 34 ans pour conduite avec facultés affaiblies. L'âge médian le plus faible (24 ans) concerne les crimes contre les

biens. L'âge médian des perpétreurs de fraudes (29 ans) montre que ces crimes sont commis par des personnes plus âgées. L'âge médian des personnes accusées de crimes avec violence est de 29 ans. Dans cette catégorie, le contrevenant plus jeune est plus susceptible d'être accusé de vol qualifié (22), de tentative d'homicide (26) et d' homicide (28); le contrevenant plus âgé est plus susceptible d'être accusé de voies de fait (30), d'enlèvement (31), d'agression sexuelle (32) ou d'autres infractions sexuelles (34). L'âge médian des personnes accusées de conduite avec facultés affaiblies est de 34 ans. L'âge médian des personnes accusées de possession de cannabis est de 22 ans, alors que celui des personnes accusées de trafic de cannabis est de 26 ans. Tant la possession que le trafic de cocaïne sont le fait de contrevenants plus âgés (âge médian de 29 ans).

En 1996, l'âge des baby-boomers varie de 30 à 49 ans. En conséquence, les baby-boomers sont plus susceptibles d'être accusés de fraude, de voies de fait et de conduite avec facultés affaiblies, et moins susceptibles d'être accusés d'homicide, de vol par effraction ou de vol de véhicule. Par ailleurs, les membres de la génération du baby-bust sont à l'âge où ils sont le plus susceptible de commettre des crimes (17 à 29 ans). Enfin, les membres de la génération de l'écho arriveront sous peu à l'âge où ils commettront le plus de crimes. À l'heure actuelle, l'âge des membres de cette cohorte varie de 2 à 16 ans et, en 2006, il variera de 12 à 26 ans. Si la relation entre l'âge et la criminalité se maintient, les services policiers peuvent miser sur une diminution du nombres de crimes par personne, tout particulièrement des crimes avec violence et des crimes contre les biens.

Les services sociaux et de santé

La démographie a une incidence marquée sur la structure de la famille et, par conséquent, sur les politiques sociales. Le nombre de mariages au Canada est à la baisse depuis 1972. En 1992, l'âge moyen des personnes lors de leur premier mariage était de 27 ans pour les femmes et de 29 ans pour les hommes, une augmentation de quatre ans pour chacun des sexes par rapport aux âges moyens recensés dans les années 70. Les mariages sont moins nombreux, les gens se marient plus tard et les unions ne durent pas longtemps. La durée moyenne des mariages qui ont abouti au divorce est passée de 11,5 ans en 1980 à 10,8 ans en 1993. En outre, 30,5 p. 100 des personnes qui ont divorcé en 1993 étaient mariées depuis cinq ans ou moins (24,2 p. 100 en 1980). Qui plus est, la proportion des mariages où l'un des conjoints a déjà été marié est passée de 12,3 p. 100 en 1967 à 32,9 p. 100 en 1993.

La baisse du taux de fécondité signifie qu'on dénombre moins d'enfants par famille. La tendance au vieillissement se traduit par la diminution graduelle de la taille des ménages. Par conséquent, la démographie a une incidence sur tout un éventail de politiques sociales, des garderies aux régimes de pension. Les perspectives quant aux garderies tiennent à la clientèle possible de la dernière vague de la génération de l'écho et des enfants du millénaire, une petite

cohorte. La question des régimes de pension publics pourrait poser problème si des modifications ne sont pas apportées afin d'accommoder les baby-boomers lorsqu'ils atteindront l'âge habituel de la retraite en 2012. Cependant, compte tenu de la période visée par la présente étude, les répercussions découlant de la retraite des baby-boomers au cours des 25 prochaines années débordent du cadre de cette analyse.

La consommation de services de santé est clairement liée à l'âge. À compter de l'âge de 50 ans, alors que le risque de subir une crise cardiaque ou d'être atteint du cancer s'accroît, la demande pour la prestation de services de santé par les médecins et les hôpitaux augmentent de façon soutenue et atteint son sommet à l'âge de la retraite, tout particulièrement au cours des six derniers mois de la vie. Les mauvaises nouvelles pour ce secteur onéreux des services publics c'est que la génération des baby-boomers utilisera de plus en plus des services de santé et s'attendra à des soins de grande qualité, assortis d'un niveau de service plus élevé. La bonne nouvelle c'est que les premiers baby-boomers n'atteindront l'âge « d'or » que dans quinze ans.

John Kettle a observé que plus de la moitié des prestations sociales dont bénéficie une personne au cours de sa vie lui sont consenties après l'âge de 56 ans. En moyenne, les personnes âgées de 35 à 39 ans sont celles qui imposent le moins lourd fardeau financier en matière de santé, d'éducation et de bien-être social; et elles ne bénéficient pas de prestations de pension. Les dépenses en matière d'éducation sont les plus élevées pour le groupe d'âge des 15 à 19 ans; les dépenses en matière de santé commencent à augmenter graduellement à compter de l'âge de 50 ans. D'ici 2006, la première vague des baby-boomers auront atteint la période de leur vie où les dépenses en matière de soins de santé qui leur sont propres sont à leur plus haut niveau. Il faudra toutefois compter encore de 10 à 20 ans avant qu'ils n'atteignent leur niveau le plus élevé en la matière, niveau constaté chez les personnes âgées de 70 ans et plus. Toujours en 2006, la génération du baby-bust en sera à ses années les moins coûteuses en matière de services sociaux, et les enfants du millénaire seront en pleine période d'âge scolaire.

Le bénévolat et les dons de bienfaisance

La valeur des dons de bienfaisance augmente avec l'âge, de même que le simple fait de donner. Selon Statistique Canada, l'âge moyen des donateurs qui ont produit une déclaration de revenu en 1990 est de 47 ans. Et la valeur des dons et des contributions s' accroît aussi avec l'âge. Neuf (9) p. 100 des personnes de moins de 25 ans ont fait des dons comparativement à 33 p. 100 des personnes âgées de 35 à 44 ans. La valeur moyenne des dons des personnes du groupe des 15 à 24 ans était de 166 dollars par rapport à 800 dollars pour les personnes du groupe des 55 ans et plus. Les projections montrent que le taux de croissance des dons de bienfaisance excédera, et de beaucoup, le taux de croissance des ménages.

Le bénévolat est une autre activité qui prend de l'ampleur avec l'âge, tout particulièrement lorsque les gens disposent davantage de temps discrétionnaire au moment de la pré-retraite et de la retraite. L'une des principales retombées de l'abondance future de bénévoles est l'afflux stratégique de ressources humaines et financières dans le secteur des organisations à but non lucratif. Le secteur public pourrait également en tirer profit si l'idée de la coproduction de services s'installe.

D'ici 2006, les membres de la génération du baby-boom en seront à ce moment de leur vie où le bénévolat et les dons de bienfaisance s'inscriront davantage dans le cadre de leurs activités sociales.

Les loisirs et la culture

De récents travaux de recherche ont discrédité le mythe selon lequel les baby-boomers sont davantage en forme que leurs parents. Sans tenir compte des niveaux de santé et de condition physique, vieillir se traduit inévitablement par un ralentissement de l'activité physique. Une société vieillissante s'adonnera moins à des activités de sport-spectacle (où les sièges exacerbent les maux de dos existants) et à la pratique individuelle de sports, et davantage à des activités récréatives passives et à des activités culturelles, de la relaxation à l'ornithologie en passant par l'opéra et le jardinage. En outre, les auteurs du présent rapport estiment qu'à mesure que les consommateurs vieilliront, ils consacreront davantage de temps aux voyages à l'étranger.

L'impact des tendances démographiques sur ce regroupement d'activités ludiques se fera sentir chez les fournisseurs de services tant des secteurs public que privé. Par exemple, les besoins en installations publiques pour la pratique de sports amateurs (par exemple, des arénas et des terrains de soccer) seront moins grands, les jeunes de la génération de l'écho et les enfants du millénaire dominant la scène sportive. Toutefois, les baby-boomers étant dans la quarantaine et la cinquantaine, la demande pour des sentiers de randonnée pédestre et des aires de conservation devrait être à la hausse. Les entrepreneurs privés devront composer avec la pression de fournir des produits et services de qualité. Par exemple, cette orientation « qualité » pourrait expliquer la différence entre l'installation de sièges étroits en plastique au SkyDome, à Toronto, et l'installation de bancs spacieux et ergonomiques dans une nouvelle salle de concert. Le taux de croissance des ventes d'outils et de fournitures de jardinage excédera, et de loin, ceux de la vente d'outils électriques et du nombre d'inscriptions à des centres de culture physique.

CONCLUSIONS

CETTE ANALYSE DES RÉPERCUSSIONS des tendances démographiques sur les produits et services des secteurs public et privé met en lumière l'incidence déterminante de l'âge dans notre société. La variable de l'âge est au coeur même de notre compréhension de la distribution de la population, conséquence d'une longue période (qui n'est pas encore terminée) marquée par un faible taux de fécondité et par l'accroissement de l'espérance de vie. En conséquence, les tailles absolues et relatives de la génération du baby-boom et des générations plus petites du baby-bust et de l'écho qui la suivent auront une incidence mesurable sur le comportement économique des gens tout au long de leur vie.

Même si d'autres facteurs influent, tout particulièrement à court terme, sur le comportement économique, dont le revenu disponible réel, les taux d'intérêt et les prix relatifs, les projections démographiques fondées sur des hypothèses liées à l'âge recèlent d'importantes données concernant les taux de croissance – à moyen et à long terme – de divers produits et services.

En dépit de l'éclairage que procure la démographie, les leaders tant des secteurs public que privé en ont fait fi dans leurs processus de planification et de prise de décisions. Cela témoigne soit de leur faible compréhension de l'incidence des tendances démographiques, soit de leur préférence pour aborder les questions dans une perspective à court terme. Peu importe les motifs de cette indifférence, les auteurs de ce rapport recommandent que les dirigeants des gouvernements et des entreprises au Canada fassent une plus large place à l'analyse démographique lors de l'élaboration de leurs politiques et orientations au cours des dix prochaines années et au-delà.

NOTES

1 Les travaux de recherche et la rédaction de ce document ont été exécutés par les trois associés du cabinet Madison Avenue Demographics Group – David K. Foot, Richard A. Loreto et Tom McCormack. Le cabinet Madison Avenue Demographics Group réunit des consultants qui s'emploient à privilégier l'utilisation judicieuse et assidue de données démographiques dans le cadre des activités de planification et de prise de décisions des organisations publiques et privées.

2 Le lecteur constatera que les projections quant à la population en 1996 présentées dans ce document diffèrent quelque peu de celles présentées récemment dans les journaux et magazines. En voici l'explication : La population par âge et par sexe a été établie d'après les données des recensements pour les années 1981, 1986 et 1991. Nous n'avons pas révisé ces données à la lumière des projections nationales produites par Statistique Canada, du dénombrement incomplet, lors des recensements, selon l'âge et le sexe, et du déplacement du moment de la production des projections du 1er juin au 1er juillet. Les données propres aux années intercensitaires (1982 à 1985 et 1987 à 1990) ont été extrapolées par Strategic Projections Inc. Les données pour la période de 1992 à 1995 ont été extrapolées par Strategic Projections Inc. à la lumière des projections nationales postcensitaires relatives à la croissance de la population publiées par Statistique Canada et établies à partir de ses dossiers administratifs. Les données propres à la période de 1996 à 2021 ont été projetées par Strategic Projections Inc.

BIBLIOGRAPHIE

Centre canadien de la statistique juridique, *Juristat*, vol. 16, nº 3, Ottawa, Statistique Canada, mars 1996.

——, *Juristat*, vol. 16, nº 11, Ottawa, Statistique Canada, juillet 1996.

——, *Statistique de la criminalité du Canada en 1994*, Ottawa, Statistique Canada, 1995.

Dumas, Jean et Alain Bélanger (en collaboration avec Gordon Smith), *Rapport sur l'état de la population au Canada en 1995: conjoncture démographique*, Ottawa, Statistique Canada, 1996.

Fédération canadienne de démographie, V*ers le XXIe siècle : tendances socio-démographiques et enjeux politiques au Canada*, actes du colloque de 1995 au Collège Saint-Paul, Ottawa, 23-25 octobre 1995.

Foot, David K., (en collaboration avec Daniel Stoffman), *Entre le Boom et l'Écho: Comment mettre à profit la réalité démographique*, Boréal, collection Info Presse, 1996.

——, *Canada's Population Outlook: Demographic Futures and Economic Challenges*,The Canadian Institute for Economic Policy Series, James Lorimer & Company, Publishers, Toronto, 1982.

——, *Public Policy and Future Population in Ontario*, Conseil économique de l'Ontario, Toronto, 1979.

Kettle, John, *The Big Generation*, McClelland and Stewart, Toronto, 1980.

Leacy, F. H. éd., *Statistiques historiques du Canada*, 2e éd, Statistique Canada / Fédération des sciences sociales du Canada, Ottawa, 1983.

Ministère des Affaires civiques de l'Ontario. *Immigration Statistics 1991*, Imprimeur de la Reine pour l'Ontario, Toronto, 1993.

Morgan, Nicole S., (en collaboration avec Charles Moubarak), *Où aller? Les conséquences prévisibles chez les groupes de décisions de la Fonction publique fédérale*, Institut de recherches poliques, Montréal, 1981.

Nault, François, Jiajian Chen, M. V. George et Mary Jane Norris, *Projection de la population indienne inscrite, 1991– 2015*, Statistique Canada, Ottawa, 1993.

Roadburg, Alan, *Aging: Retirement, Leisure and Work in Canada*, Methuen Publications, Toronto, 1985.

Secrétariat du Conseil du Trésor, *Statistique sur l'emploi dans la fonction publique fédérale*, 1er avril 1995 au 31 mars 1996, Ottawa, 1996.

Smith Barney, *Trends: New Horizons for the 21st Century*, New York, 1996.

Strategic Projections Inc., *Canadian Labour Market Implications of Projected Demographic and Economic Trends*, rapport établi pour la Société canadienne des postes, mars 1995.

——, *Consumer Spending Patterns 1996 to 2016*, rapport établi pour le Bureau de la consommation, Industrie Canada, octobre 1995.

——, *Demographic Change and the Household Furniture Industry in Canada*, rapport établi pour Industrie Canada, mars 1995.

——, *Demographic and Economic Trends in Canada: Implications for the Information Highway*, rapport confidentiel, mai 1995.

——, I*mpacts of an Aging Population on Metropolitan Toronto Transportation*, rapport établi pour le Département du transport de la municipalité de Toronto, avril 1996.

——, *Potential Household Formation by Type in Canada*, rapport établi pour le Bureau de la consommation, Industrie Canada, décembre 1995.

——, (pour RAL Consulting Limited), *Training Needs Analysis*, vol. 1, « Economic & Demographic Scan », étude préparée pour l'International Brotherhood of Painters &

Allied Trades Sectoral Agreement (Ontario) Committee, Woodbridge, Ontario, février 1995.

Statistique Canada, *Tendances sociales canadiennes*, n° 12, Ottawa, Statistique Canada, printemps 1989.

——, *Tendances sociales canadiennes*, n° 42, Ottawa, Statistique Canada, automne 1996.

The Globe and Mail, Toronto, 1er janvier 1995 au 30 septembre 1996.

The Wyatt Company, *Best Practices in Corporate Restructuring*, Survey of Corporate Restructuring, 1993.

Wigdor, Blossom T. et David K. Foot, T*he Over-Forty Society: Issues for Canada's Aging Population*, James Lorimer & Company, Publishers, Toronto, 1988.

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LE CANADA AU 21e SIÈCLE

III. RELEVER LE DÉFI

RÉACTIONS INDIVIDUELLES À L'ÉVOLUTION DU MARCHÉ DU TRAVAIL AU CANADA

Document no 9
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LE CANADA AU 21e SIÈCLE

III. RELEVER LE DÉFI

RÉACTIONS INDIVIDUELLES À L'ÉVOLUTION DU MARCHÉ DU TRAVAIL AU CANADA

Par Paul Beaudry et David A. Green,
Université de la Colombie-Britannique

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PRÉFACE

À L'APPROCHE DU NOUVEAU MILLÉNAIRE, les Canadiens assistent à une transformation radicale des paramètres de l'économie. La tendance à la mondia-lisation des marchés et à l'intégration de plus en plus poussée de l'activité économique entre les nations s'accentue. Les progrès spectaculaires de l'informatique et des communications facilitent ce mouvement de mondialisation et changent fondamentalement le milieu de travail et le mode de vie des Canadiens. Du même coup, et comme conséquence première de la révolution de l'information, les activités axées sur le savoir occupent une place sans cesse plus grande dans notre économie et celle des autres pays industrialisés.

Cette mutation fondamentale de l'économie nous incite à faire une comparaison avec la révolution industrielle du 19e siècle. Comme à cette époque, les grands changements structurels engendrent des incertitudes. Les entreprises et les travailleurs luttent pour se tailler une place dans ce nouvel ordre économique. Les Canadiens se demandent si les ressources matérielles, humaines et institutionnelles de leur pays constituent une assise suffisamment solide pour garantir leur prospérité future. Beaucoup estiment que les perspectives qui s'offrent au Canada sont beaucoup moins sûres qu'à l'époque où les richesses naturelles jouaient un rôle clé dans l'édification de l'économie du pays.

Afin d'explorer plus à fond les possibilités et les défis que laissent entrevoir ces développements à moyen et à long terme, la Direction de l'analyse de la politique micro-économique d'Industrie Canada a invité un groupe de spécialistes à présenter leur « vision » du Canada au 21e siècle dans un certain nombre de domaines importants. Chaque auteur devait s'attaquer à deux tâches redoutables : d'abord dégager les grandes tendances historiques en vue d'élaborer des scénarios illustrant comment les choses évolueront vraisemblablement au cours des dix à quinze prochaines années dans le domaine qui lui avait été assigné, puis examiner les conséquences à moyen terme de cette évolution pour l'économie canadienne.

Les essais qui découlent de cet exercice sont en voie de publication sous le thème général « Le Canada au 21e siècle ». La collection englobe onze documents traitant des perspectives qui s'offrent au Canada à moyen terme dans différents domaines. Ces documents sont répartis en trois volets. Le premier, *Mise en situation*, est consacré aux tendances fondamentales qui façonneront le contexte économique à moyen terme au Canada. Le second volet, *Ressources et technologie*, traite de l'évolution de certains facteurs importants sur le plan de la création de la richesse au Canada, ainsi que des mesures requises pour leur donner un solide fondement en vue d'assurer la prospérité du pays. Le troisième et dernier volet, *Relever le défi*, scrute les réactions des particuliers, des entreprises et des gouvernements aux défis qui se présenteront à moyen terme et propose certains éléments de solution en vue d'orienter le pays sur la bonne voie.

S'inscrivant dans le troisième et dernier volet, *Relever le défi*, cette étude du professeur Paul Beaudry et de David Green, de l'Université de la Colombie-Britannique, traite de la réaction des jeunes travailleurs à l'évolution spectaculaire du marché du travail au cours des dernières années. Les auteurs décrivent la détérioration sérieuse de la position des nouveaux venus sur le marché du travail. Les jeunes hommes (de plus de 25 ans) qui occupent leur premier emploi au cours des années 90 doivent envisager des gains viagers réels de 20 à 30 p. 100 inférieurs à ceux des personnes entrées dans la population active durant les années 70. Dans le cas des femmes, la tendance dominante a été l'intégration réussie d'un nombre considérable de nouvelles travailleuses dans la population active. Mais les auteurs constatent qu'après avoir fait les rajustements appropriés pour neutraliser la tendance haussière de l'emploi et du nombre d'heures travaillées jusqu'en 1989, les femmes ont également subi un recul sur le plan des gains réels.

Les auteurs prévoient que ces tendances négatives du marché de l'emploi pour les jeunes travailleurs se maintiendront et s'accompagneront d'une augmentation supplémentaire des taux d'inscription scolaire. Mais l'augmentation continue des taux de participation et d'emploi des femmes semble avoir pris fin. À long terme, les auteurs entrevoient deux facteurs dont l'effet jouera en sens opposé : la mondialisation et la concurrence accrue en provenance de l'étranger, alimentées par une main-d'oeuvre peu coûteuse, devraient rendre la vie encore plus difficile aux jeunes gens et aux travailleurs peu spécialisés au Canada. Par ailleurs, les jeunes hommes peu qualifiés feront vraisemblablement face à une concurrence moins vive parmi les nouveaux entrants sur le marché du travail parce que les pressions sur l'offre de travail attribuables aux tendances démographiques et à la participation accrue des femmes se sont atténuées.

INTRODUCTION

Le changement est l'élément que l'on retrouve le plus souvent dans les travaux de recherche actuels sur le marché du travail.

– Stephan F. Kaliski, 1985

PLUS DE DIX ANS APRÈS QU'ELLE AIT ÉTÉ FAITE, la réflexion de Kaliski au sujet de l'état de changement perçu sur le marché du travail au Canada demeure pertinente. À l'heure actuelle, la société canadienne est préoccupée par les effets d'événements tels que l'émergence de l'âge de l'information, les contraintes imposées par l'endettement élevé du secteur public et l'impact des taux de chômage obstinément élevés. Ces effets seront déterminés par les réactions des particuliers, des entreprises et des gouvernements, tous captifs du contexte défini par les institutions au Canada et la place que celui-ci occupe dans l'économie mondiale. Cette étude, qui met l'accent sur les réactions individuelles, vise deux objectifs : d'abord, nous voulons documenter l'évolution récente de certains paramètres individuels du marché du travail, par exemple les gains, l'emploi, la fréquentation scolaire et la formation des familles. Puis, nous tentons de prédire comment ces paramètres individuels continueront d'évoluer au cours de la prochaine décennie. En cherchant à atteindre ces objectifs, nous concentrerons notre attention sur les jeunes parce que nous nous intéressons à la façon dont la turbulence actuelle et future du marché du travail touchera de façon permanente les nouveaux entrants.

Pour décrire l'évolution récente, nous devons d'abord nous faire une idée des grandes tendances du marché du travail. Cependant, les tendances observées au cours des deux dernières décennies traduisent plusieurs phénomènes différents qui se déroulent de façon simultanée. À titre d'exemple, ces tendances sont le reflet des effets globaux du cycle économique, des différences observées dans la situation relative des cohortes nouvelles par rapport aux cohortes plus anciennes d'entrants sur le marché du travail, ainsi que le profil de vieillissement des cohortes plus âgées. Afin de comprendre comment les particuliers peuvent réagir à la turbulence actuelle, il importe de préciser si les piètres résultats obtenus par les jeunes travailleurs au cours des années 90 sont principalement attribuables à des effets cycliques qui disparaîtront éventuellement lorsque les conditions du marché du travail, dans l'ensemble, s'amélioreront, ou encore si elles sont le reflet d'un recul permanent dans la performance relative des entrants récents sur le marché du travail. Les prédictions concernant les jeunes seraient plus pessimistes si les piètres résultats enregistrés dans les années 90 sont le reflet d'un repli permanent pour les nouvelles cohortes plutôt que d'un ralentissement cyclique particulièrement prononcé qui pourrait être suivi bientôt d'une reprise. Pour cette raison, une grande partie de l'analyse est consacrée à départager les effets de cohorte des effets du cycle économique.

La projection dans le futur des tendances observées peut prendre deux formes. La première est un prolongement mécanique des tendances passées.

Cette approche est utile pour une brève période mais elle devient de plus en plus incertaine plus nous repoussons l'horizon de la prévision. Mais même un prolongement mécanique des tendances passées dépendra de l'habilité avec laquelle nous pouvons dissocier les effets cycliques des effets de cohorte au cours du passé récent. Cela est particulièrement vrai ici du fait que nous nous préoccupons davantage du bien-être de la jeune génération actuelle sur l'ensemble du cycle viager que de la nature des ajustements qu'ils peuvent faire à court terme. Nous nous sommes notamment intéressés à prédire le succès relatif à long terme des nouveaux entrants plutôt que de déterminer si les résultats qu'ils obtiendront s'amélioreront à court terme en raison d'un retournement cyclique. En utilisant la première méthode de prédiction, nous projetons les résultats enregistrés pour les nouveaux entrants dans l'avenir immédiat.

Afin de prédire les résultats au delà du très court terme, c'est-à-dire à un horizon d'entre trois et cinq ans, nous devons avoir une théorie de ce qui a causé les tendances actuelles et de la façon dont cette cause changera vraisemblablement. C'est la seconde forme de projection. Malheureusement, aucune théorie ne ressort d'elle-même, mais l'information au sujet des tendances passées nous aide à évaluer les théories concurrentes. Nous avons utilisé à cette fin les données sur les tendances passées pour éventuellement retenir deux théories plausibles des causes sous-jacentes. Nous décrivons ensuite deux scénarios de prévisions différents qui s'appuient sur ces théories.

Comme nous l'avons déjà indiqué, notre préoccupation majeure porte sur les résultats obtenus par les jeunes. Cependant, nous avons concentré nos efforts sur les prévisions qui ont trait au groupe d'âge des 25 à 34 ans. Nous avons procédé ainsi parce que nous considérons que c'est l'âge auquel il se produit une transition fondamentale vers des profils d'emploi stable, l'accélération de la carrière et la constitution d'une famille. Si des changements au sein de l'économie et la réaction des jeunes à ces changements provoquent des lésions permanentes, celles-ci ressortiront de façon plus manifeste au cours de la période qui suit immédiatement la jeunesse. Le degré naturellement élevé de flexibilité des jeunes gens rendra ces lésions difficiles à détecter directement. Par contre, si les changements actuellement observés sur le marché du travail nécessitent des ajustements supplémentaires de la part des jeunes (par exemple sous la forme d'une scolarité prolongée), mais que ces ajustements débouchent toujours sur des profils d'emploi stable à un âge plus avancé, l'effet de ces changements pour les jeunes ne suscitera pas une préoccupation aussi sérieuse. Nous pouvons évaluer cette possibilité directement en examinant les expériences de différentes cohortes à mesure qu'elles progressent en âge entre 25 et 34 ans.

Les autres chapitres de l'étude sont structurés ainsi : dans le prochain chapitre, nous présentons un aperçu détaillé des changements qui se sont produits sur le marché du travail, en mettant l'accent sur la façon dont ces changements sont répartis au sein de la population. Dans le troisième chapitre, qui est l'élément le plus novateur de l'étude, nous présentons une analyse par cohorte des changements observés afin de déceler le profil d'évolution des possibilités

qui s'offrent aux jeunes travailleurs. En utilisant les renseignements présentés dans les chapitres deux et trois, nous élaborons, dans le quatrième chapitre, deux scénarios différents sur l'adaptation possible des particuliers aux changements actuels. Enfin, nous résumons nos principales constatations dans le dernier chapitre.

TENDANCES FONDAMENTALES DE LA POPULATION ACTIVE, DE L'EMPLOI, DES GAINS ET DES ACTIVITÉS AUTRES QUE LE TRAVAIL

TENDANCES DE LA POPULATION ACTIVE

Tendances de la population

Nous débutons noter analyse des tendances du marché du travail par un examen de la croissance de la population source qui est à la base de la population active. Celle-ci est constitué essentiellement de la population civile âgée de plus de 15 ans. L'élément marquant du taux de croissance de la population a été la poussée observée au moment où les membres de la génération du boum des naissances ont franchi l'âge de 15 ans, suivie d'une chute rapide. La figure 1 montre la taille de la population dans les groupes d'âge 16-24, 25-34 et 35-44 entre 1950 et aujourd'hui[1]. La génération du boum des naissances ressort nettement de la hausse de plus de 100 p. 100 observée dans la taille de la jeune population entre 1960 jusqu'à son sommet de 1980, ainsi que du cheminement parallèle, mais décalé, des deux autres groupes d'âge. Au cours des deux à trois prochaines décennies, la répartition de la population par groupe d'âge changera : le sommet du boum des naissances se déplacera vers l'âge de la retraite et la proportion de la population source dans le groupe d'âge plus jeune sera relativement restreinte. Ce changement démographique devrait constituer l'élément central définissant l'expérience des nouvelles cohortes de jeunes travailleurs sur le marché du travail. Il faudrait garder à l'esprit le contraste qui ressort entre cette situation et celle des deux ou trois décennies précédentes (lorsque les cohortes de jeunes étaient soit les babyboomers eux-mêmes soit les cohortes qui ont immédiatement suivi ce groupe) au moment de projeter toute tendance passée dans l'avenir.

Taux d'emploi selon l'âge

Nous commençons notre examen des tendances du marché du travail pour les personnes ayant appartenu à la population source au cours des 20 dernières années en nous intéressant à l'emploi. Nous croyons que c'est là un bon point de départ parce que l'emploi est à la fois l'objectif et la principale expérience sur le marché du travail pour la plupart des membres de la population source, un aspect qui est souvent oublié parce que l'on s'intéresse généralement davantage au chômage et à la participation à la population active. En outre, c'est cet élément de la population active qui est le moins vulnérable aux erreurs de mesure. La figure 2 montre le ratio de l'emploi à la population source de 1976 à 1996. Le profil qui se dégage sur cette période pourrait être qualifié en gros de tendance à la hausse faisant voir des fluctuations cycliques dont l'amplitude va en augmentant. À titre d'exemple, à la fin des années 70, le ratio emploi/population a

FIGURE 1

POPULATION PAR GROUPE D'ÂGE, 1951-1995

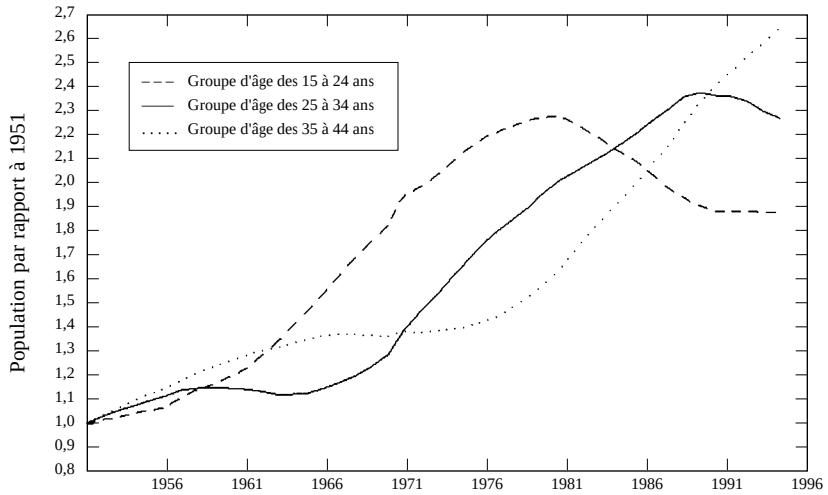
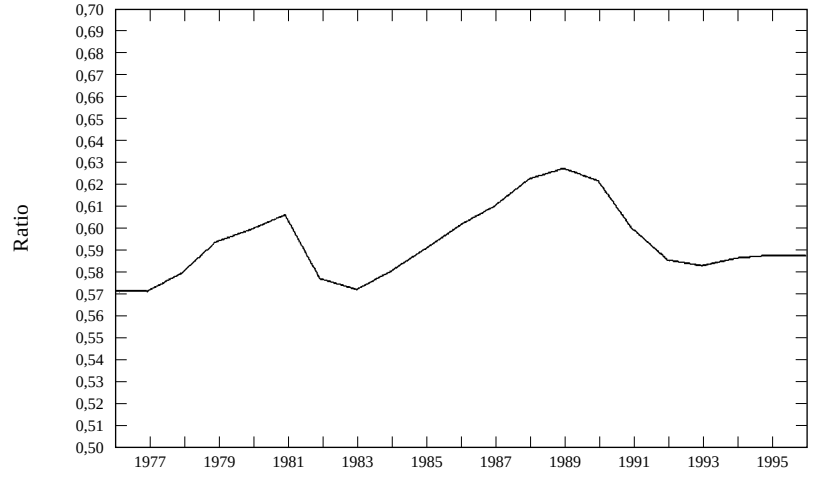


FIGURE 2

RATIO EMPLOI/POPULATION POUR LES DEUX SEXES, PERSONNES DE PLUS DE 15 ANS, 1976-1996



diminué d'entre 1 et 2 p. 100 mais il a ensuite remonté à un niveau beaucoup plus élevé en 1981. Au cours de la récession de 1981-1982, le ratio a chuté d'environ 4 p. 100 mais, en 1990, il était remonté à des niveaux bien supérieurs au sommet précédent. Les années 90 ont été jusqu'à maintenant marquées par une diminution très prononcée de ce ratio, qui est demeuré de façon persistante à un bas niveau.

Derrière cette tendance générale se profile un ensemble complexe de tendances de l'emploi pour différents groupes selon l'âge, le sexe et la scolarité au sein de la population source. La figure 3a montre le ratio emploi/population par groupe d'âge pour les hommes ainsi que le rapport entre le ratio emploi/population des jeunes et celui des hommes âgés de 25 à 54 ans. La tendance générale observée à la figure 2 ne ressort pas de façon marquée pour les hommes appartenant à l'un ou l'autre de ces groupes d'âge. Dans le cas des hommes âgés de 15 à 24 ans, on peut constater la même cyclicalité prononcée que celle qui ressort de la figure 2, mais la tendance générale est stationnaire ou en baisse. Pour l'ensemble des hommes de plus de 25 ans, une forte tendance à la baisse peut être observée au cours des 20 dernières années avec, à l'occasion, des mouvements cycliques de faible amplitude. La tendance négative est souvent attribuée à l'impact du départ hâtif à la retraite parmi les hommes de plus de 55 ans. Cependant, le ratio emploi/population pour les hommes de 25 à 34 ans a chuté de près de 10 p. 100 au cours de la période. La tendance observée pour ce dernier groupe d'âge laisse penser que les tendances de l'emploi masculin inquiètent davantage qu'elles ne le devraient si le phénomène était uniquement attribuable aux départs à la retraite. Tant le groupe d'âge des plus jeunes que celui des 25 à 34 ans montrent un profil cyclique prononcé des ratios d'emploi. On peut s'attendre plus naturellement à observer ce phénomène dans le cas des jeunes travailleurs qui peuvent utiliser leur temps d'autres façons, par exemple pour investir en éducation et en formation. Dans le cas du groupe d'âge des 25 à 34 ans, le caractère cyclique de la tendance étonne davantage, de même que la forte tendance à la baisse. Enfin, le rapport entre le ratio emploi/population pour les jeunes et celui de l'ensemble des travailleurs de plus de 25 ans indique que la position relative des jeunes est demeurée essentiellement inchangée du début à la fin de la période.

À la figure 3b, les résultats présentés pour les femmes font ressortir un cycle beaucoup moins prononcé que celui observé chez les hommes, tandis que plusieurs groupes d'âge font voir une forte tendance à la hausse. La variation cyclique la plus importante s'observe, à nouveau, parmi le groupe d'âge le plus jeune, le recul étant particulièrement prononcé et persistant au cours du ralentissement le plus récent du marché du travail. Une comparaison des sommets cycliques (1980 et 1989) révèle une tendance à la hausse pour le groupe des jeunes avant 1990. Par rapport aux profils d'emploi des groupes d'âge de plus de 25 ans, toutefois, l'emploi chez les jeunes femmes a chuté de façon spectaculaire au cours de la période. Enfin, contrairement à la situation des hommes, le groupe des femmes de 25 à 34 ans affiche davantage de traits communs avec les

FIGURE 3a

RATIO EMPLOI/POPULATION PAR GROUPE D'ÂGE, HOMMES, 1976-1996

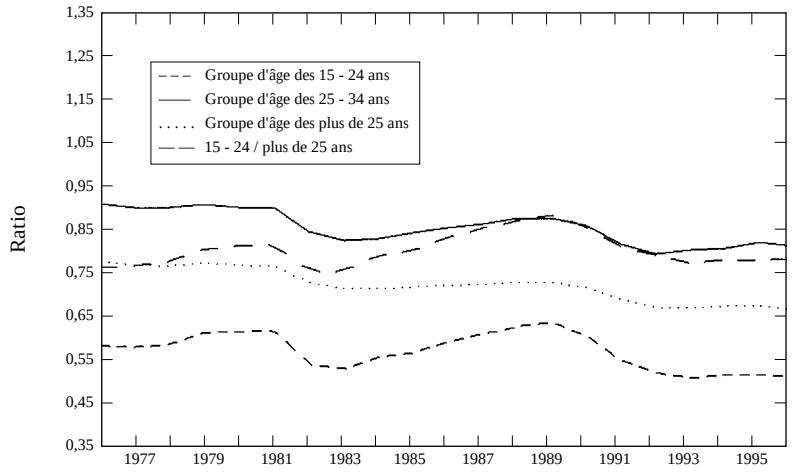
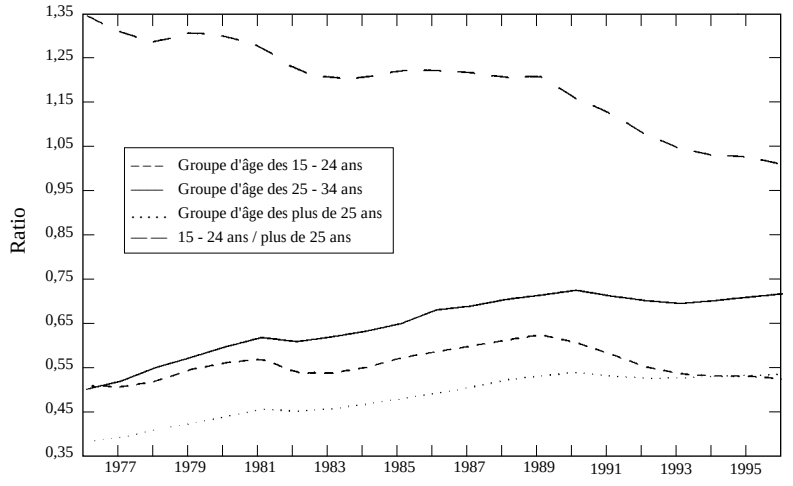


FIGURE 3b

RATIO EMPLOI/POPULATION PAR GROUPE D'ÂGE, FEMMES, 1976-1996



groupes plus âgés qu'avec celui des jeunes. Le groupe d'âge des 25 à 34 ans montre la même tendance prononcée à la hausse et la même faible amplitude des fluctuations cycliques que la tendance générale qui se dégage pour les groupes d'âge de 25 ans et plus.

Un résultat d'importance capitale qui ressort des figures 2, 3a et 3b est que les tendances générales peuvent masquer des différences très importantes entre les sous-populations, notamment entre les hommes et les femmes. Si les ratios d'emploi des femmes ont augmenté fortement au cours des 20 dernières années, ceux des hommes ont chuté, même dans le cas des groupes d'âge qui sont encore loin de la retraite. En outre (le résultat peut être étonnant), les données sur les hommes font ressortir une plus grande amplitude cyclique que les données pour les groupes de femmes correspondants. La similitude entre hommes et femmes apparaît principalement dans le groupe d'âge le plus jeune, où les membres des deux sexes ont subi un ralentissement prononcé de l'emploi au cours des années 90.

Taux d'emploi selon la scolarité

Des tendances marquées et des profils intéressants pour les diverses sous-populations ressortent également d'un examen des tendances de l'emploi par niveau de scolarité. Riddell (1995) a montré que depuis 1980, il y a eu un mouvement important dans la composition de la population active selon la scolarité, des catégories de scolarité les plus basses vers les catégories d'études postsecondaires. Notamment, au cours de la période 1980-1993, l'auteur a observé une diminution de 57 p. 100 du nombre de travailleurs employés ayant une scolarité élémentaire et une augmentation de 77 p. 100 du nombre de travailleurs possédant un diplôme universitaire. Ces tendances se sont accélérées au cours des années 90 (voir Riddell, 1995, tableau 2). Nous retrouvons derrière ces tendances les changements provoqués par le départ à la retraite des cohortes les plus âgées et les moins scolarisées, ainsi que par les choix faits par les nouvelles cohortes en matière d'éducation, auxquels s'ajoute la performance moins bonne sur le marché du travail des travailleurs les moins scolarisés lors des périodes de ralentissement économique. Quelle que soit la raison exacte de ces changements, toutefois, l'ordre de grandeur des déplacements observés est remarquable.

Dans les tableaux 1 à 4, nous présentons les ratios emploi/population par sexe, âge et scolarité pour les années 1981, 1982, 1988 et 1992, respectivement. Une comparaison du tableau 1 et du tableau 3 montre les effets tendanciels d'un sommet cyclique (1981) à un autre (1988). Il n'est pas possible de résumer en un énoncé simple la baisse généralisée des taux d'emploi pour les travailleurs des deux sexes et de tous les groupes d'âge qui possèdent une scolarité élémentaire. Si cette tendance s'observe parmi les hommes dans la force de l'âge, le taux d'emploi des hommes peu scolarisés de 15 et 24 ans a, de fait, augmenté au cours de cette période. Pour les hommes de plus de 25 ans appartenant à la plupart des groupes définis selon la scolarité, les taux d'emploi peuvent être

qualifiés d'élevés et de relativement stables. La principale tendance observable au cours de cette période pourrait être l'augmentation des ratios emploi/population pour les femmes de plus de 25 ans, pour toutes les catégories de scolarité dépassant les études élémentaires – une indication que les tendances propres aux femmes plus âgées, dont nous avons fait état précédemment, se retrouvent dans pratiquement toute la gamme des catégories de scolarité. Dans le cas des jeunes femmes, les courbes d'augmentation et de diminution du taux d'emploi pour les différentes catégories de scolarité offrent un tableau varié. Il est difficile de donner une interprétation complète des profils observés pour le groupe d'âge le plus jeune étant donné qu'ils pourraient traduire des changements dans les possibilités d'emploi de même que dans les taux d'inscription scolaire.

Une comparaison du tableau 3 et du tableau 4 montre comment les taux d'emploi ont changé à mesure que l'économie a éprouvé des difficultés, sur le plan du marché du travail, au début des années 90. Pour tous les groupes définis selon l'âge et le sexe, on observe une baisse marquée du taux d'emploi des personnes possédant une scolarité élémentaire. Pour les groupes d'âge les plus jeunes, ce résultat pourrait traduire la décision de demeurer à l'école plus longtemps compte tenu de la récession; pour les travailleurs plus âgés, toutefois, cela indique que les moins scolarisés sont ceux qui encaissent le coup lors des ralentissements économiques. Pour les travailleurs de plus de 25 ans, la récession a engendré une baisse des taux d'emploi dans la plupart des groupes de scolarité, les reculs les moins prononcés étant survenus parmi les personnes ayant poursuivi leurs études au delà de l'école secondaire. Parmi les jeunes travailleurs, on peut observer une baisse des taux d'emploi, chez les hommes, pour toutes les catégories de scolarité, mais une augmentation importante dans le taux d'emploi des femmes ayant terminé leurs études secondaires.

Enfin, une comparaison des tableaux 1 et 2 révèle des effets semblables à ceux observés au moment d'une récession antérieure. Si l'on peut faire un rapprochement entre ces tendances et celles correspondant à l'arrivée de la récession du début des années 90 (les taux d'emploi pour les groupes les moins scolarisés ont diminué dans les deux cas), les mouvements sont beaucoup moins prononcés en 1981 et en 1982, comparativement à 1988 et 1992. Selon cette mesure, les variations observées au début des années 90 ne peuvent être attribuées à l'effet « habituel » d'une récession.

Dans l'ensemble, on semble observer un recul important des taux d'emploi pour les travailleurs moins scolarisés et un retournement à la hausse pour les plus scolarisés. Les années 90 ont été témoin d'une chute plus prononcée et persistante des taux d'emploi qu'au cours de la récession du début des années 80.

TABLEAU 1

RATIOS EMPLOI/POPULATION, 1981
GROUPE D'ÂGE ET SEXE

Scolarité	15 à 24 ans			25 à 34 ans			35 à 54 ans			TOUS
	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	
Études primaires	0,5758	0,3862	0,4941	0,9036	0,5160	0,7096	0,9083	0,5055	0,7158	0,6769
Études secondaires, partielles ou complétées	0,8072	0,7144	0,7611	0,9723	0,6745	0,8168	0,9667	0,6756	0,8099	0,7927
Études postsecondaires partielles	0,9199	0,8629	0,8925	0,9650	0,7820	0,8789	0,9722	0,7555	0,8664	0,8820
Certificat d'études postsecondaires	0,9472	0,9304	0,9377	0,9761	0,8331	0,9012	0,9869	0,7858	0,8741	0,8988
Diplôme d'études postsecondaires	0,9278	0,9665	0,9478	0,9688	0,8768	0,9275	0,9852	0,8110	0,9260	0,9288
Tous	0,8165	0,7401	0,7786	0,9660	0,7252	0,8445	0,9571	0,6658	0,8112	0,8107

Nota : Fondé sur des calculs des auteurs à l'aide de données tirées de l'Enquête sur les finances des consommateurs.

TABLEAU 2

RATIOS EMPLOI/POPULATION, 1982
GROUPE D'ÂGE ET SEXE

Scolarité	15 à 24 ans			25 à 34 ans			35 à 54 ans			TOUS
	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	
Études primaires	0,5238	0,3594	0,4557	0,8667	0,5019	0,6844	0,8964	0,5030	0,7047	0,6591
Études secondaires, partielles ou complétées	0,7824	0,6882	0,7360	0,9589	0,6828	0,8136	0,9489	0,6660	0,7965	0,7785
Études postsecondaires partielles	0,8791	0,8291	0,8540	0,9722	0,7874	0,8886	0,9771	0,7369	0,8667	0,8676
Certificat d'études postsecondaires	0,9186	0,8820	0,8974	0,9776	0,8226	0,8961	0,9823	0,7734	0,8683	0,8856
Diplôme d'études postsecondaires	0,8316	0,9501	0,8948	0,9711	0,8639	0,9220	0,9802	0,8222	0,9232	0,9203
Tous	0,7849	0,7160	0,7507	0,9584	0,7266	0,8411	0,9467	0,6605	0,8035	0,7983

Nota : Fondé sur des calculs des auteurs à l'aide de données tirées de l'Enquête sur les finances des consommateurs.

TABLEAU 3

RATIOS EMPLOI/POPULATION, 1988
GROUPE D'ÂGE ET SEXE

Scolarité	15 à 24 ans			25 à 34 ans			35 à 54 ans			TOUS
	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	
Études primaires	0,6360	0,3805	0,5270	0,8479	0,5533	0,7098	0,8507	0,5390	0,6964	0,6652
Études secondaires, partielles ou complétées	0,8506	0,7563	0,8051	0,9614	0,7759	0,8678	0,9430	0,7594	0,8456	0,8400
Études postsecondaires partielles	0,9563	0,8907	0,9230	0,9727	0,8250	0,8989	0,9356	0,8054	0,8723	0,9001
Certificat d'études postsecondaires	0,9715	0,9412	0,9548	0,9832	0,8924	0,9358	0,9711	0,8351	0,8994	0,9234
Diplôme d'études postsecondaires	0,9474	0,9509	0,9494	0,9668	0,9092	0,9380	0,9738	0,8958	0,9413	0,9407
Tous	0,8648	0,7865	0,8262	0,9617	0,8153	0,8878	0,9387	0,762	0,8499	0,8555

Nota : Fondé sur des calculs des auteurs à l'aide de données tirées de l'Enquête sur les finances des consommateurs.

TABLEAU 4

RATIOS EMPLOI/POPULATION, 1992
GROUPE D'ÂGE ET SEXE

Scolarité	15 à 24 ans			25 à 34 ans			35 à 54 ans			TOUS
	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	Hommes	Femmes	Les deux	
Études primaires	0.5491	0,3251	0,4532	0,7878	0,4985	0,6507	0,7561	0,5156	0,6369	0,6055
Études secondaires, partielles ou complétées	0,7304	0,6698	0,7016	0,9163	0,7005	0,8087	0,9180	0,7561	0,8301	0,7847
Études postsecondaires partielles	0,9083	0,8710	0,8898	0,9145	0,8113	0,8628	0,9265	0,7773	0,8506	0,8698
Certificat d'études postsecondaires	0,9169	0,8990	0,9075	0,9735	0,8787	0,9252	0,9347	0,8569	0,8961	0,9080
Diplôme d'études postsecondaires	0,9209	0,9297	0,9263	0,9595	0,9189	0,9391	0,9684	0,8701	0,9265	0,9308
Tous	0,7832	0,7405	0,7623	0,9360	0,7971	0,8663	0,9182	0,7793	0,8482	0,8334

Nota : Fondé sur des calculs des auteurs à l'aide de données tirées de l'Enquête sur les finances des consommateurs.

Composition industrielle

La répartition sectorielle de la population active a subi des changements importants au cours des deux dernières décennies. Kaliski (1985) et Riddell (1985) analysent les tendances de la composition industrielle et professionnelle de la population active jusqu'au début des années 80, tandis que Riddell (1996) prolonge l'analyse jusque dans les années 90. Les principales tendances de la composition industrielle avant 1980 sont un déplacement prononcé au détriment des industries du secteur primaire, une augmentation de l'emploi dans la fabrication et la construction et une poussée beaucoup plus forte de l'emploi dans les industries de services. Une bonne partie de la croissance observée dans l'importance relative du secteur des services est survenue avant 1973, mais elle s'est poursuivie sans relâche jusqu'à aujourd'hui. Au cours des années 80, le secteur manufacturier a enregistré une croissance presque nulle de l'emploi, tandis que le secteur des services s'est accru fortement, en particulier l'industrie des services financiers. Dans les années 90, la croissance de l'emploi dans le secteur de la fabrication est devenue fortement négative. L'emploi dans le secteur des services a continué de croître mais, au sein de ce secteur, on a pu observer des baisses très importantes de croissance dans l'industrie des services financiers et dans le secteur public. Comme l'ont noté Betcherman et Morissette (1994), cette dernière tendance peut être considérée comme particulièrement inquiétante pour les jeunes, parce que les emplois gouvernementaux leur avaient servi de porte d'entrée dans la population active par le passé en leur procurant des emplois de qualité. Enfin, il importe de signaler que les jeunes travailleurs et les femmes représentent une part disproportionnée de la croissance du secteur des services.

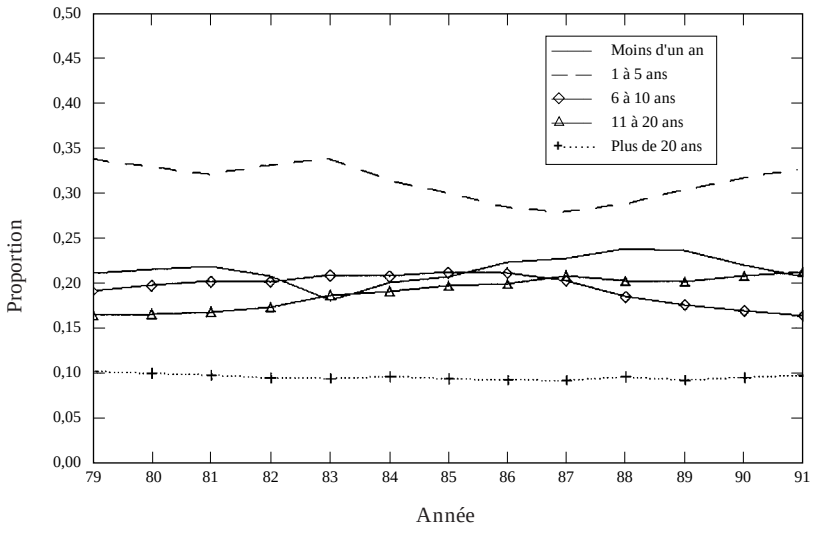
La croissance quasi nulle de l'emploi dans le secteur manufacturier canadien a alimenté les préoccupations au sujet d'un changement structurel profond de la population active et qui semble mener à des profils de travail plus instables. Riddell (1996) analyse cette question dans le contexte des changements dans l'emploi pour un vaste ensemble de secteurs, notamment le secteur manufacturier. Il arrive à la conclusion qu'il y a peu d'indications d'une intensification récente des changements structurels au niveau des grands secteurs par rapport aux années 60 et aux années 70, mais que l'on peut observer une plus grande turbulence au sein du secteur manufacturier depuis quelques années.

Tendances de la durée d'un emploi

Afin de voir si les changements structurels perçus avaient engendré une plus grande instabilité de l'emploi, Green et Riddell (1996) ont examiné l'évolution de la répartition de la durée des emplois non autonomes. La figure 4 (qui reproduit leur figure 1) fait voir la proportion des emplois de diverses durées (incomplètes) en mars de chaque année, de 1979 à 1991. Ces chiffres ne semblent pas indiquer de façon irréfutable qu'il y a une instabilité croissante de l'emploi parce que la proportion des emplois qui sont de très courte durée n'a pas augmenté avec le temps. Il y a certains indices de cyclicalité, notamment en ce qui a trait à la réduction de la proportion des emplois durant moins d'un an au cours des récessions du début des années 80 et du début des années 90. Le tableau général masque toutefois des différences importantes entre les sous-groupes. Après avoir neutralisé l'effet du cycle économique, Green et Riddell observent des hausses statistiquement significatives et importantes de la proportion des emplois qui durent moins d'un an pour les hommes et les femmes de 20 à 24 ans dans pratiquement tous les groupes de scolarité, au cours de la période 1979-1989. Cette augmentation est également observable pour les hommes de 25 à 34 ans de tous les groupes de scolarité, ainsi que pour les travailleurs qui n'ont pas terminé leurs études secondaires, dans pratiquement tous les groupes d'âge (tant les hommes que les femmes). Le fait que, selon cette mesure, il y ait une

FIGURE 4

RÉPARTITION DE LA POPULATION ACTIVE SELON LA DURÉE DE L'EMPLOI, 1979-1991



augmentation de l'instabilité d'emploi parmi les hommes âgés de 25 à 34 ans, mais non parmi les femmes de ce groupe d'âge, fournit un intéressant parallèle avec les tendances de l'emploi que nous avons décrites plus tôt. Il est à noter, cependant, que si les tendances positives sont plus prononcées pour les hommes de ce groupe d'âge, les femmes ont toujours une probabilité plus élevée de détenir un emploi durant une année ou moins. L'instabilité croissante observée parmi ces groupes est compensée par une tendance à détenir des emplois de plus longue durée parmi les femmes de plus de 25 ans et les hommes ayant entre 35 et 44 ans. Dans l'ensemble, la répartition de la durée des emplois semble révéler une « implosion » du centre : l'instabilité est plus grande pour les jeunes et les moins scolarisés ainsi que pour les hommes âgés de 25 à 34 ans.

Emploi non standard

L'instabilité de l'emploi peut également être attribuée au déplacement vers des formes d'emploi non standard, tout comme aux changements observés dans la durée des emplois. Une tendance intéressante à cet égard est l'augmentation de la proportion des travailleurs autonomes dans l'économie. Crompton (1993) décrit une augmentation lente mais persistante de l'emploi autonome entre 1971 et 1991. L'emploi autonome représentait 14 p. 100 de l'emploi total en 1989 et 15 p. 100 en 1994 (Krahn, 1995). Plus précisément, pour l'emploi autonome individuel (les travailleurs autonomes qui n'ont aucun employé), les chiffres correspondants sont de 7 p. 100 en 1989 et de 9 p. 100 en 1994, les pourcentages étant légèrement plus élevés pour les hommes que pour les femmes. L'emploi autonome ne semble pas jouer un rôle important dans l'expérience acquise par les jeunes sur le marché du travail, alors que seulement 5 p. 100 des hommes et moins de 3 p. 100 des femmes âgés de 15 à 24 ans sont classés dans la catégorie des personnes travaillant pour leur propre compte (Krahn, 1995). Les taux d'emploi autonome augmentent sensiblement avec l'âge, comme on doit s'y attendre. Aucune tendance vers l'emploi autonome ne semble ressortir pour la cohorte la plus jeune durant les années 90, mais il y a un léger déplacement (statistiquement non significatif) en ce sens pour les travailleurs âgés de 25 à 34 ans (Krahn, 1995).

Une autre preuve de la stabilité réduite du marché du travail ressort de l'augmentation rapide de l'emploi à temps partiel. Entre 1976 et 1994, le pourcentage de la population active travaillant moins de 30 heures par semaine est passé de 11 à 17 p. 100. Cette tendance englobe des différences marquées selon le sexe et le groupe d'âge. Ainsi, l'emploi à temps partiel chez les femmes âgées de 15 à 24 ans est passé d'environ 23 p. 100 en 1976 à 46 p. 100 en 1994. Pour les hommes appartenant au même groupe d'âge, la hausse a été de 18 à 36 p. 100. Chez les hommes âgés de 25 à 54 ans, le taux d'emploi à temps partiel n'était que de 4 p. 100 en 1994. Dans les années 90, le taux de croissance de l'emploi à temps partiel s'est essentiellement stabilisé, mais cette tendance générale masque une forte croissance de l'emploi à temps partiel pour les deux sexes au sein de la cohorte la plus jeune (de 40 p. 100 en 1989 à 46 p. 100 en

1994 dans le cas des femmes âgées de 15 à 24 ans), compensée par une diminution pour l'ensemble des groupes d'âge entre 25 et 54 ans (Krahn, 1995). Quant à dire si ces tendances doivent être jugées inquiétantes, cela dépend de la mesure dans laquelle les personnes en cause choisissent de travailler à temps partiel. La majorité des travailleurs à temps partiel travaillent volontairement moins de 30 heures par semaine. En 1995, la proportion des travailleurs à temps partiel qui affirmaient être employés involontairement à temps partiel était de 25 p. 100 parmi les hommes âgées de 15 à 24 ans, de 28 p. 100 parmi les femmes âgées de 15 à 24 ans, de 42 p. 100 parmi les hommes de plus de 25 ans et de 32 p. 100 parmi les femmes de plus de 25 ans. Cependant, on observe une forte tendance à la hausse dans le pourcentage des personnes travaillant involontairement à temps partiel, chez les deux sexes et pour tous les groupes d'âge, durant les années 90.

Pourquoi le travail à temps partiel a-t-il augmenté en importance parmi les jeunes travailleurs mais non parmi les plus vieux au cours des années 90? La similitude étroite des tendances du travail à temps partiel involontaire parmi les jeunes travailleurs et les travailleurs plus âgés au cours des années 90 laisse penser que l'on ne peut attribuer ce phénomène à des conditions du marché du travail moins bonnes pour les jeunes travailleurs. Plutôt, il pourrait être lié à la forte augmentation de la fréquentation scolaire parmi les 15-24 ans au cours de cette période. Si cette hypothèse s'avère, l'augmentation du travail à temps partiel parmi les jeunes pourrait être moins préoccupante qu'à première vue. Nous reviendrons sur ce point plus loin au moment d'analyser les tendances de la fréquentation scolaire.

L'augmentation du travail à forfait, dont la durée fixe est déterminée à l'avance, peut également constituer une indication de l'instabilité de l'emploi. L'augmentation des postes de contractuels, même en supposant une répartition de la durée de l'emploi inchangée, indiquerait un plus faible lien entre les travailleurs et une entreprise donnée, ainsi qu'un cheminement de carrière qui comporte un plus grand nombre de changements d'emplois. Comme dans le cas des autres formes de travail non standard, les contrats de travail se retrouvent plus fréquemment chez les jeunes que parmi les autres groupes d'âge. En 1994, 17 p. 100 des femmes de 15 à 24 ans et 16 p. 100 des hommes du même groupe d'âge étaient employés comme contractuels, le chiffre correspondant étant inférieur à 9 p. 100 pour le reste de la population active. Au cours des années 90, on a observé une légère tendance à la hausse du pourcentage des jeunes travailleurs appartenant à ces catégories. La plupart des autres groupes d'âge montrent une tendance stable ou légèrement négative au cours de cette période pour les femmes, mais des taux croissants pour les hommes – le pourcentage des hommes de 25 à 34 ans qui détiennent des emplois temporaires étant passé de 6 p. 100 en 1989 à 10 p. 100 en 1994 (Krahn, 1995).

Les diverses formes d'emploi non standard présentent un degré élevé de chevauchement. À titre d'exemple, les emplois à temps partiel sont également ceux qui ont une probabilité plus élevée d'être de courte durée. Pour faciliter la

compréhension des mouvements nets de l'emploi non standard, nous avons reproduit, à la figure 5a, le pourcentage des hommes de divers groupes d'âge qui ont travaillé à temps plein durant toute l'année, au cours de diverses années. Les personnes travaillant à temps plein durant toute l'année sont définies comme étant les personnes ayant travaillé plus de 50 semaines au cours d'une année et qui se considèrent comme travailleurs à temps plein dans le cadre de leur principal emploi au cours d'une année. Il n'est donc pas étonnant que la proportion varie considérablement entre les jeunes travailleurs et les travailleurs plus âgés. Pour ces deux groupes, il est tentant de faire une comparaison de la situation en 1988 et en 1993 pour arriver à la conclusion que le travail non standard est sur une trajectoire fortement ascendante depuis quelques années. Cela peut être vrai en partie, mais une comparaison avec le début des années 80 révèle que le pourcentage des personnes travaillant à temps plein durant toute l'année avait aussi diminué de façon marquée à cette époque. Au troisième chapitre, nous tentons de départager certains effets communs, par exemple ceux qui pourraient être engendrés par une récession et des écarts permanents auxquels doivent faire face les nouveaux entrants dans la population active, au cours des années 90, par rapport à ceux des périodes antérieures.

La figure 5b fait voir les même renseignements que la figure 5a, mais pour les femmes. Une similitude considérable ressort des profils respectifs des hommes et des femmes parmi le groupe d'âge le plus jeune. Pour les deux sexes, on observe une forte cyclicalité ainsi qu'une baisse très importante du pourcentage des personnes travaillant à temps plein durant toute l'année au cours des années 90. Cependant, parmi les groupes plus âgés, le profil parmi les femmes est sensiblement le même que celui observé antérieurement. Notamment, une forte tendance à la hausse du pourcentage des travailleurs à temps plein durant toute l'année au cours des années 80 devient stationnaire durant les années 90. L'écart le plus frappant entre les hommes et les femmes concerne le groupe d'âge des 25 à 34 ans. Chez les hommes, la tendance ressemble beaucoup plus à celle observée pour le groupe d'âge le plus jeune.

Dans l'ensemble, on peut résumer la situation de l'emploi non standard en disant qu'il poursuit une lente progression marquée par quelques pointes au cours des années 90. Durant cette période, les hausses les plus remarquables s'observent pour les jeunes des deux sexes et les hommes âgés de 25 à 34 ans. Mais si l'emploi non standard a joué un rôle important dans les processus d'ajustement des travailleurs à un marché du travail moins robuste au cours des années 90, on ne peut dire clairement que les tendances observées durant les années 90 représentent une réaction cyclique ou un changement plus permanent. Nous reviendrons sur cette question au moment de présenter des données empiriques au troisième chapitre. Cependant, il faudrait garder à l'esprit qu'aucune forme particulière d'emploi non standard ne représente un pourcentage très important de l'emploi total. De même, les affirmations à l'effet que le marché du travail a marqué un revirement spectaculaire vers les formes d'emploi instables sont exagérées, notamment pour les travailleurs dans la force de l'âge.

FIGURE 5a

PROPORTION DE LA POPULATION MASCULINE TRAVAILLANT À TEMPS PLEIN TOUTE L'ANNÉE, PAR GROUPE D'ÂGE, 1981-1993

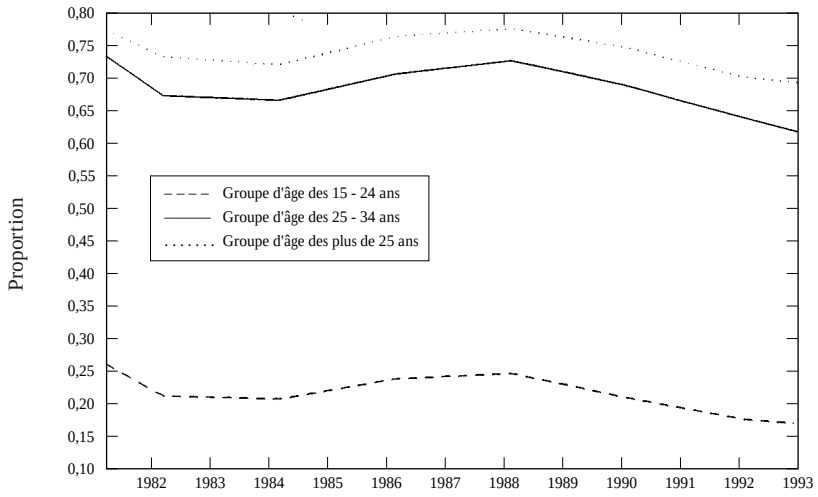
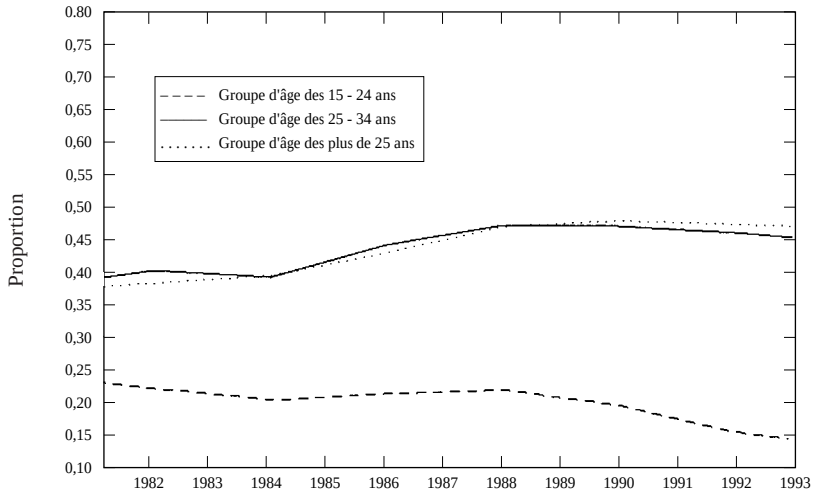


FIGURE 5b

PROPORTION DE LA POPULATION FÉMININE TRAVAILLANT À TEMPS PLEIN TOUTE L'ANNÉE, PAR GROUPE D'ÂGE, 1981-1993



Participation à la population active

Des mouvements dans les taux de participation à la population active se profilent derrière les tendances de l'emploi que nous venons d'examiner. Jusqu'à la fin des années 80, ces mouvements ont été dominés par une hausse importante et continue du taux de participation des femmes qui, de 23 p. 100 qu'il était en 1953 a atteint environ 60 p. 100 en 1990. Au cours des années 90, la progression du taux de participation des femmes a plafonné. La figure 6a fait voir le taux de participation des femmes appartenant à divers groupes d'âge. Pour la cohorte la plus jeune, soit les femmes âgées de 15 à 24 ans, on peut observer une augmentation très rapide jusqu'en 1981, avec un ralentissement tout au long des années 80, puis une tendance négative marquée au cours des années 90. On peut s'attendre à une diminution de la participation des jeunes au cours des périodes de ralentissement économique parce que les jeunes réagissent aux mauvaises conditions du marché du travail en se retirant de celui-ci pour poursuivre leurs études ou acquérir une formation. Cependant, une comparaison du léger revirement observé dans le taux de participation des jeunes en 1982-1983 avec la baisse marquée observée durant les années 90 laisse penser qu'une cause plus profonde qu'une réaction cyclique normale est en jeu. Pour les autres groupes d'âge, le taux de participation des femmes est demeuré essentiellement constant durant les années 90, avec un léger repli pour les femmes âgées de 25 à 34 ans et une légère augmentation pour les groupes plus âgés (Butlin, 1995).

Les profils qui caractérisent l'emploi des hommes, à la figure 6b, sont passablement différents. Contrairement aux femmes, le taux de participation des hommes âgés de plus de 25 ans affiche une tendance persistante à la baisse depuis deux décennies, étant passé de 81 p. 100 en 1976 à 74 p. 100 en 1995. En partie, cette tendance traduit le mouvement vers une retraite plus hâtive parmi les hommes de plus de 55 ans. Cependant, les deux autres groupes d'âge présentés dans cette figure montrent que la retraite ne constitue pas la seule explication de cette tendance générale. Les hommes âgés de 15 à 24 ans présentent un profil assez semblable à celui des femmes du même groupe d'âge. Leur taux de participation est demeuré essentiellement stable tout au long des années 80 mais il a ensuite chuté sensiblement, passant de 73 p. 100 en 1989 à 64 p. 100 en 1995. Le taux de participation des hommes semble être plus sensible au cycle économique que celui des femmes; encore une fois, cependant, il semble peu probable que la baisse du taux de participation des hommes au cours des années 90 soit simplement une répétition du ralentissement cyclique du début des années 80. Ce qui est plus étonnant que le déclin récent du taux de participation des jeunes est la chute du taux de participation des hommes âgés de 25 à 34 ans. Après être demeuré autour de 95 p. 100 jusqu'en 1989, celui-ci a baissé pour s'établir à 91 p. 100 en 1995.

On peut résumer l'évolution des taux de participation des hommes âgés de plus de 25 ans en affirmant qu'ils poursuivent une tendance à la baisse qui s'est accélérée au cours des années 90. Les femmes âgées de plus de 25 ans ont

FIGURE 6a

TAUX DE PARTICIPATION DES FEMMES À LA POPULATION ACTIVE, PAR GROUPE D'ÂGE, 1976-1996

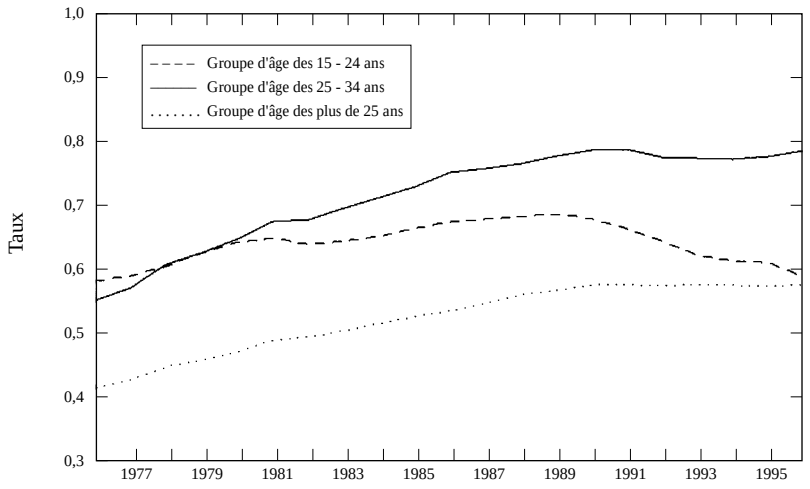
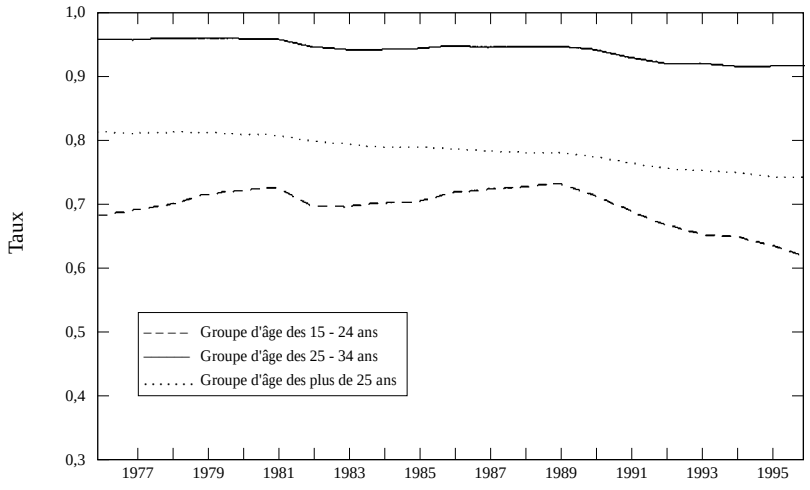


FIGURE 6b

TAUX DE PARTICIPATION DES HOMMES À LA POPULATION ACTIVE, PAR GROUPE D'ÂGE, 1976-1996



vu leur taux de participation augmenter rapidement jusqu'en 1989, après quoi il s'est stabilisé durant les années 90. Les jeunes, hommes et femmes, font voir une tendance relativement stationnaire durant les années 80, laquelle a été suivie d'une forte baisse durant les années 90.

Chômage

Une façon utile de comprendre la performance de l'économie canadienne sur le plan de l'emploi au cours des deux dernières décennies est de comparer les tendances du taux de participation à celles des ratios emploi/population. Chez les femmes, on observe une hausse particulièrement rapide tant du taux de participation que du taux d'emploi jusqu'en 1989. Entre 1981 et 1989, le taux de participation des femmes âgées de 25 à 34 ans à la population active a augmenté d'environ 11 points de pourcentage, passant de 66 p. 100 en 1981 à 77 p. 100 en 1989. Au cours de la même période, le ratio de l'emploi à la population parmi ce groupe est passé de 61 à 70 p. 100. L'économie a donc été en mesure de fournir un nombre élevé de nouveaux emplois pour absorber cette augmentation très importante de la population active. Le taux de création d'emploi n'a toutefois pas égalé le taux de croissance de la population active au cours de cette période, un résultat qui ressort du taux de chômage. La figure 7a montre le taux de chômage chez les femmes appartenant à différents groupes d'âge. Comme on pouvait s'y attendre, le taux de chômage parmi les femmes âgées de 25 à 34 ans a augmenté légèrement entre 1981 et 1989. Les tendances pour les femmes âgées de plus de 25 ans sont semblables à celles des femmes âgées de 25 à 34 ans durant cette période : augmentation rapide du taux de participation à la population active qui n'est pas tout à fait compensée par le taux de croissance élevé de l'emploi. Durant les années 90, comme nous l'avons vu, la croissance de la participation des femmes âgées de plus de 25 ans a plafonné et le taux de chômage a été déterminé par une croissance de l'emploi qui a d'abord diminué pour ensuite se rétablir légèrement.

Parmi les femmes âgées de 15 à 24 ans, on observe une forte variation cyclique des trois taux. Cependant, en comparant les sommets cycliques de 1981 et 1989, on peut voir une augmentation du taux de participation de 4 points de pourcentage et une augmentation du taux de chômage de 5 points de pourcentage. Parmi ce groupe, la croissance modérée de la participation (comparativement aux femmes plus âgées) a été plus que compensée par la modeste croissance de l'emploi. Il en est résulté une diminution du taux de chômage chez les jeunes femmes durant les années 80. Dans les années 90, tant le taux de participation que le taux d'emploi de ce groupe ont chuté, le taux d'emploi diminuant plus rapidement au début des années 90 et engendrant, par le fait même, une forte hausse du taux de chômage. Dans l'ensemble, les années 90 se sont révélées, pour les femmes, une période très différente de celle qu'elles ont traversée durant les deux décennies précédentes. Jusqu'en 1989, les variations du chômage étaient engendrées par les écarts entre le taux de participation et le

FIGURE 7a

TAUX DE CHÔMAGE PARMI LES FEMMES, PAR GROUPE D'ÂGE, 1976-1996

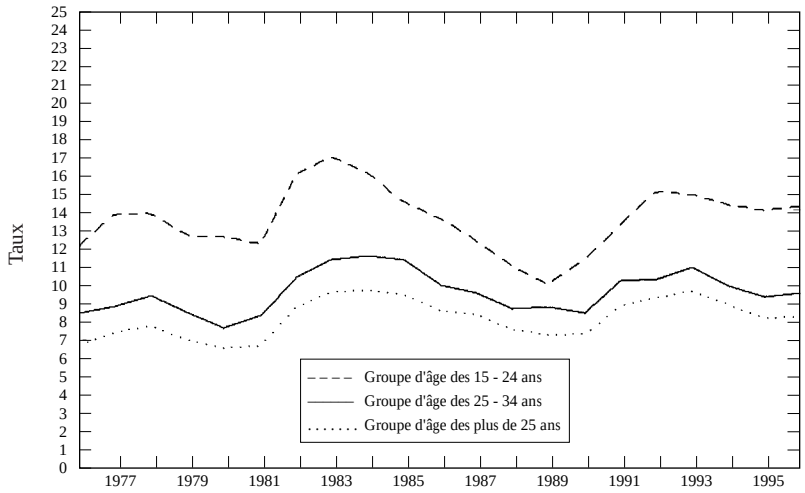
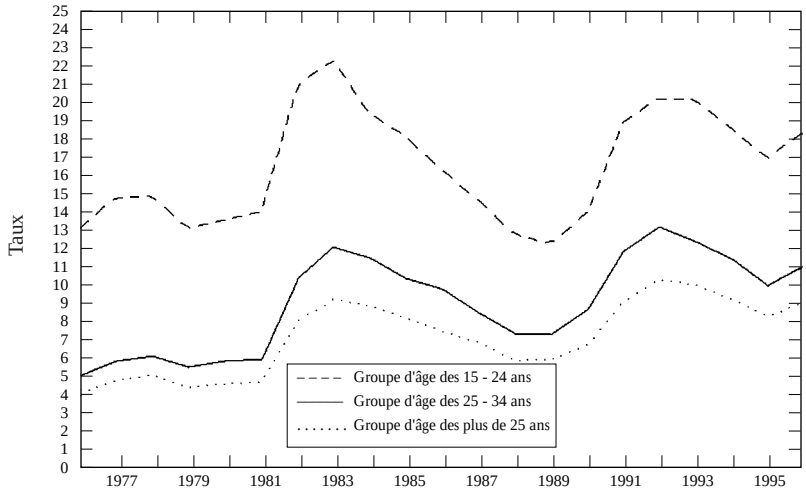


FIGURE 7b

TAUX DE CHÔMAGE PARMI LES HOMMES, PAR GROUPE D'ÂGE, 1976-1996



taux d'emploi. Par contre, dans les années 90, la plupart des taux de participation ont stagné ou ont affiché un déclin, accompagné par une diminution, puis d'une reprise de la croissance de l'emploi parmi les femmes âgées de plus de 25 ans, ainsi qu'une baisse de la croissance de l'emploi parmi les femmes de moins de 25 ans.

Chez les hommes âgés de plus de 25 ans, les deux dernières décennies ont été marquées par une baisse persistante de la participation et de l'emploi. Si le déclin a été passablement modéré dans le cas du taux de participation, le taux d'emploi révèle de fortes fluctuations cycliques, avec pour résultat une importante variation cyclique dans les taux de chômage, comme il ressort de la figure 7b. Encore une fois, la baisse la plus étonnante est celle observée pour les hommes âgés de 25 à 34 ans : leur taux de participation à la population active est tombé de 95,5 p. 100 en 1981 à 94 p. 100 en 1989, alors que leur taux d'emploi, durant la même période, a reculé de 89,4 à 87 p. 100. Ce groupe a dû faire face à de moins bonnes conditions d'emploi, qui ont mené à certains retraits de la population active et à une augmentation du taux de chômage. Les années 90 se sont révélées encore pire pour les hommes âgés de 25 à 34 ans : leur taux d'emploi et leur taux de participation ont respectivement reculé de 7 et de 2 points de pourcentage entre 1989 et 1993. La tendance générale révèle un contraste frappant avec la croissance positive de l'emploi enregistrée chez les femmes appartenant au même groupe d'âge.

Les hommes du groupe d'âge le plus jeune révèlent un profil différent. Leur taux d'emploi a augmenté entre 1981 et 1989, tandis que leur taux de participation est demeuré relativement stable, ce qui a entraîné une diminution du taux de chômage. En tenant compte des profils observés dans les années 90, cette situation est très semblable à celle des femmes appartenant au même groupe d'âge. Les mouvements du marché du travail des jeunes semblent donc différents de ceux du marché du travail des personnes plus âgées, pour l'un et l'autre sexe. Comme dans le cas des femmes, le taux de chômage chez les jeunes hommes durant les années 90 n'a pas augmenté jusqu'aux niveaux atteints au cours de la récession du début des années 80. Par ailleurs, pour les hommes et les femmes plus âgés, les taux de chômage dans les années 90 ont presque atteint et même dépassé, dans certains cas, ceux enregistrés au début des années 80. Ainsi, si l'on ne peut décrire l'expérience du marché du travail chez les jeunes comme ayant été bonne durant les années 90, les résultats observés sur le plan du chômage sont meilleurs (comparativement à ceux des travailleurs plus âgés) qu'au cours de la récession du début des années 80. Ce phénomène découle principalement d'un mouvement de retrait de la population active beaucoup plus important parmi les jeunes travailleurs durant les années 90; il dissimule une situation relativement mauvaise (pour les jeunes femmes comparativement à celles qui sont plus âgées) ou relativement constante (pour les jeunes hommes comparativement aux plus âgés) sur le plan de l'emploi durant les années 90, en comparaison du début des années 80.

TABLEAU 5

TAUX DE CHÔMAGE PAR NIVEAU DE SCOLARITÉ
ANNÉE ET SEXE

	1981		1982		1984	
Scolarité	Hommes	Femmes	Hommes	Femmes	Hommes	Femmes
Études primaires	0,1692	0,1582	0,1908	0,1658	0,1800	0,1676
Études secondaires, partielles ou complétées	0,1362	0,1245	0,1769	0,1515	0,1424	0,1357
Études postsecondaires partielles	0,0802	0,0737	0,1368	0,1190	0,0898	0,1045
Diplôme d'études postsecondaires	0,0325	0,0531	0,0432	0,0434	0,0485	0,0549
Tous	0,1151	0,1055	0,1470	0,1282	0,1213	0,1152

Nota : Les taux de chômage sont calculés à partir des données de l'Enquête sur les finances des consommateurs. Le taux de chômage est égal au pourcentage des personnes appartenant à la population active, au cours de la semaine de référence, qui étaient sans travail et à la recherche d'un emploi.

Au tableau 5, nous présentons les taux de chômage par sexe et niveau de scolarité. Comme on pouvait s'y attendre, les taux de chômage diminuent à mesure que s'élève le niveau de scolarité, pour l'un et l'autre sexe. Chez les hommes, on observe une plus grande cyclicalité pour les deux taux de chômage les plus bas comparativement aux deux taux les plus élevés. Les taux de chômage pour les travailleurs qui possèdent une scolarité élémentaire et qui ont fait des études secondaires partielles révèlent des pointes très prononcées au cours des années 90, pour atteindre des niveaux comparables à ceux observés pour ces groupes lors de la récession du début des années 80. À l'opposé, le taux de chômage des personnes qui possèdent un diplôme d'études postsecondaires n'augmente pas sensiblement jusqu'en 1992, mais il atteint des niveaux plus élevés que ceux observés en 1982. Chez les femmes, la tendance est semblable, sauf pour le fait que les taux de chômage montent beaucoup plus rapidement pour les hommes des deux catégories de scolarité les moins élevées durant les années 90 que pour les femmes appartenant aux mêmes groupes.

Les mouvements des taux de chômage peuvent découler en partie du fait que plus de gens entrent sur le marché de l'emploi (c'est-à-dire qu'ils sont à la recherche d'un travail tout en étant sans emploi), soit parce qu'ils ont quitté leur emploi ou qu'ils commencent à chercher un emploi alors qu'ils n'en ont pas. Ces mouvements peuvent aussi être causés par une variation dans la durée des périodes de chômage des participants à la population active. La première source de mouvement du taux de chômage est appelée l'incidence du chômage, tandis que la seconde correspond à sa durée. On peut étudier l'incidence du chômage en examinant l'évolution de la probabilité que des personnes quittent leur emploi et se retrouvent en chômage ou qu'elles sortent de la catégorie « ne participe pas à la population active » (c'est-à-dire la situation où elles sont sans emploi mais ne cherchent pas de travail) pour rejoindre le groupe des chômeurs. La durée des périodes de chômage est déterminée par la probabilité qu'une personne sans emploi sorte de la catégorie du groupe des chômeurs soit parce qu'elle obtient un emploi soit parce qu'elle cesse ses recherches. Cette forme de retrait se produit lorsque les personnes en chômage perdent espoir au sujet de leurs perspectives d'emploi et interrompent tout simplement leurs recherches. À mesure que progresse le cycle économique, le nombre de travailleurs ainsi découragés peut varier sensiblement, causant parfois des mouvements en apparence illogiques dans le taux de chômage. Pour cette raison, le taux de chômage peut être considéré comme un piètre indicateur de l'état du cycle économique.

ÉVOLUTION DU PROFIL DES GAINS DU TRAVAIL

Tendances générales

Au cours des dernières années, les chercheurs ont déployé des efforts considérables pour tenter d'expliquer les changements observés dans la répartition des

gains d'emploi au Canada. Les résultats de ces travaux nous donnent un tableau assez complet, mais complexe, des changements qui se sont produits au cours des 15 dernières années. Dans le but de simplifier la présentation des principales constatations, nous passons en revue ces travaux sur les gains d'emploi d'abord en décrivant les mouvements généraux dans la répartition des gains annuels pour ensuite ventiler ces gains de manière à faire ressortir les principaux mouvements par groupe d'âge et niveau de scolarité, pour enfin analyser la ventilation des changements observés dans les heures travaillées et les salaires horaires. Tout au long de ce chapitre, nous présentons les observations séparément pour les hommes et les femmes. La plupart des renseignements résumés ici proviennent de l'Enquête sur les finances des consommateurs.

Les principaux changements observés dans les gains annuels réels des hommes et des femmes sont présentés sous forme sommaire au tableau 6. Pour les hommes, les gains annuels médians ont diminué depuis le début des années 80. Cependant, le cheminement de la médiane ne traduit pas fidèlement tous les changements survenus; en particulier, de 1981 à 1993, il s'est produit une importante polarisation. Au cours de cette période, l'écart entre le décile supérieur et le décile inférieur de la répartition des gains s'est considérablement élargi : les gains du premier décile n'ont diminué que de 1 p. 100, tandis que ceux du décile inférieur ont chuté de plus de 27 p. 100. Cette disparité plus grande révèle une baisse particulièrement pénible des gains absolus et relatifs parmi les personnes qui se retrouvent au bas de la distribution. Des travaux récents de Morissette et Bérubé (1996) permettent de penser que les changements observés dans les gains annuels traduisent en réalité des changements dans les gains viagers. À l'aide d'un ensemble de données par panel tirées des dossiers de l'impôt sur le revenu, Morissette et Bérubé montrent que la plus grande dispersion des gains durant les années 80 n'était pas associée à une plus grande mobilité de l'ensemble de la courbe de distribution du revenu. Par conséquent, on peut raisonnablement faire l'hypothèse que la polarisation accrue des gains annuels observée durant les années 80 est une indication de l'inégalité plus grande du revenu permanent.

La situation des femmes est sensiblement différente de celle des hommes. Les gains des femmes ont continué d'augmenter tout au long des années 80 et du début des années 90. Comme on pouvait s'y attendre, une bonne partie de la croissance des gains des femmes est attribuable à la hausse des heures travaillées annuellement. De fait, lorsque nous centrons notre attention uniquement sur les travailleuses à temps plein durant toute l'année (une méthode qui permet de limiter les variations des gains attribuables aux changements dans les heures travaillées), nous observons que les gains des femmes du décile inférieur ont en réalité baissé par rapport à la médiane.

TABLEAU 6

VARIATION EN POURCENTAGE DES GAINS ANNUELS RÉELS, CERTAINS DÉCILES, TOUTES LES PERSONNES AYANT DES GAINS

	1981-1988		1988-1993	
Décile	Hommes	Femmes	Hommes	Femmes
10	-10	11	-17	12
50	-4	1	-5	10
90	0	9	-1	6

Nota : Fondé sur les calculs des auteurs à l'aide de données tirées de l'Enquête sur les finances des consommateurs, diverses années. Les gains correspondent aux gains de l'ensemble des personnes ayant des gains positifs de toute provenance.

Ventilations selon l'âge et la scolarité

Une fois que l'on a reconnu qu'il y a eu des mouvements importants dans la répartition des gains, il n'est que naturel de se demander si les variations observées sont attribuables à des changements dans la composition de la population active ou à des changements dans les gains entre les différents groupes de travailleurs. La décomposition qui retient le plus l'attention est celle effectuée en fonction de l'âge (ou de l'expérience) et de la scolarité. Certains chercheurs ont aussi tenté d'évaluer l'importance des changements survenus dans la composition industrielle et professionnelle (voir, par exemple, Richardson, 1994). Étant donné que la dernière décomposition n'explique qu'une faible partie des tendances générales, nous nous sommes attachés à décrire comment l'inégalité croissante des gains est liée à l'âge et à l'éducation.

Le premier obstacle important touchant à l'âge et à la scolarité (voir, par exemple, Morissette, Myles et Picot, 1993) est que la polarisation accrue des gains observés durant les années 80 n'est pas simplement attribuable à un changement dans la composition âge/éducation de la population des travailleurs. De fait, comme nous le verrons plus loin, les changements dans la composition âge/éducation de la population active ont vraisemblablement contribué à un resserrement de la disparité des gains.

Au tableau 7, nous présentons les changements dans les gains pour différents groupes définis selon l'âge et la scolarité. La période visée va de 1981 à 1993. Il est à noter que l'analyse doit être départagée selon le sexe afin d'obtenir un tableau plus clair des changements survenus. La première et peut-être la plus importante observation qui découle de ce tableau a trait à l'âge. Il y a eu une diminution considérable des gains absolus et relatifs des travailleurs âgés de 17 à 24 ans, hommes et femmes et, dans une moindre mesure, des travailleurs âgés

de 25 à 34 ans. À l'opposé, la plupart des travailleurs âgés de 45 à 54 ans ont vu leurs gains augmenter durant cette période.

Les changements dans les gains selon les différents groupes de scolarité sont présentés au tableau 7; il n'en ressort aucune tendance claire, à la hausse ou à la baisse, dans le rendement découlant de la scolarité. Cette observation contraste nettement avec les résultats obtenus pour les États-Unis, où les changements dans les gains ont été fortement et positivement associés à la scolarité. Une explication possible de cette divergence est que les institutions canadiennes réussissent mieux à protéger les travailleurs âgés et, en conséquence, toute pression à la baisse sur les salaires visant les travailleurs scolarisés de sexe masculin semblerait se manifester uniquement parmi les travailleurs jeunes ou moins expérimentés. Si cela s'avère et que nous supposons

TABLEAU 7

VARIATION EN POURCENTAGE DES GAINS ANNUELS RÉELS, SELON L'ÂGE ET LA SCOLARITÉ, 1981-1993

I. Toutes les personnes ayant des gains	Hommes	Femmes
16 à 24 ans	-0,36	-0,24
25 à 34 ans	-0,16	0,06
35 à 44 ans	-0,10	0,15
45 à 54 ans	0,02	0,29
Niveau de scolarité		
Études primaires	-0,20	0,03
Études secondaires partielles	-0,12	0,07
Études postsecondaires partielles	-0,19	-0,11
Certificat d'études postsecondaires	-0,12	0,06
Diplôme universitaire	-0,05	0,09
II. Travailleurs à temps plein toute l'année		
16 à 24 ans	-0,14	0,01
25 à 34 ans	-0,07	0,03
35 à 44 ans	-0,05	0,17
45 à 54 ans	0,04	0,05
Niveau de scolarité		
Études primaires	-0,07	0,08
Études secondaires partielles	-0,06	0,06
Études postsecondaires partielles	-0,01	-0,02
Certificat d'études postsecondaires	-0,08	0,02
Diplôme universitaire	-0,03	0,06

Nota : Fondé sur les calculs des auteurs à l'aide de données tirées de l'Enquête sur les finances des consommateurs, diverses années.

que le Canada subit les mêmes pressions fondamentales sur les salaires que les États-Unis, nous devrions nous attendre à ce que les variations observées dans les gains au Canada soient beaucoup plus étroitement liées au niveau de scolarité parmi les jeunes travailleurs qu'au sein de l'ensemble de la population. C'est précisément ce qu'ont constaté Bar-Or et coll. (1995). Notamment, dans le cas des travailleurs n'ayant qu'entre une et cinq années d'expérience (c'est-à-dire principalement des jeunes travailleurs), Bar-Or et coll. signalent que les années 80 ont été marquées par une forte augmentation des gains relatifs des travailleurs qui possèdent un diplôme universitaire ou qui ont poursuivi des études supérieures.

En résumé, les années 80 et le début des années 90 ont été marquées par une disparité croissante des gains tirés d'un emploi. Une partie de cette disparité accrue est attribuable à la chute des gains des jeunes travailleurs, en particulier les jeunes moins scolarisés. Nonobstant l'importance de ces variations des gains entre groupes, il faut signaler qu'elle n'explique pas la totalité de l'augmentation observée de la disparité. De fait, comme l'ont signalé Morissette, Myles et Picot (1993), une fraction importante de la disparité croissante des gains provient de la disparité observée au sein des groupes définis selon l'âge et la scolarité. Par conséquent, même si les travailleurs plus âgés, en moyenne, se sont mieux tirés d'affaire que les travailleurs plus jeunes, de nombreux travailleurs âgés ont également subi une baisse importante des revenus qu'ils tirent du marché du travail.

Gains hebdomadaires, heures travaillées et rémunération horaire

L'analyse qui précède portait sur les changements observés dans les gains annuels et, par conséquent, elle englobait à la fois les changements survenus dans les heures travaillées et dans les taux de rémunération horaire. Afin de donner une image plus précise des tendances du marché du travail, il est utile de ventiler les changements observés dans les gains horaires entre ces deux composantes : les heures travaillées et la rémunération horaire. À cette fin, nous débutons par une brève analyse où nous nous demandons si les changements dans les gains hebdomadaires traduisent des changements dans les gains annuels et comment ces changements sont liés aux changements dans le nombre de semaines travaillées annuellement. Nous passons ensuite à une description de la décomposition des gains hebdomadaires entre le nombre d'heures travaillées par semaine et la rémunération horaire.

Richardson (1994) a décrit les changements survenus dans la répartition des gains hebdomadaires entre 1981 et 1992; il fait état d'une inégalité croissante très semblable à celle observée dans les gains annuels. En effet, on peut déduire indirectement du tableau 7 une similitude entre les changements observés dans la répartition des gains hebdomadaires et annuels. Comme il ressort de ce tableau, les variations liées à l'âge sont assez semblables entre l'échantillon regroupant tous les salariés et celui qui ne regroupe que les personnes travaillant à temps

plein durant toute l'année. Étant donné que ces dernières ne subissent que des variations restreintes du nombre de semaines travaillées, la dispersion accrue des gains hebdomadaires a été un facteur déterminant de la dispersion croissante des gains annuels. L'inégalité grandissante des gains annuels ne peut être attribuée exclusivement à l'inégalité croissante du nombre d'heures travaillées.

Kuhn et Robb (1995) présentent d'autres données qui nous aident à comprendre comment les changements survenus dans le nombre de semaines travaillées ont contribué aux changements observés dans la répartition des gains annuels. Pour la période 1971-1991, ces auteurs ont constaté que les variations dans le nombre de semaines travaillées ont un lien positif très étroit avec les changements dans les gains hebdomadaires. Ce résultat indique que les variations dans le nombre de semaines travaillées ont en réalité amplifié l'effet de l'inégalité croissante des gains hebdomadaires sur les gains annuels. En particulier, les résultats obtenus par Kuhn et Robb laissent penser que la chute importante du quintile inférieur de la répartition des gains annuels est attribuable à l'effet conjugué d'une baisse des gains hebdomadaires et du nombre de semaines travaillées annuellement.

Morissette (1995) présente des données sur la répartition des gains hebdomadaires entre la rémunération horaire et le nombre d'heures travaillées au cours d'une semaine (voir également Morissette et Sunter, 1994). En débutant par le nombre d'heures travaillées par semaine, Morissette décrit un important affaissement de la répartition du nombre d'heures de travail hebdomadaires. Ainsi, pour la période 1981-1989, il constate une diminution de 9 p. 100 de la proportion des travailleurs masculins qui ont travaillé entre 35 et 40 heures par semaine. Simultanément, il constate une augmentation de près de 4 p. 100 de la proportion des travailleurs masculins qui ont travaillé plus de 50 heures par semaine. Morissette signale également que l'augmentation observée parmi ceux qui travaillent plus de 50 heures par semaine vaut principalement pour les travailleurs plus âgés et plus scolarisés, tandis que les travailleurs plus jeunes et moins scolarisés révèlent une incidence plus grande de travail à temps partiel (moins de 30 heures par semaine). Ces changements observés dans la répartition des heures de travail hebdomadaires semblent également assez répandus entre les secteurs et les professions.

L'explication des changements qui ont pu se produire dans la répartition de la rémunération horaire cause quelques problèmes dans le cas du Canada en raison du peu de données fiables qui existent sur cette question. Néanmoins, à l'aide des données de l'Enquête sur l'activité (1981) et de l'Enquête sur l'activité du marché du travail (1988), Morissette, Myles et Picot (1995) présentent des renseignements sur la façon dont la répartition de la rémunération horaire a évolué entre 1981 et 1989 et sur la façon dont ces changements sont liés à ceux observés dans la répartition des heures de travail hebdomadaires. Le tableau général qui s'en dégage montre que la répartition des gains horaires ne s'est ni détériorée ni améliorée clairement au cours de cette période. Ce résultat pourrait, à première vue, laisser penser que la dispersion accrue observée

dans les gains hebdomadaires est par conséquent attribuable entièrement à la plus grande dispersion du nombre d'heures travaillées par semaine. Cependant, ce n'est pas le cas. Même si la variance de la rémunération horaire a diminué légèrement au cours de la période étudiée, la covariance entre la rémunération horaire et le nombre d'heures de travail hebdomadaires a augmenté sensiblement. Cette covariance plus grande est la principale source de dispersion accrue des gains hebdomadaires. De fait, parmi les femmes, l'augmentation de la variance des gains hebdomadaires est essentiellement attribuable à cette hausse de la covariance entre les gains horaires et le nombre d'heures de travail par semaine[2]. Si nous combinons les renseignements au sujet du nombre de semaines de travail par année et du nombre d'heures de travail par semaine, nous arrivons à la conclusion que la dispersion accrue des gains annuels est principalement imputable à une dispersion plus grande du nombre d'heures travaillées par année et à la covariance accrue avec la rémunération horaire.

Même si l'analyse qui précède indique qu'il n'y a pas eu de changement marqué dans la répartition globale des salaires horaires, une telle hypothèse masque des changements importants au niveau de la rémunération horaire entre les différents groupes définis selon l'âge et la scolarité. Morissette, Myles et Picot (1995) ont décelé une détérioration importante de la rémunération horaire parmi les jeunes travailleurs et une amélioration marquée de la rémunération des travailleurs plus âgés, comme dans le cas des gains annuels. Ce phénomène pourrait traduire la diminution de la proportion des jeunes travailleurs employés dans les secteurs où la rémunération est élevée, par exemple les industries productrices de biens et le secteur gouvernemental, ainsi que l'augmentation de la proportion des jeunes travailleurs employés dans des secteurs relativement moins bien rémunérés comme le commerce de détail et les services d'alimentation et d'hébergement (voir Riddell, 1996). Cette tendance est moins marquée entre les groupes définis selon la scolarité, mais on peut néanmoins en déduire que la rémunération horaire des travailleurs plus scolarisés a augmenté légèrement, en particulier parmi les travailleurs qui possèdent un diplôme universitaire.

ADAPTATION DES JEUNES, ÉDUCATION ET FORMATION DES FAMILLES

DANS LES SECTIONS QUI PRÉCÈDENT, nous avons décrit comment l'emploi et les gains du travail ont évolué au cours des 15 dernières années. L'un des aspects les plus remarquables est la détérioration prononcée des conditions d'emploi des jeunes. Une question évidente qui se pose est comment les jeunes ont-ils réagi à ces changements. En particulier, comment ces changements ont-ils influé sur les décisions en matière d'éducation, sur les modes de vie et sur la formation des familles?

Le changement peut-être le plus remarquable au cours des 15 dernières années est l'accroissement notable de la fréquentation scolaire. Selon Card et Lemieux (1996), le tiers des jeunes âgés de 15 à 24 ans étaient inscrits comme

étudiants à temps plein en 1981. En 1995, un peu plus de la moitié des personnes appartenant à ce groupe étaient inscrites dans un établissement d'enseignement, ce qui signifie une hausse de plus de 50 p. 100. En comparaison, au cours de la même période, les taux de fréquentation scolaire aux États-Unis ont augmenté de moins de 15 p. 100. Il faut signaler cependant que la Canada a amorcé cette période avec un taux d'inscription scolaire inférieur à celui des États-Unis. Néanmoins, autour de 1990, le taux d'inscription à l'école des jeunes au Canada avait rattrapé celui des États-Unis et, en 1995, le taux canadien dépassait le taux américain d'un peu plus de 5 points de pourcentage. Cette hausse de la fréquentation scolaire ressort clairement de l'augmentation observée de la clientèle des établissements universitaires. Riddell (1995) rapporte qu'en 1982-1983, seulement 20 p. 100 des jeunes âgés de 18 à 21 ans fréquentaient l'université, tandis qu'en 1990-1991, ce chiffre avait augmenté à plus de 30 p. 100[3]. Il en découle que la fréquentation des établissements postsecondaires a connu une augmentation phénoménale de 70 p. 100 (E*ducation Quarterly Review*, printemps 1996).

La forte augmentation de taux d'inscription à l'école est survenue parallèlement aux changements observés dans les modes de vie et la formation des familles. Ainsi, Card et Lemieux (1996) signalent que la proportion des hommes âgés de 20 ans qui vivent avec leurs parents a augmenté, passant de 67 p. 100 en 1981 à plus de 76 p. 100 en 1994, tandis que la proportion des jeunes femmes vivant avec leurs parents est passée de 54 à 63 p. 100. La diminution du pourcentage des jeunes adultes qui forment des familles est encore plus prononcée. En 1981, environ 16 p. 100 des hommes âgés de 20 ans étaient chef ou conjoint de leur propre ménage; en 1994, ce chiffre avait chuté à 8 p. 100. Pour les femmes du même âge, la proportion a diminué de 31 à 20 p. 100.

Un tableau assez clair ressort du comportement des jeunes. En réaction aux possibilités réduites que leur offre le marché du travail, les jeunes, hommes et femmes, ont continué à vivre avec leurs parents, ils ont prolongé leur formation scolaire et ils ont reporté à plus tard la formation d'une famille. Une question qui surgit est de savoir si la substitution de l'éducation pour le travail représente la plus grande partie de la chute de l'emploi au sein de ce groupe d'âge. Si c'est le cas, l'emploi est alors remplacé par un investissement au niveau des compétences. Dans le cas contraire, la diminution de l'emploi correspond à une augmentation des ressources humaines non utilisées. Pour faire un peu de lumière sur cette question, il est utile d'examiner les changements survenus dans les taux d'inactivité des jeunes hommes et des jeunes femmes[4]. Le taux d'inactivité est la proportion des gens qui ne travaillent pas ni ne fréquentent l'école au cours d'une semaine de référence. Parmi les hommes âgés de 15 à 19 ans, le taux d'inactivité a diminué, passant de 14 p. 100 en 1981 à 7 p. 100 en 1988 et, enfin, à 6 p. 100 en 1993. Parmi les hommes âgés de 20 à 24 ans, le taux d'inactivité est demeuré à près de 20 p. 100 sur l'ensemble de la période. Nous pouvons donc en déduire que la plus grande partie de la baisse de l'emploi

chez les jeunes hommes est attribuable au choix de poursuivre des études (à temps plein ou à temps partiel) plutôt que de demeurer inactif.

Du côté des femmes, le tableau est un peu plus complexe étant donné que les changements observés dans les taux d'activité traduisent en partie des changements au niveau du soin des enfants. Il n'est pas étonnant de constater que le taux d'inactivité a chuté sensiblement entre 1981 et 1993. Même dans la catégorie des jeunes femmes sans enfant, nous observons que le taux d'inactivité a diminué, passant de 10 à 5 p. 100 pour les femmes âgées de 15 à 19 ans et de 20 à 16 p. 100 pour celles ayant entre 20 à 24 ans. Encore une fois, ces tendances appuient l'hypothèse selon laquelle la détérioration récente des conditions du marché du travail n'a pas entraîné une augmentation considérable de l'inactivité parmi les jeunes gens mais, plutôt, les a incités à poursuivre leurs études.

REGARDER AU DELÀ DES TENDANCES

SELON DIVERSES MESURES FONDÉES SUR LES DONNÉES PRÉSENTÉES dans le premier chapitre, il semble clair qu'un large éventail de travailleurs ont eu peu de succès sur le marché du travail au début des années 90. En tentant de faire des prédictions pour la prochaine décennie, il est manifestement nécessaire d'évaluer la mesure dans laquelle ces résultats traduisent un ralentissement cyclique temporaire, bien que prolongé, ou s'ils correspondent à des changements fondamentaux et permanents dans les paramètres du marché du travail. Dans le présent chapitre, nous tentons de faire la lumière sur la nature des changements actuels et, en particulier, de déterminer si ces changements traduisent un processus continu ou un ajustement à un événement singulier.

Nous examinons d'abord ce qui s'est produit pour différentes cohortes à mesure qu'elles avançaient en âge de 25 à 38 ans[5]. Même si notre préoccupation première porte sur les résultats qu'obtiendront les jeunes au cours de la prochaine décennie, nous portons notre attention sur le groupe des 25-38 ans pour trois raisons. La première et la plus importante est que, pour évaluer les effets de l'évolution du marché du travail sur les jeunes, nous devons savoir s'ils ressentiront ces effets tout au long de leur vie professionnelle. L'une des principales raisons pour lesquelles les analystes concentrent leur attention sur les jeunes est la crainte qu'une mauvaise expérience en début de vie puisse marquer ces travailleurs de façon permanente; ainsi, ces conséquences sont plus importantes que celles qui surviennent à des étapes moins déterminantes du cycle de vie. Par contre, si les nouvelles modalités d'emploi au sein d'une économie demandent une plus grande souplesse de la part des jeunes travailleurs mais que ceux-ci sont tout de même en mesure de profiter de modalités d'emploi stables à un âge plus avancé, les préoccupations au sujet de la turbulence accrue sur le marché du travail des jeunes pourraient être moins sérieuses. Afin de déterminer laquelle de ces hypothèses prévaut, nous devons évaluer les expériences des travailleurs sur le marché du travail au moment où ils entrent dans la partie de leur cycle de vie qui suit immédiatement leurs jeunes années. Si l'on s'attend généralement à ce que les jeunes soient souples et consacrent une part importante de leur temps à investir dans leur éducation et leur formation, les années qui suivent correspondent à l'étape où ces personnes devraient commencer à occuper des emplois à long terme et entreprendre un cheminement de carrière qui ira en s'accélérant. Pour évaluer les perspectives futures qui s'offrent aux jeunes, il est important de voir si la transition vers des emplois plus permanents s'est modifiée au cours des dernières années.

La seconde raison pour laquelle nous centrons notre attention sur le groupe des 25 à 38 ans est qu'il y a déjà eu de nombreuses études consacrées aux jeunes travailleurs. Ainsi, nous aurons plus à gagner en examinant la période de transition marquée par le passage de la jeunesse à l'âge adulte. Troisièmement, nous croyons que les antécédents de travail de ces personnes peuvent fournir des renseignements particulièrement importants au sujet des changements qui

se produisent sur le marché du travail étant donné que ce groupe d'âge avait des possibilités de substitution plus limitées que celles qui s'offrent aux personnes plus jeunes (en particulier sur le plan de l'éducation et des modes de vie). En effet, en centrant l'attention sur ce groupe d'âge, nous pouvons raisonnablement interpréter les changements qui se produisent à mesure que les cohortes avancent en âge, sous l'angle des changements qui marquent la demande plutôt que des changements qui se produisent du côté de l'offre.

Notre analyse porte sur la nature changeante des profils âge-expérience pour différentes mesures de la performance du marché du travail. Nous débutons par un examen de l'évolution des gains d'emploi annuels étant donné qu'il s'agit d'une mesure assez globale de la performance du marché du travail. De fait, nous présentons les résultats correspondant aux gains moyens pour des échantillons qui englobent les personnes n'ayant réalisé aucun gain et, à la fois, des travailleurs autonomes et des salariés occupant un emploi régulier. Les mouvements observés dans nos mesures des gains traduiront ainsi les changements dans les taux d'emploi, le nombre de semaines de travail par année, le nombre d'heures travaillées par semaine et la rémunération horaire, ainsi que les mouvements d'entrée et de sortie du marché de l'emploi autonome. Ce que nous voulons savoir est comment a changé la relation entre l'âge et les gains. Cette relation s'est-elle détériorée pour des cohortes successives de travailleurs? Le cas échéant, la détérioration va-t-elle en s'accélérant ou en diminuant? Par ailleurs, pour les cohortes plus jeunes, les gains commencent-ils à un niveau inférieur pour ensuite croître plus rapidement avec l'âge? En répondant à ces questions, nous espérons être en mesure de mieux cerner la nature de l'évolution récente et, ainsi, établir une base sur laquelle faire des projections pour l'avenir.

Les figures 8 à 11 présentent des profils âge/gains pour différentes cohortes de naissance à mesure qu'elles avancent en âge de 25 à 38 ans. Les chiffres sont présentés pour les hommes et les femmes séparément et sont répartis selon les principales catégories de scolarité. Le groupe le moins scolarisé comprend les personnes qui ont obtenu un diplôme d'études secondaires. La catégorie la plus élevée englobe les personnes qui possèdent au moins un diplôme ou un certificat d'études postsecondaires. À noter qu'une personne figurant dans la catégorie de scolarité la plus faible peut avoir fait des études secondaires partielles mais ne peut détenir un diplôme d'études postsecondaires. Les 11 cohortes que nous avons suivies correspondent aux personnes dont l'âge variait entre 25 et 26 ans en 1972, 1974, 1976, 1978, 1980, 1982, 1984, 1986, 1988, 1990 et 1992. Chacune de ces années est considérée comme l'année de l'entrée de la cohorte correspondante (l'année au cours de laquelle une cohorte de naissance entre dans le groupe d'âge des 25 à 38 ans). Les années d'observation utilisées sont 1981 à 1993; les différentes cohortes traversent donc notre fenêtre d'observation pour différentes durées. À titre d'exemple, nous suivons les premières cohortes lorsqu'elles atteignent la trentaine, tandis que les cohortes subséquentes ne sont suivies que jusque dans la vingtaine. La mesure des gains correspond aux

gains annuels moyens réels tirés d'un emploi (en dollars de 1981) pour l'ensemble des personnes qui ont enregistré des gains au sein d'une cohorte. Les données sont tirées de l'Enquête sur les finances des consommateurs et les années d'observation sont 1981, 1982, 1984, 1986, 1988, 1990, 1992 et 1993.

Plusieurs points ressortent d'un examen sommaire des figures 8 à 11. Premièrement, il est remarquable de constater que les profils âge-gains des femmes sont beaucoup plus stables que ceux des hommes. Notamment, les gains des femmes semblent ne connaître aucune croissance à mesure qu'elles avancent en âge, tandis qu'il semble y avoir une croissance importante des gains du côté des hommes. Deuxièmement, les gains moyens des hommes sont assez semblables à l'âge de 25 ans pour les deux catégories définies selon la scolarité mais ils augmentent beaucoup plus rapidement pour les travailleurs qui possèdent une scolarité plus poussée.

Afin de dégager une première impression de la façon dont les profils âge-gains peuvent changer entre les différentes cohortes à l'entrée, il est utile d'examiner les écarts de gains à un âge donné. Prenons, par d'exemple, les hommes âgés de 29 ans qui possèdent une scolarité élevée. Il est clair que les gains, à l'âge de 29 ans, sont inférieurs pour les cohortes les plus récentes que pour les plus anciennes et que la différence est importante (d'environ 25 p. 100). Par contre, parmi les femmes ayant une scolarité élevée, le classement des cohortes est essentiellement inversé : les gains moyens à l'âge de 29 ans sont plus élevés pour les cohortes plus récentes que pour les précédentes. Ces observations laissent penser que toute interprétation des changements observés dans les profils âge-gains sera vraisemblablement très différente pour les hommes et les femmes.

La difficulté qui surgit lorsque l'on tente d'interpréter le classement des profils âge-gains en examinant différentes cohortes à un âge donné est que les observations sont prises à des points différents du cycle économique. À titre d'exemple, examinons à nouveau la situation des hommes de 29 ans ayant une scolarité élevée. L'observation pour la cohorte de 1988 est faite en 1992, au moment où le cycle économique atteint un creux. Par conséquent, il ne faudrait pas s'étonner que cette cohorte enregistre des gains inférieurs à l'âge de 29 ans que la plupart des autres cohortes. Pour en tirer des déductions au sujet des possibilités offertes, dans l'ensemble, par le marché du travail, il est nécessaire de neutraliser les effets du cycle économique. À la figure 11, cela peut être fait en comparant les gains à l'âge de 29 ans de la cohorte de 1978 à ceux de la cohorte de 1988 parce que les deux observations proviennent d'années où les conditions du marché du travail étaient déprimées. Nous tournons par conséquent notre attention vers une approche plus systématique à l'identification des effets de cohorte en maintenant constants les effets du cycle économique.

FIGURE 8

GAINS RÉELS PAR COHORTE PARMI LES HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE

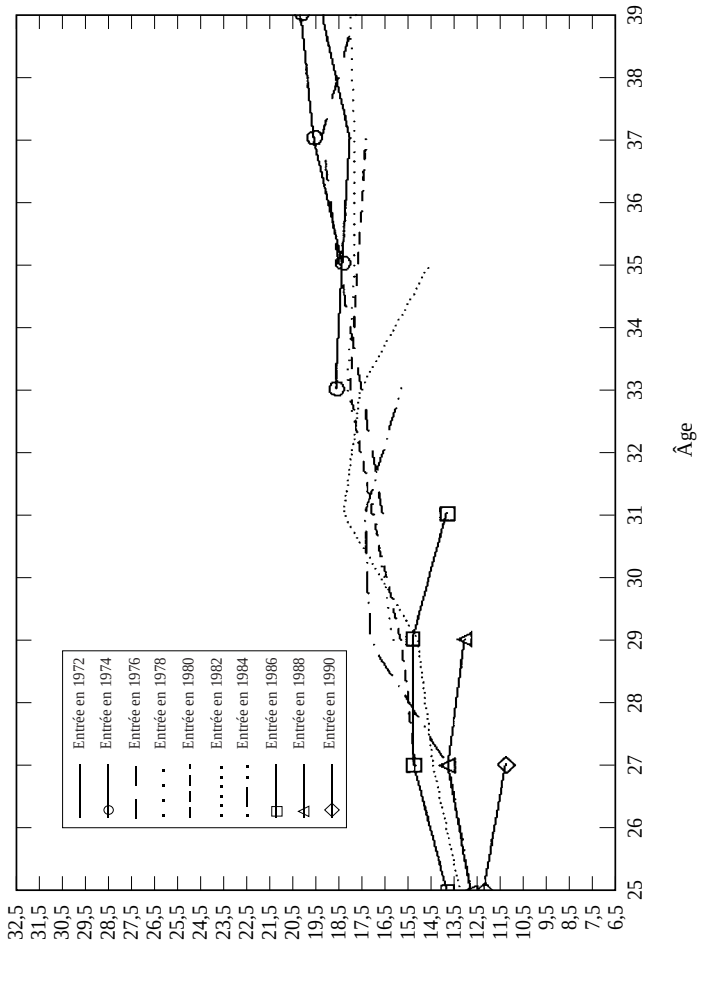


FIGURE 9

GAINS RÉELS PAR COHORTE PARMI LES HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE

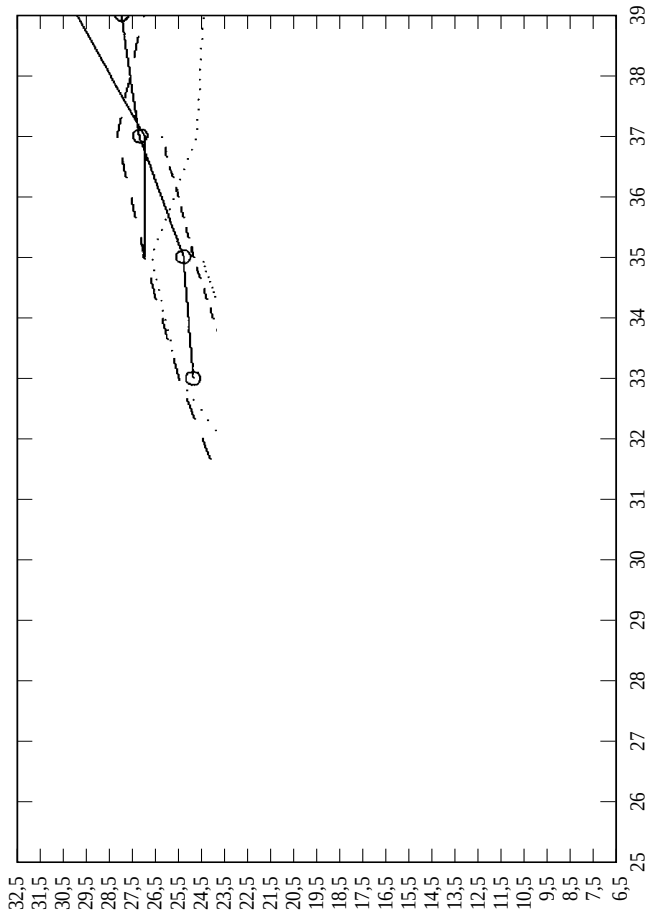


FIGURE 10

GAINS RÉELS PAR COHORTE PARMI LES FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE

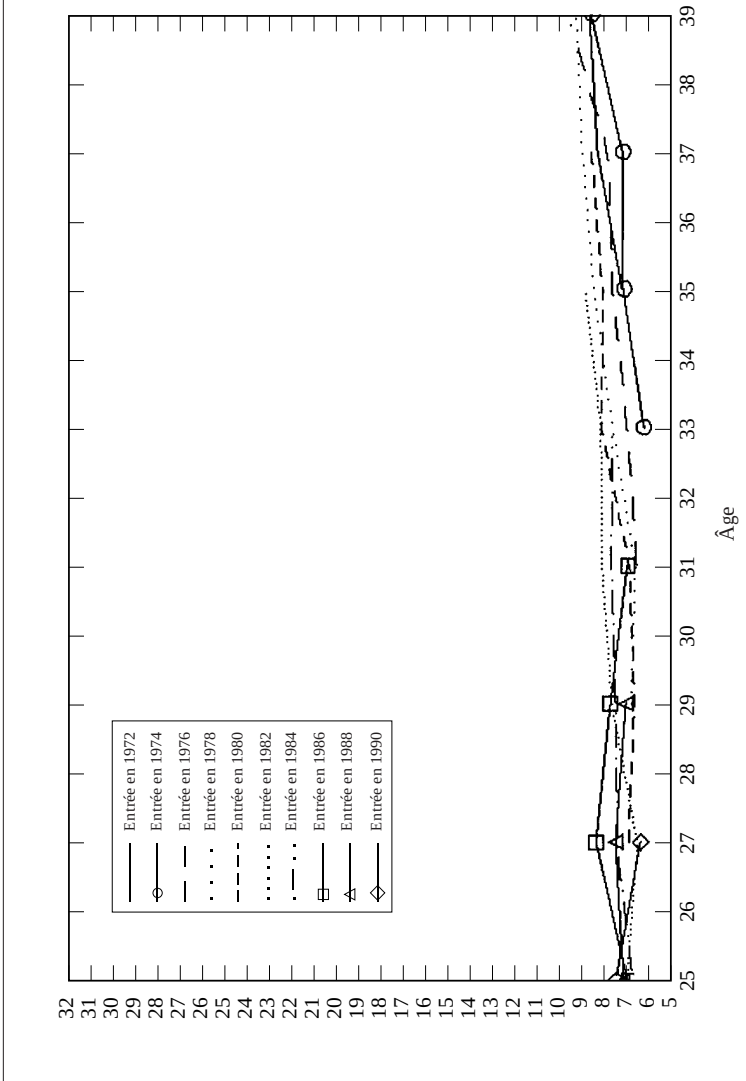
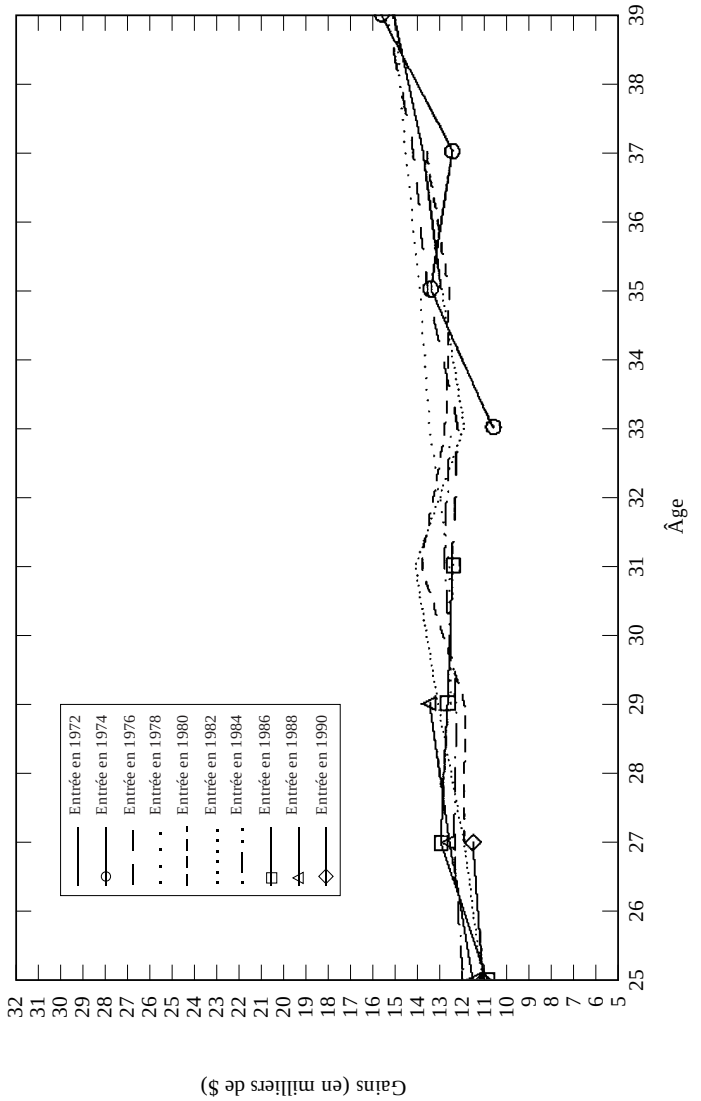


FIGURE 11

GAINS RÉELS PAR COHORTE PARMI LES FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE



ESTIMATION DES PROFILS ÂGE-GAINS PAR COHORTE

LES GAINS OBSERVÉS POUR LES TRAVAILLEURS D'UN ÂGE DONNÉ (par exemple ceux qui ont 29 ans) à un moment donné (par exemple en 1992) peuvent être liés, sur un plan conceptuel, à trois effets sous-jacents. Le premier est ce que nous appellerons l'*effet de génération*, c'est-à-dire un effet commun à tous les travailleurs à un moment précis. L'effet de génération saisira l'impact de tout événement commun, par exemple une récession. Le second effet est ce que nous appellerons un *effet de cohorte*; cet effet mesure le niveau moyen des gains des personnes qui sont entrées sur le marché du travail adulte à un moment donné, comparativement à ceux qui y sont entrées à un autre moment. En connaissant l'effet de cohorte, on peut établir si les entrants récents sur le marché du travail sont désavantagés par rapport aux entrants antérieurs en ce qui a trait à leurs gains moyens à long terme. Le troisième effet est l'*effet d'ancienneté*; cet effet représente la croissance des gains qui se produit naturellement au cours du cycle de vie d'un travailleur, en maintenant constante toute différence entre les effets de cohorte et les effets de génération. Les gains d'une personne de 29 ans en 1992 traduiront le fait que 1992 a pu être une mauvaise année, en plus du fait que la personne est entrée dans une cohorte relativement bonne et le fait que cette personne soit à un stade relativement précoce de son cycle de vie.

Les gains doivent être ventilés entre ces composantes avec le plus de souplesse possible. La difficulté que fait surgir une telle décomposition est que les trois effets sont liés par une identité : si nous connaissons la cohorte d'entrée d'une personne (c'est-à-dire la cohorte qui a atteint l'âge de 25 ans en 1988) et l'année pour laquelle les gains ont été observés (par exemple 1992), nous pouvons calculer exactement l'âge de la personne (dans le cas présent, 29 ans). D'un point de vue économétrique, une représentation souple de ces trois effets dans une régression des gains engloberait des variables auxiliaires correspondant à chaque âge, cohorte d'entrée et année d'observation. Dans ce cas, en fixant la variable auxiliaire d'une cohorte d'entrée particulière pour une année d'observation donnée à la valeur 1 signifierait toujours que la variable auxiliaire employée pour un âge donné serait aussi égale à 1. Nous sommes ici en présence d'une matrice covariée singulière. Les trois éléments d'information (la cohorte, l'âge et l'année) ne sont donc pas indépendants et leurs effets ne peuvent être déterminés de façon indépendante sans imposer une restriction supplémentaire. L'approche la plus fréquemment employée pour résoudre ce problème est d'imposer une normalisation à l'un ou plusieurs des effets en cause. À titre d'exemple, nous pouvons supposer que les effets de génération suivent exactement le cycle économique et que le cycle économique peut être représenté par le taux de chômage. Dans ce cas, les variables auxiliaires représentant l'année d'observation peuvent être remplacées par le taux de chômage de sorte que les variables correspondant à l'effet de génération, à l'effet de cohorte et à l'effet d'ancienneté

ne s'additionneront plus parfaitement. Avec une telle normalisation, l'estimation souple des effets de génération et de cohorte est en principe possible.

Dans nos travaux empiriques, nous avons effectué des régressions du logarithme des gains moyens pour une cohorte et une année données, pour un ensemble de variables destinées à saisir les effets de cohorte, de génération et d'ancienneté. Nous avons imposé deux restrictions à notre spécification. Premièrement, par souci d'économie, nous avons limité la saisie des effets de génération à une fonction quadratique de l'âge. Deuxièmement, nous avons ajouté un ensemble de variables auxiliaires correspondant aux différentes années d'observation, mais en regroupant 1981 et 1988 pour constituer une catégorie regroupée omise. Cette dernière restriction reflète l'hypothèse que 1981 et 1988 sont des années correspondant à des étapes identiques du cycle économique. Il est à noter que cette restriction nous permet de détecter les effets de cohorte, de génération et d'ancienneté. Tous les effets de génération sont estimés par rapport à l'étape du cycle économique correspondant à 1981. Nous avons également ajouté un ensemble complet de variables auxiliaires correspondant à chacune des 11 cohortes décrites précédemment.

Avant d'examiner les résultats de cette estimation, il est utile de préciser les hypothèses sous-jacentes à notre spécification. Premièrement, en introduisant un ensemble complet de variables auxiliaires pour représenter les cohortes, nous faisons en sorte que le profil âge-gains puisse avoir une coordonnée différente pour chaque cohorte. Cependant, nous ne permettons pas au profil âge-gains de changer de configuration pour les différentes cohortes. Étant donné que cette hypothèse est plutôt restrictive, nous avons exploré d'autres spécifications, examinées ci-après. Deuxièmement, nous avons restreint les profils âge-gains à une forme quadratique. Bien que cela soit également restrictif, notre examen d'autres spécifications possibles n'a pas révélé un effet restrictif indû. Troisièmement, en introduisant un ensemble restreint de variables auxiliaires pour l'année d'observation, plutôt que de paramétriser directement l'effet du cycle économique comme fonction du taux de chômage, nous permettons que les effets du ralentissement des années 90 soient arbitrairement différents de ceux associés au ralentissement du début des années 80. Cette approche semble particulièrement intéressante étant donné le débat considérable entourant la question de savoir si la récession des années 90 était semblable ou non aux précédentes. Néanmoins, il importe de souligner que notre stratégie de détermination des effets exige de faire l'hypothèse qu'aucune tendance commune ne touche l'ensemble des cohortes entre 1981 et 1988.

Les résultats de notre décomposition des gains en effets de cohorte, de génération et d'ancienneté sont présentés dans les figures 12 à 15. Dans les figures 12a à 12d, nous avons reproduit la valeur estimative des variables auxiliaires représentant les cohortes pour différents groupes définis selon le sexe et la scolarité. La valeur d'une variable auxiliaire de cohorte peut être interprétée comme étant les gains moyens de cette cohorte à l'âge de 25 ans si les conditions du marché du travail étaient celles qui prévalaient en 1981. Dans chacune de ces

figures, nous avons également tracé la tendance quadratique estimative liée aux effets de cohorte. Le premier élément qui ressort des figures 12a à 12d est la différence marquée entre les profils respectifs des hommes et des femmes. En particulier, les gains moyens sont successivement plus élevés pour les cohortes plus récentes de femmes, alors que l'opposé est vrai pour les hommes.

La tendance révélée par les effets de cohorte estimatifs est assez décourageante pour les jeunes hommes, en particulier pour ceux qui ont une faible scolarité. Tant pour les hommes hautement scolarisés que pour ceux qui le sont moins, l'estimation des gains d'une cohorte récente est d'environ 30 p. 100 inférieure à celle d'une cohorte née 20 ans plus tôt. Dans les deux cas, il n'y a aucune indication que la détérioration des résultats obtenus sur le marché du travail pour les cohortes plus récentes devra probablement s'interrompre ou se renverser dans l'avenir immédiat. De fait, les données laissent penser que la chute des gains pour les cohortes récentes d'hommes ayant une scolarité peu élevée va en s'accélérant. Il faudrait rappeler que ces effets estimatifs sont neutres par rapport aux effets du cycle économique et que l'on ne devrait pas s'attendre à un retournement simplement en raison du fait que l'économie sort de la récession prolongée du début des années 90. Le seul signe peut-être encourageant dans ce tableau par ailleurs pessimiste est la variation relativement limitée des effets de cohorte pour les cohortes ayant une scolarité élevée atteignant l'âge de 25 ans en 1988, en 1990 et en 1992. Considérés isolément, ces effets estimatifs pourraient indiquer que les cohortes futures d'hommes ayant une scolarité élevée peuvent s'attendre à ce que leurs niveaux de gains ne se détériorent pas davantage. Dans le contexte de la tendance générale, cela apparaît toutefois comme une brève pause sur une trajectoire en forte baisse.

Le profil des effets de cohorte pour les femmes révèle que les cohortes plus récentes gagnent entre 15 à 20 p. 100 plus que les cohortes antérieures. Cependant, les données semblent également indiquer que l'augmentation des gains parmi les femmes plus jeunes se stabilise puisque l'on n'a pu déceler aucun changement perceptible depuis le milieu des années 80. Une comparaison des profils des hommes et des femmes fait également ressortir le degré de convergence des gains. Ainsi, l'écart de gains entre les hommes et les femmes pour la cohorte de 1972 était d'environ 70 p. 100, tandis qu'il était inférieur à 20 p. 100 pour la cohorte de 1992.

Les figures 13a à 13d font voir les effets de génération estimatifs pour nos quatre paires sexe-scolarité. La valeur de l'effet de génération peut être interprétée comme étant les gains moyens à l'âge 25 ans au cours de différentes années en l'absence de tout effet de cohorte. Dans les quatre figures, nous pouvons observer la trajectoire habituelle d'un cycle économique, avec un premier creux entre 1982 et 1984 et un second creux en 1992 et 1993. Une observation intéressante est que le creux de la récession des années 90 semble plus prononcé, pour l'ensemble des groupes, que celui de la récession du début des années 80. Il est remarquable de constater jusqu'à quel point l'amplitude des effets du cycle

économique diffère entre les hommes et les femmes. Les hommes moins scolarisés font voir une plus grande sensibilité cyclique au niveau des gains, suivis des hommes ayant la scolarité la plus élevée. La sensibilité cyclique des gains des femmes semble beaucoup plus modérée par comparaison. Ce résultat a de quoi surprendre étant donné que l'on considère habituellement que les femmes sont moins attachées au marché du travail et, ainsi, plus portées à réagir fortement aux fluctuations du cycle économique. Cependant, l'absence relative de cyclicalité pourrait traduire une plus grande souplesse de la main-d'oeuvre féminine, alors que les femmes entrent dans la population active au cours des périodes de récession, à la faveur de l'effet de « main-d'oeuvre supplémentaire ».

Les figures 14a à 14d renferment nos estimations du profil âge-gains spécifique à chaque cohorte, après avoir neutralisé les effets du cycle économique. Comme on peut s'y attendre à la lumière de l'information que renferment les figures 12a à 12d, les profils âge-gains sont successivement moins élevés pour les cohortes d'hommes plus récentes, tandis qu'ils sont successivement plus élevés pour les cohortes de femmes. La pente des profils âge-gains est également passablement différente d'un groupe à l'autre. En particulier, les hommes hautement scolarisés montrent une croissance des gains importante (de l'ordre de 40 à 50 p. 100) à mesure qu'ils avancent en âge de 25 à 35 ans. Par contre, les femmes moins scolarisées ne gagnent qu'environ 10 p. 100 sur cette période.

Une restriction que nous avions imposée à l'estimation des profils âge-gains présentés à la figure 14 est que la pente de ces profils n'a pas changé avec le temps. En particulier, cette restriction élimine la possibilité que les cohortes plus récentes, en particulier chez les hommes, puissent débuter à un niveau de gains moins élevé pour connaître ensuite une croissance plus importante à mesure qu'ils avancent en âge. Afin d'explorer cette possibilité, nous avons réestimé nos profils âge-gains spécifiques à chaque cohorte pour permettre que le profil d'âge puisse changer d'une cohorte à l'autre. Les résultats de cette spécification complémentaire sont présentés dans les figures 15a à 15d[6].

Avant de commenter la figure 15, il importe de mentionner que nous n'avons pas obtenu beaucoup de preuves statistiquement significatives à l'appui de l'hypothèse selon laquelle la pente des profils âge-gains change d'une cohorte à l'autre. Néanmoins, nous croyons que les résultats présentés aux figures 15a à 15d sont intéressants parce qu'ils révèlent le sens des effets estimés. En particulier, les résultats obtenus pour les hommes vont en sens contraire de l'opinion voulant que les cohortes plus récentes entrent à des niveaux de gains inférieurs et connaissent une croissance des gains plus rapide avec l'âge. En effet, nous constatons une croissance légèrement inférieure des cohortes plus récentes à mesure qu'elles avancent en âge. Il est également intéressant de noter que ces données contredisent, jusqu'à un certain point, l'opinion selon laquelle les changements récents sur le marché du travail traduisent pour l'essentiel une augmentation de la prime accordée pour les compétences; si c'était le cas, nous devrions observer une accentuation de la pente de la relation âge-gains pour les cohortes plus jeunes, afin de traduire la valeur accrue de l'expérience.

FIGURE 12a

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS PARMI LES FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1972-1992

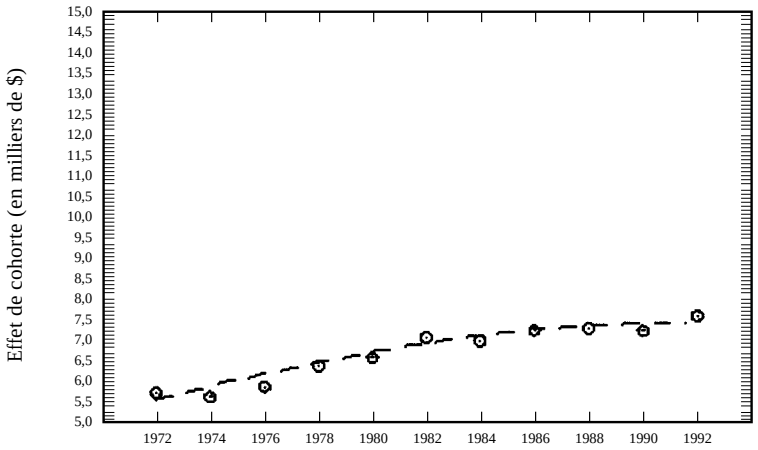


FIGURE 12b

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS PARMI LES FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1972-1992

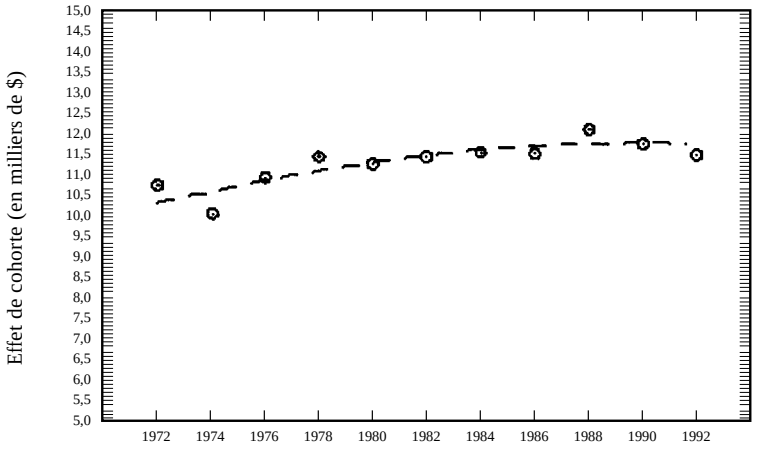


FIGURE 12c

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS PARMI LES HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1972-1992

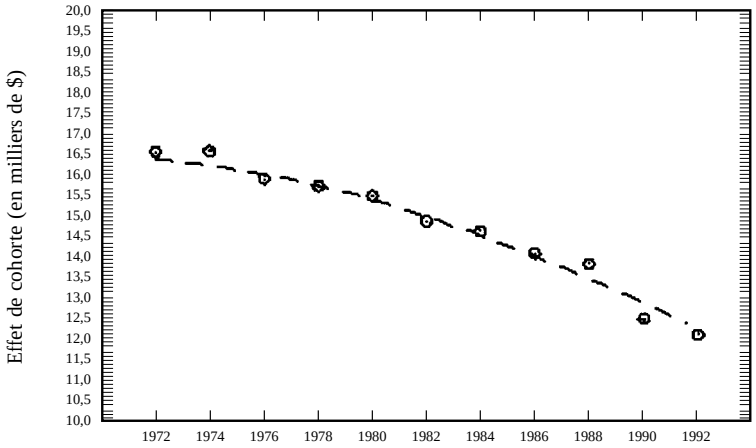


FIGURE 12d

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS PARMI LES HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1972-1992

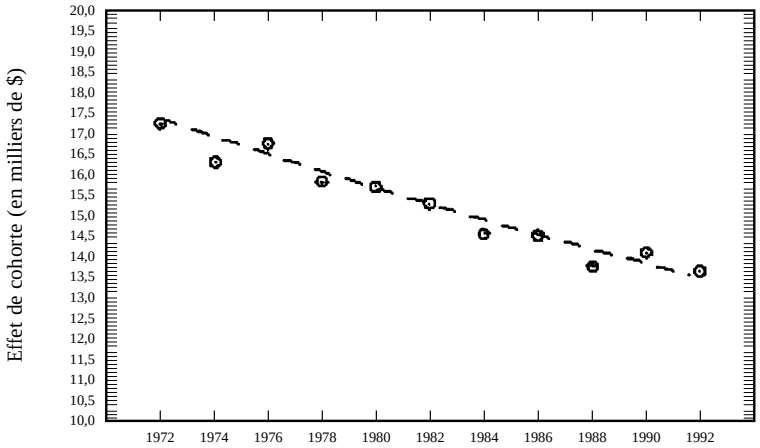


FIGURE 13a

EFFET ATTRIBUABLE À L'ANNÉE, GAINS RÉELS DES FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1981-1993

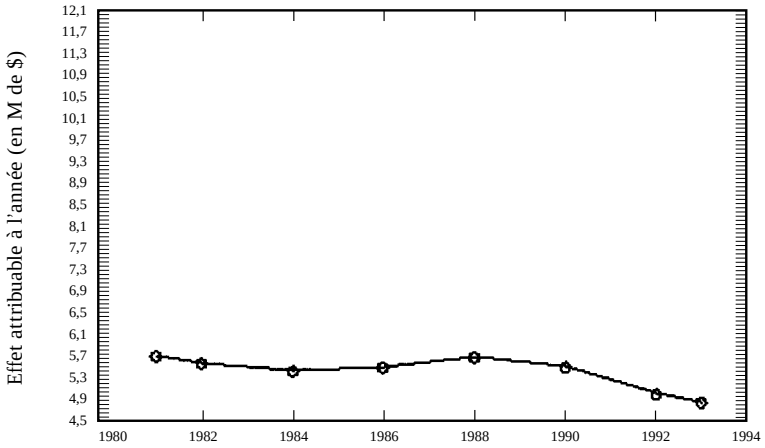


FIGURE 13b

EFFET ATTRIBUABLE À L'ANNÉE, GAINS RÉELS DES FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1981-1993

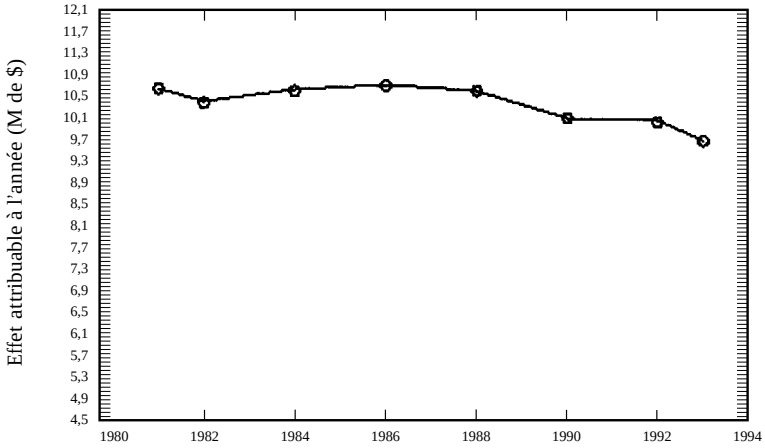


FIGURE 13c

EFFET ATTRIBUABLE À L'ANNÉE, GAINS RÉELS DES HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1981-1993

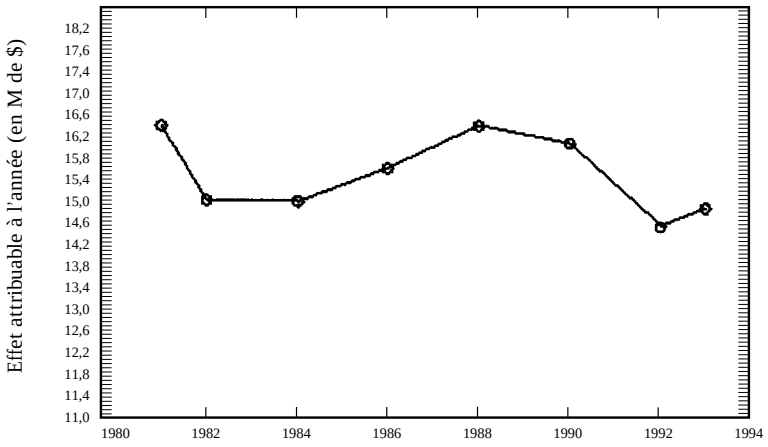


FIGURE 13d

EFFET ATTRIBUABLE À L'ANNÉE, GAINS RÉELS DES HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1981-1993

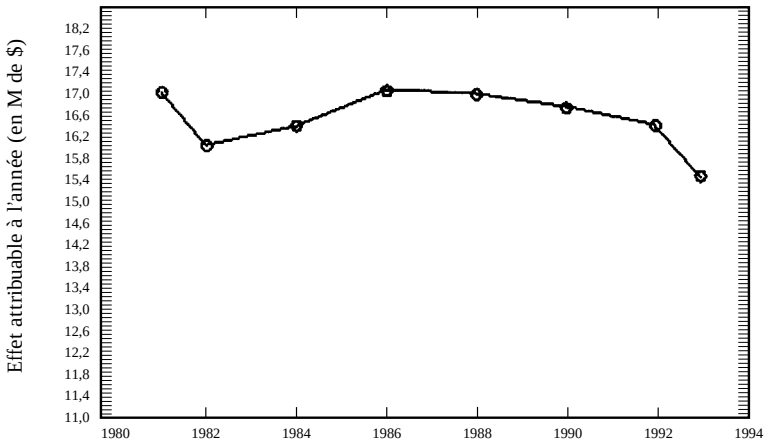


FIGURE 14a

PROFIL ÂGE-GAINS POUR DIVERSES COHORTES, FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE

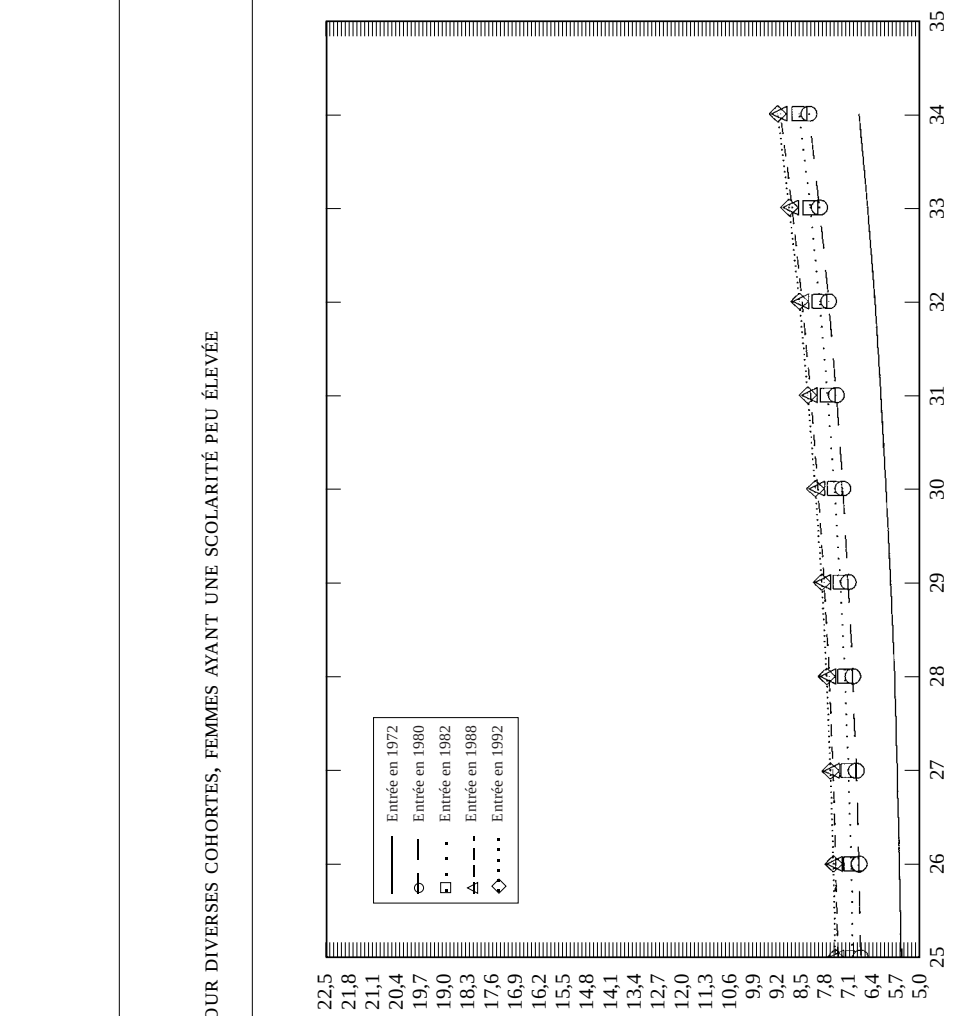


FIGURE 14b

PROFIL ÂGE-GAINS POUR DIVERSES COHORTES, FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE

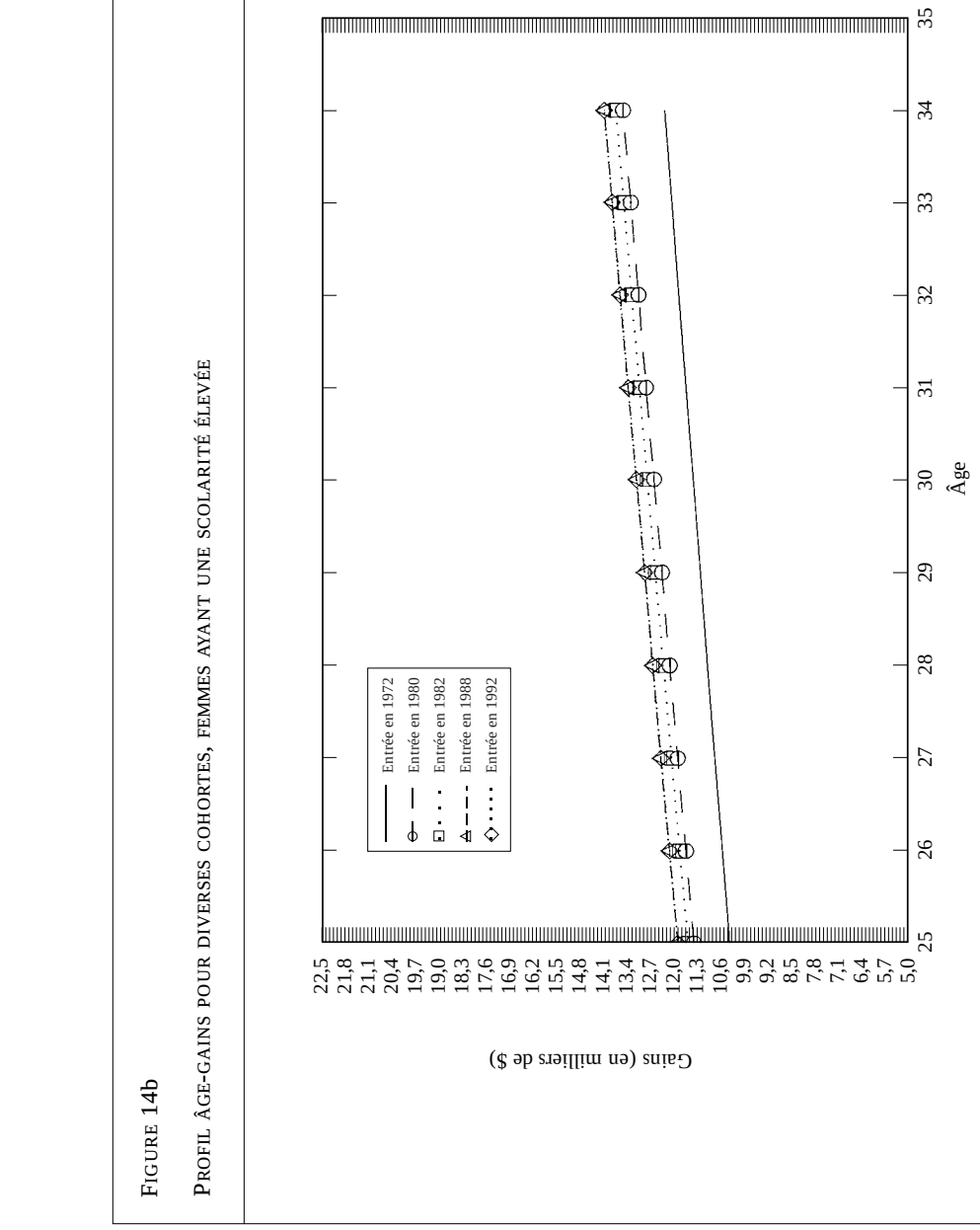


FIGURE 14c

PROFIL ÂGE-GAINS POUR DIVERSES COHORTES, HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE

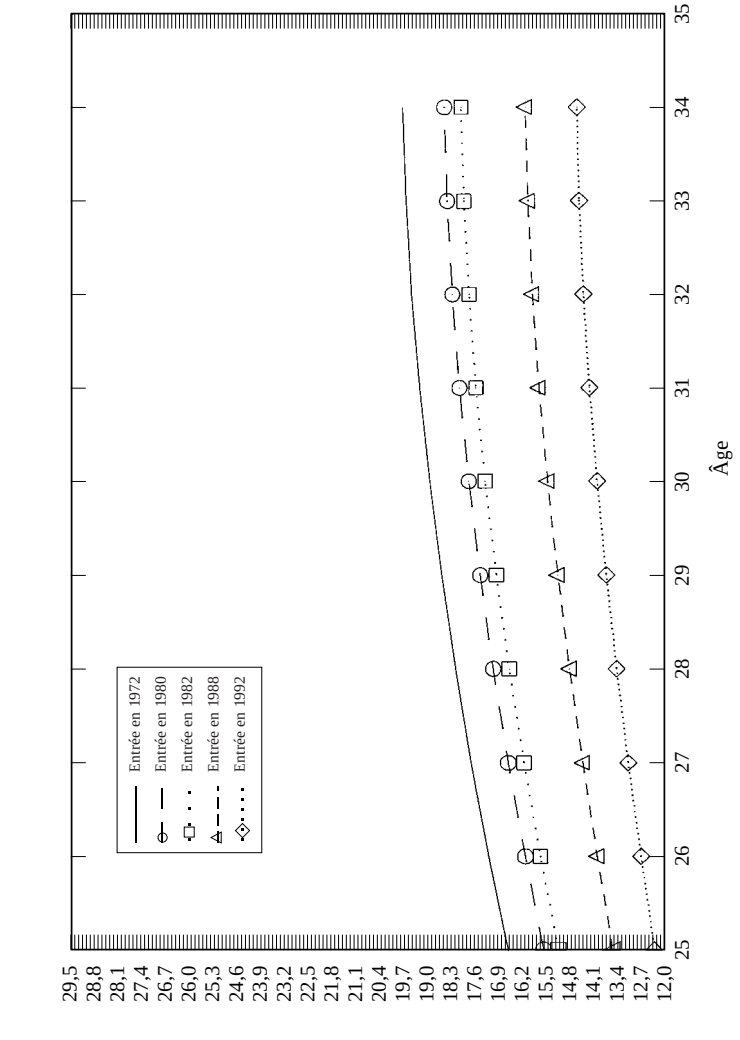


FIGURE 14d

PROFIL ÂGE-GAINS POUR DIVERSES COHORTES, HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE

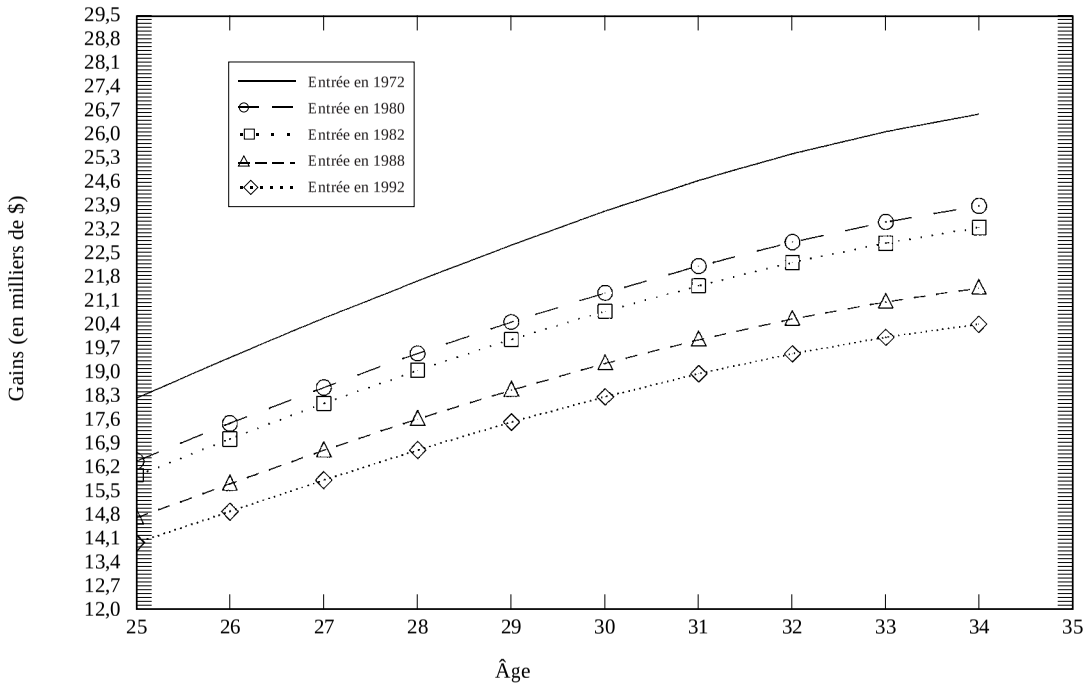


FIGURE 15a

PROFILS ÂGE-GAINS PERMETTANT DIFFÉRENTES PENTES, PAR COHORTE, FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE

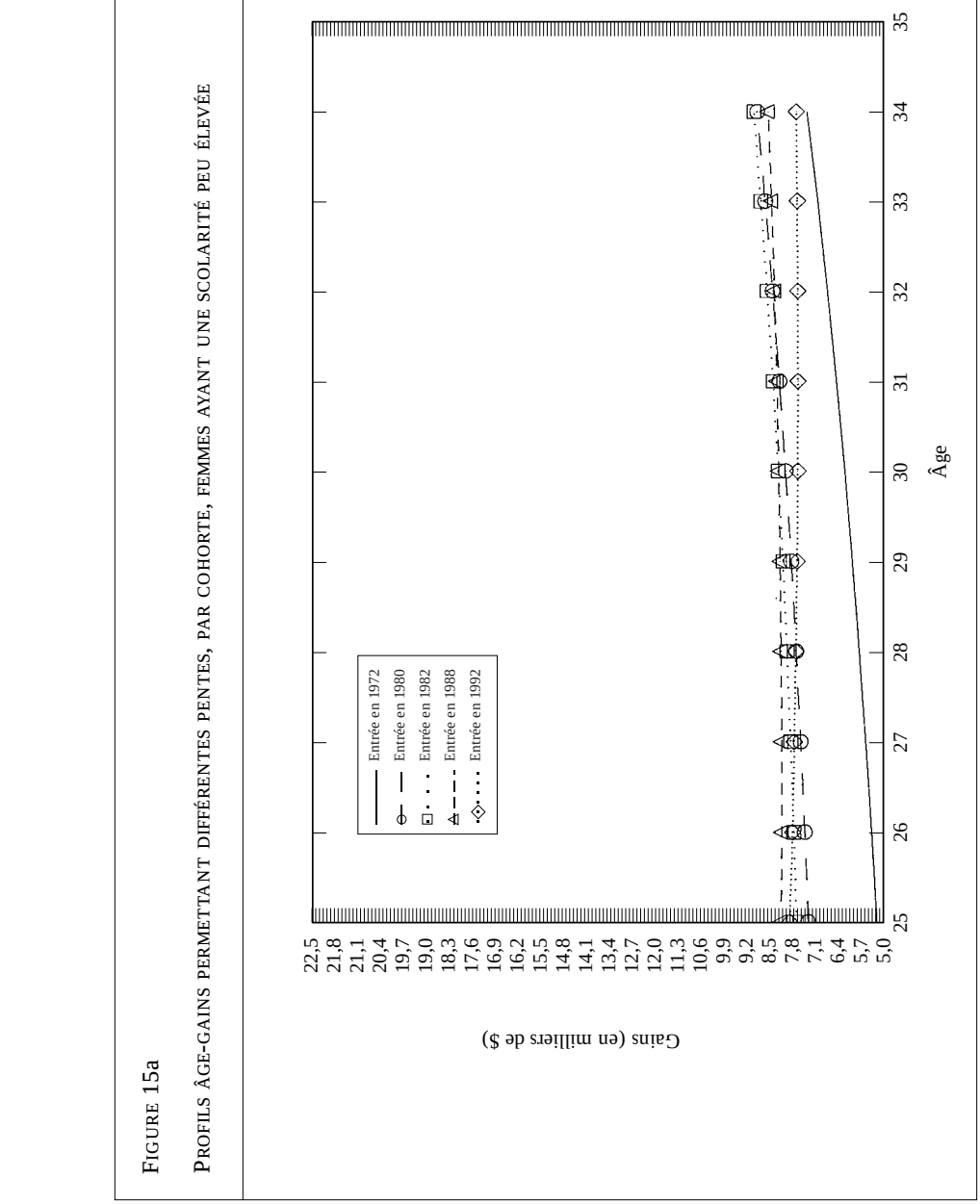


FIGURE 15b

PROFILS ÂGE-GAINS PERMETTANT DIFFÉRENTES PENTES, PAR COHORTE, FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE

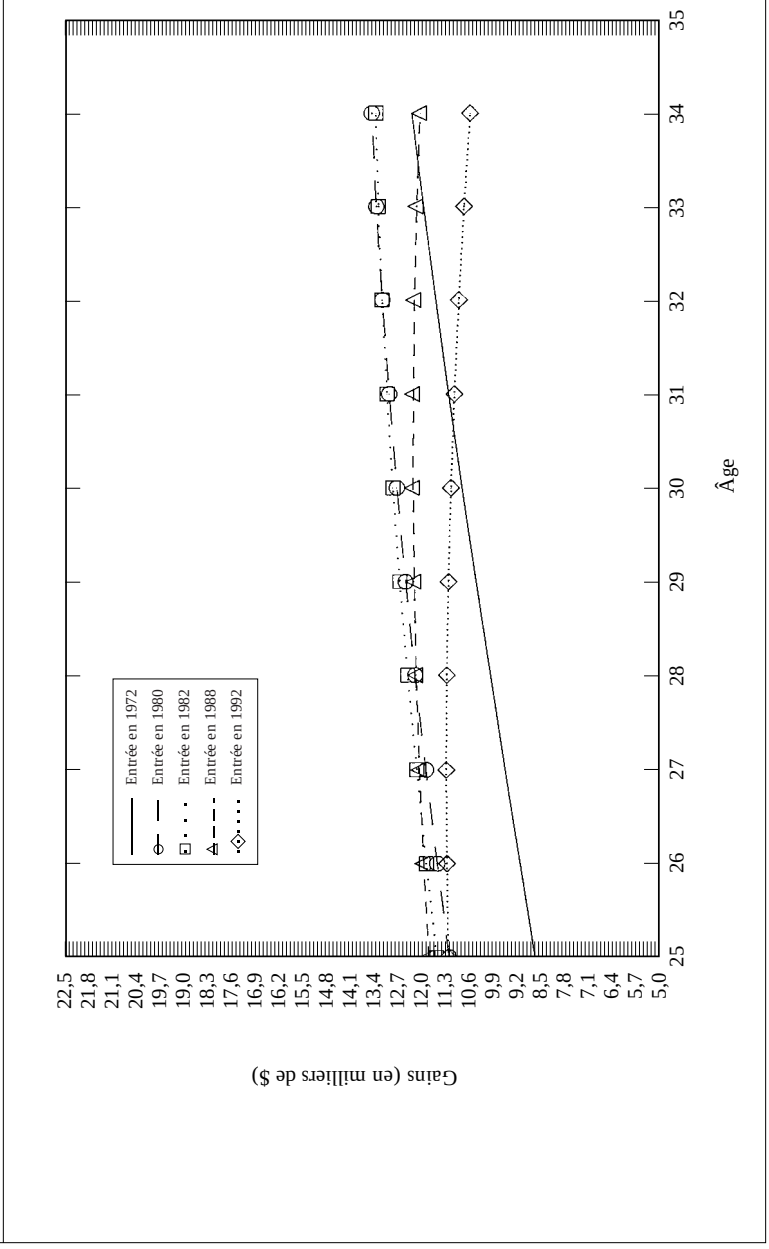


FIGURE 15c

PROFILS ÂGE-GAINS PERMETTANT DIFFÉRENTES PENTES, PAR COHORTE, HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE

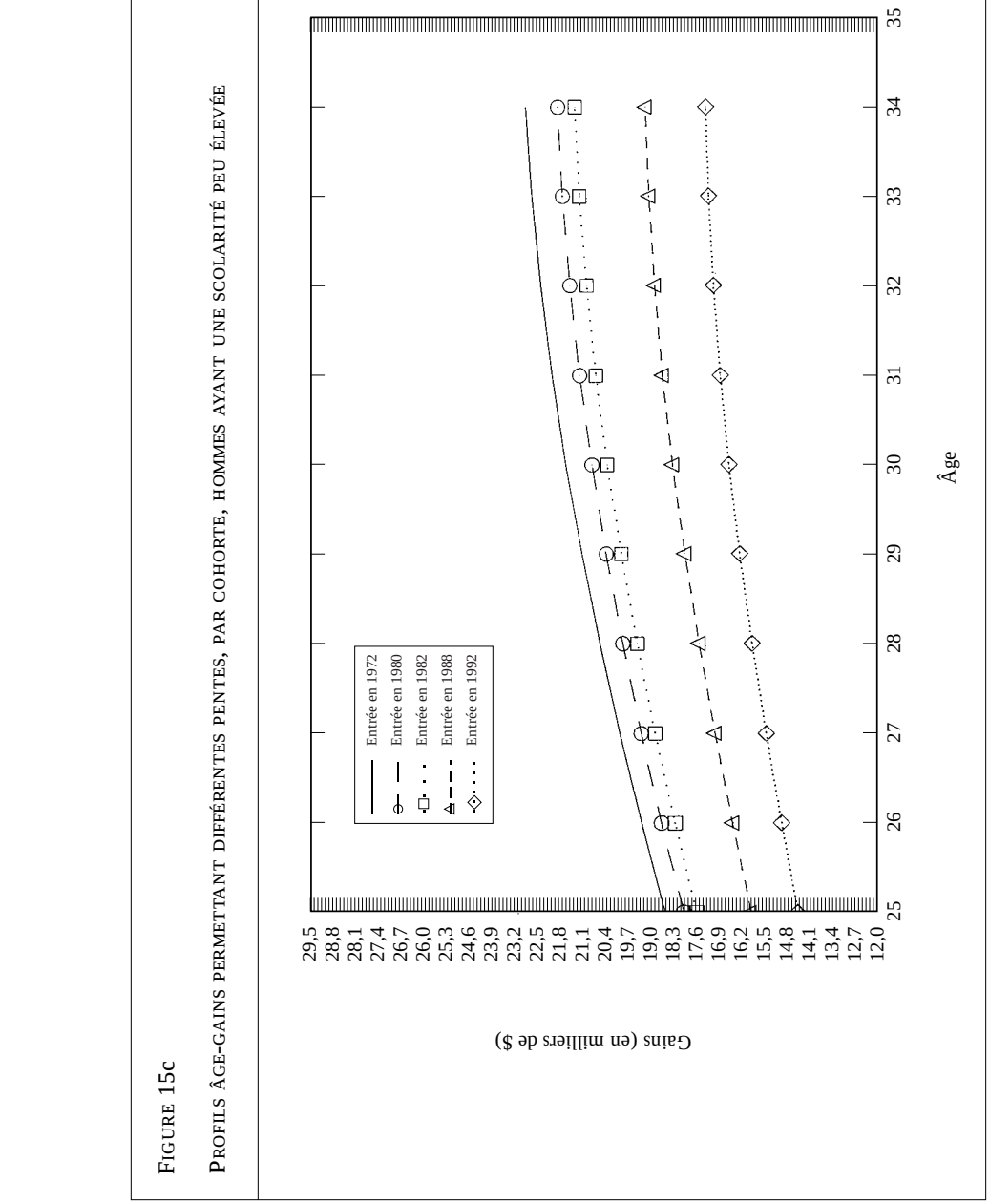
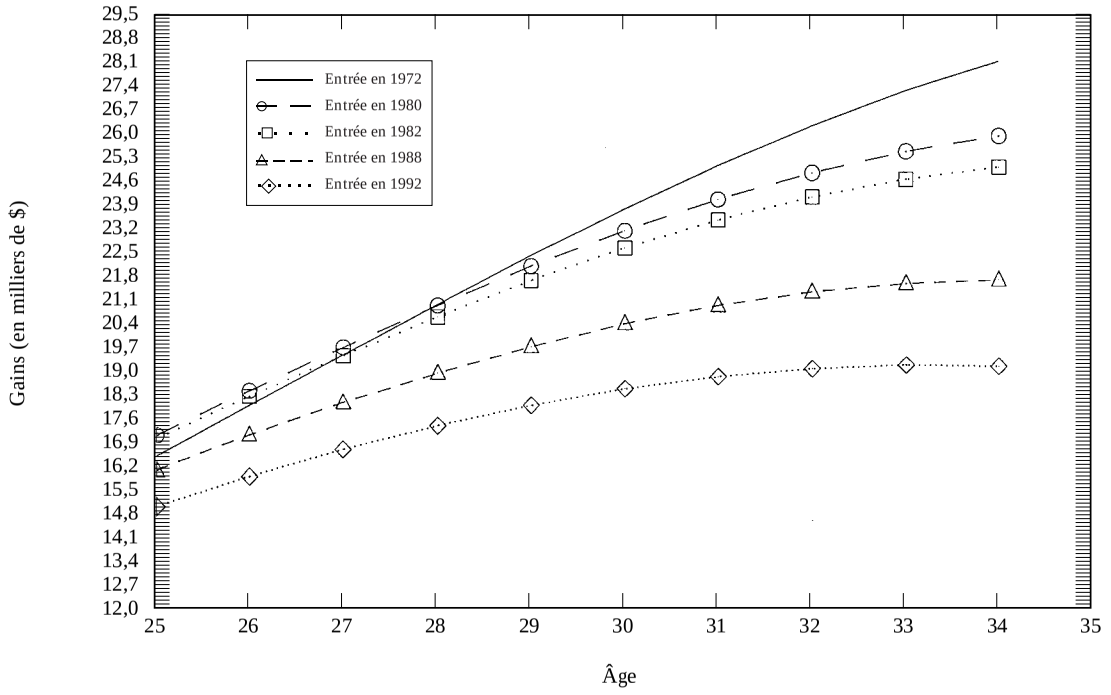


FIGURE 15d

PROFILS ÂGE-GAINS PERMETTANT DIFFÉRENTES PENTES, PAR COHORTE, HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE



Les profils âge-gains pour les femmes présentés aux figures 15a et 15b se prêtent également à une interprétation différente des changements qui se produisent entre cohortes. À titre d'exemple, ces figures semblent montrer que l'amélioration des gains des cohortes de femmes plus jeunes était essentiellement un phénomène des années 70. Depuis 1982, il semblerait que les nouvelles cohortes de femmes perdent du terrain comparativement aux cohortes qui les ont immédiatement précédées. À cet égard, les données laissent penser que les nouvelles cohortes de femmes pourraient commencer à exhiber un profil de changement semblable à celui que connaissent les hommes.

Dans l'ensemble, les données présentées dans les figures 12 à 15 font ressortir ce qui suit pour les hommes : les cohortes plus jeunes gagnent successivement moins; loin d'être temporaire, ce phénomène se poursuit et pourrait aller en s'accélérant dans le cas des hommes moins scolarisés; enfin, les cohortes plus récentes ne montrent pas de rattrapage sur les cohortes plus âgées à mesure qu'elles avancent en âge et pourraient même perdre encore du terrain. Par contre, les cohortes récentes de femmes gagnent davantage que celles d'il y a 20 ans, mais l'augmentation des gains est interrompue et pourrait même avoir amorcé un retournement.

EFFET DE COHORTE SUR LES GAINS DES PERSONNES EMPLOYÉES À TEMPS PLEIN TOUTE L'ANNÉE

COMME NOUS L'AVONS INDIQUÉ PRÉCÉDEMMENT, la mesure des gains utilisée dans l'analyse par cohorte qui précède traduit une grande diversité d'effets. En particulier, les mouvements de cet indicateur traduisent des mouvements dans l'emploi, dans le nombre d'heures travaillées ainsi que dans la rémunération horaire. Dans ce chapitre et le suivant, nous tentons de comprendre les changements qui surviennent dans les éléments secondaires qui déterminent le mouvement général des gains. Tout d'abord, nous présentons des estimations des effets de cohorte pour les gains des personnes employées à temps plein et travaillant toute l'année. Puisque toutes les personnes utilisées pour établir cette mesure des gains travaillent, la mesure ne traduira pas directement les changements survenus dans l'emploi. Cela est particulièrement important au moment de comparer les hommes et les femmes puisque, compte tenu des tendances du taux d'emploi présentées dans le premier chapitre, les variations dans l'emploi seront vraisemblablement un déterminant très important du cheminement général des gains des femmes, mais non des hommes. Les effets des mouvements observés dans les heures de travail hebdomadaires et les semaines travaillées au cours d'une année auront aussi un impact réduit sur les gains des personnes employées à temps plein et travaillant toute l'année. Cela nous permet de nous concentrer plus directement sur le prix de la main-d'oeuvre, en écartant les variations quantitatives. Le principal inconvénient de l'utilisation des gains des personnes travaillant à temps plein toute l'année est que les entrées et les sorties de l'échantillon attribuables aux congédiements, à l'embauche, etc. engen-

FIGURE 16a

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS, FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE TRAVAILLANT À TEMPS PLEIN TOUTE L'ANNÉE, 1972-1992

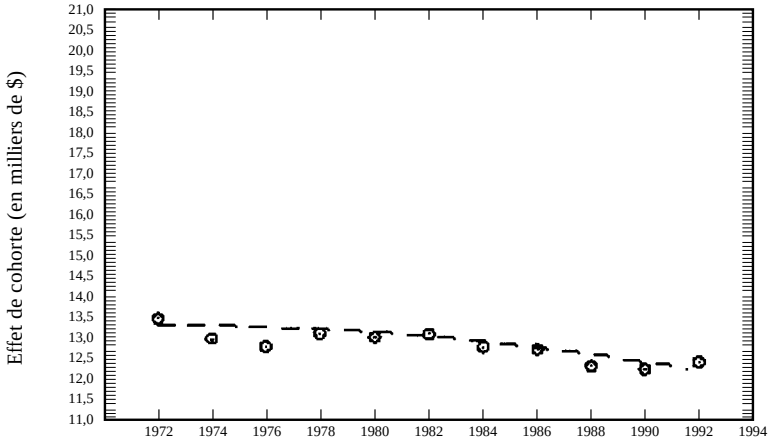


FIGURE 16b

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS, FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE TRAVAILLANT À TEMPS PLEIN TOUTE L'ANNÉE, 1972-1992

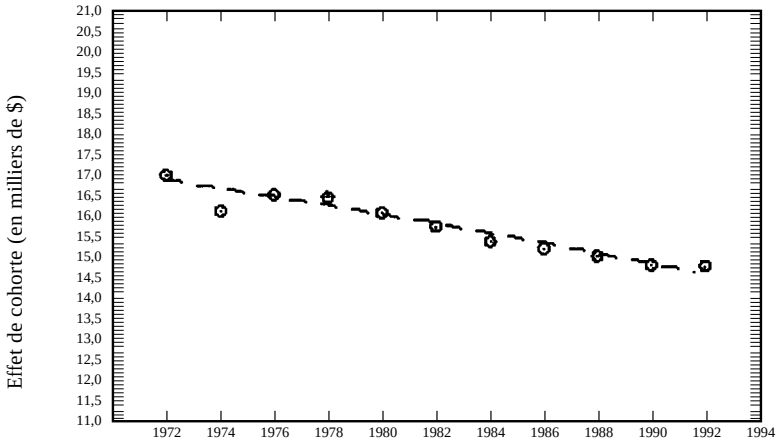


FIGURE 16c

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS, HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE TRAVAILLANT À TEMPS PLEIN TOUTE L'ANNÉE, 1972-1992

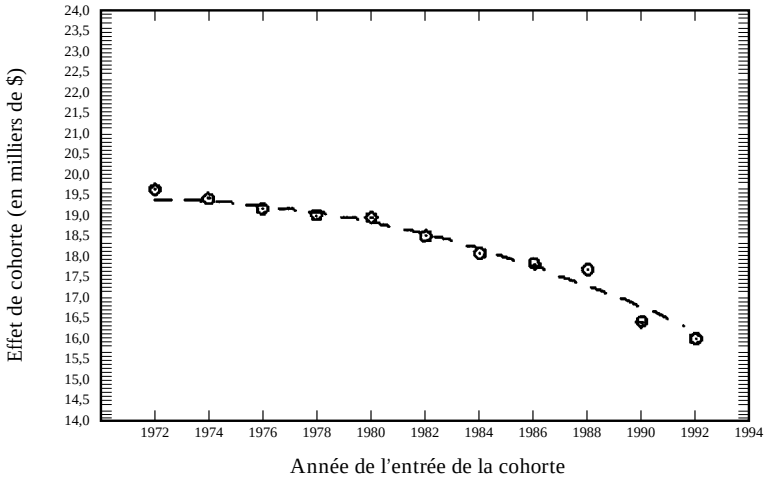
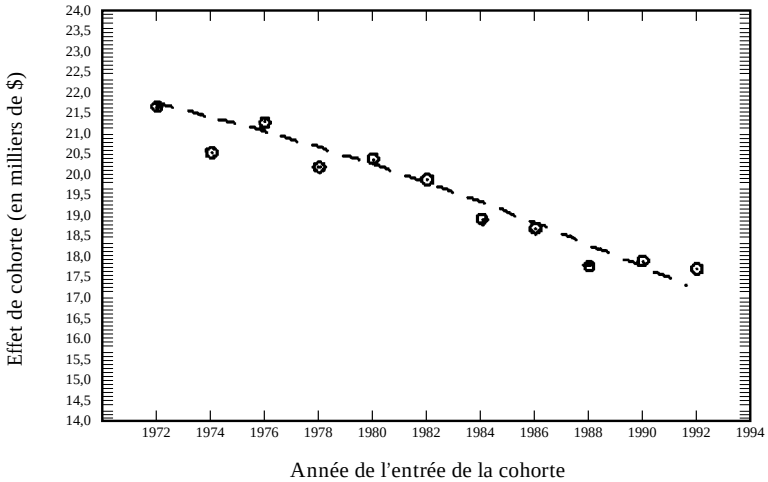


FIGURE 16d

EFFET DE COHORTE DU LOGARITHME DES GAINS RÉELS, HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE TRAVAILLANT À TEMPS PLEIN TOUTE L'ANNÉE, 1972-1992



dreront un biais de sélection. Ainsi, les gains des personnes employées à temps plein durant toute l'année pourraient augmenter au cours des périodes de récession si les travailleurs les moins qualifiés sont les premiers à être mis à pied. Cela complique la tâche au moment de tirer des conclusions précises. Il est à noter que la mesure antérieure des gains, parce qu'elle portait sur l'ensemble de la population, n'est pas touchée par les problèmes découlant de l'effet de sélection.

Les figures 16.1 à 16.4 font voir les effets de cohorte sur les gains moyens des personnes travaillant à temps plein durant toute l'année. Les estimations des effets de cohorte proviennent d'une régression du logarithme des gains dont la spécification est exactement identique à celle employée pour l'estimation des profils âge-gains spécifiques aux diverses cohortes. Elle englobe notamment une fonction quadratique pour l'âge, des variables auxiliaires pour chacune des années, en supposant que 1981 et 1988 sont identiques, ainsi qu'un ensemble complet de variables auxiliaires pour les cohortes. Les coefficients estimés à l'aide de cette régression sont à la base des courbes reproduites à la figure 16. La principale observation qui en ressort est que les tendances des cohortes féminines sont à l'inverse de celles de la figure 12. Parmi les femmes, les effets de cohorte affichent une tendance négative tant pour les travailleuses ayant une scolarité élevée que pour celles qui ont une faible scolarité. La tendance parmi les femmes ayant une faible scolarité est modérée, mais celle des femmes ayant une plus grande scolarité ressemble à celle des hommes ayant une scolarité élevée. Les tendances pour les hommes, illustrées à la figure 16, ressemblent beaucoup à celles que montre la figure 12. La principale conclusion à tirer de cette figure, toutefois, est que la forte tendance à la hausse des gains visibles pour tous les groupes de femmes est entièrement attribuable aux effets de la croissance de l'emploi. Les tendances des salaires, si l'on garde constants le nombre d'heures travaillées et les effets d'emploi, sont négatives à la fois pour les hommes et pour les femmes.

PROFILS DES COHORTES AU NIVEAU DE L'EMPLOI ET DE LA STABILITÉ D'EMPLOI

DANS LA SECTION PRÉCÉDENTE, NOUS AVONS EXAMINÉ comment les cohortes récentes s'en tiraient sur le plan des gains annuels tirés d'un emploi. Il serait utile de savoir si les variations observées dans les gains sont associés principalement à des changements survenus dans l'emploi (plutôt que dans les salaires) afin d'évaluer comment les gens peuvent tenter de s'y ajuster. De même, on se préoccupe beaucoup au sein de la société de la possibilité que le paradigme qui définit les relations entre travailleurs et entreprises soit en train de se transformer, ainsi que de la façon dont les gens devront s'ajuster à un tel changement. Il pourrait donc être utile de se demander si les cohortes plus récentes ont une moins grande stabilité d'emploi ou une incidence plus grande de travail à temps partiel que les cohortes antérieures. Pour répondre à ces questions, nous avons procédé d'une façon semblable à celle employée pour décrire les

changements dans les gains spécifiques aux diverses cohortes. Pour l'ensemble des mesures de la population active examinées dans le présent chapitre, nous avons à nouveau estimé une régression dont la spécification englobe une fonction quadratique pour l'âge, des variables auxiliaires pour chacune des années, sans l'hypothèse que les effets de 1981 et de 1988 ont été les mêmes, ainsi qu'un ensemble complet de variables auxiliaires pour chacune des cohortes.

Nous débutons par l'examen des profils d'évolution des taux d'emploi pour les diverses cohortes, c'est-à-dire un profil de cohortes pour la fraction des personnes employées au cours d'une semaine donnée. Comme auparavant, après avoir neutralisé les effets du cycle économique, nous cherchons à faire ressortir comment les cohortes récentes se comparent aux plus anciennes en ce qui a trait au taux d'emploi. Les figures 17.1 à 17.4 renferment les estimations des variables auxiliaires des cohortes associées aux taux d'emploi. La valeur d'une variable auxiliaire de cohorte devrait maintenant être interprétée comme étant le taux d'une cohorte à l'âge de 25 ans si les conditions du marché du travail étaient semblables à celles de 1981. Encore une fois, les profils de cohorte estimés diffèrent sensiblement selon le sexe. Chez les femmes, il y a une augmentation marquée dans le temps, qui indique que les cohortes plus récentes ont des taux d'emploi plus élevés que les cohortes antérieures. L'augmentation est particulièrement remarquable parmi les femmes moins scolarisées. La cohorte des femmes moins scolarisées de 1992 avait un taux d'emploi près de 30 p. 100 plus élevé que la cohorte correspondante du début des années 70.

Le profil de cohorte pour les hommes diffère sensiblement de celui des femmes. Parmi les hommes plus scolarisés, il n'y a essentiellement aucune indication d'une tendance des taux d'emploi d'une cohorte à l'autre. Cela pourrait sembler étonnant à première vue compte tenu du fait, bien documenté, que les jeunes travailleurs connaissent actuellement un chômage élevé et de faibles taux d'emploi. Cependant, il faut rappeler que les estimations des effets de cohorte ont été effectuées en neutralisant les effets globaux du cycle économique. Par conséquent, les données présentées à la figure 17.4 montrent que les cohortes récentes d'hommes scolarisés ne sont pas dans une situation pire que celle des cohortes antérieures mais que l'ensemble des cohortes font voir actuellement une diminution des taux d'emploi.

Le seul groupe pour lequel le taux d'emploi semble suivre une trajectoire décroissante est celui des hommes moins scolarisés. Parmi ce groupe, le taux d'emploi a diminué, passant de 80 p. 100 pour la cohorte de 1972 à près de 74 p. 100 pour la cohorte de 1992, un repli assez significatif. Encore une fois, l'un des faits intéressants qui ressort de la comparaison des figures est le degré de convergence entre les taux d'emploi des hommes et des femmes. Parmi les travailleurs plus scolarisés, le taux d'emploi est essentiellement identique pour les cohortes récentes d'hommes et de femmes.

Afin de préciser la nature changeante des relations d'emploi, nous avons reproduit, dans les figures 18 et 19, des mesures liées à la stabilité du travail. En particulier, les figures 18.1 à 18.4 reflètent les profils de cohorte liés aux change-

ments observés dans la fraction des travailleurs qui sont employés à temps plein durant toute l'année, tandis que les figures 19.1 à 19.4 renferment des renseignements semblables pour la durée moyenne des emplois actuels (durée moyenne d'un emploi). Ainsi, après avoir neutralisé les effets du cycle économique, la valeur de la variable auxiliaire de chaque cohorte, à la figure 18, représente la fraction des travailleurs de différentes cohortes qui travaillent à temps plein durant toute l'année à l'âge de 25 ans.

Le profil de cohorte qui ressort en ce qui a trait au taux des emplois à temps plein qui durent toute l'année est assez semblable à celui observé pour le taux d'emploi. Parmi les hommes plus scolarisés, aucune tendance claire ne ressort, tandis que parmi les hommes moins scolarisés, on peut voir une diminution sensible du taux d'emploi à temps plein durant toute l'année. Parmi les cohortes plus récentes de femmes, par contre, le taux d'emploi à temps plein durant toute l'année semble être plus élevé, notamment dans le cas des femmes plus scolarisées. Le déclin de l'emploi à temps plein sur l'ensemble d'une année parmi les hommes moins scolarisés est, à nouveau, assez marqué. La probabilité qu'une personne ait un emploi à temps plein pour toute l'année est de 10 p. 100 inférieure pour un homme de la cohorte de 1992 que pour son homologue du début des années 70.

La figure 19 permet de voir plus directement l'évolution de la nature des relations d'emploi puisqu'elle renferme des renseignements sur la durée des emplois pour les cohortes plus récentes. La principale constatation qui s'en dégage est que les tendances montrent maintenant une similitude plus marquée pour les groupes définis en fonction de la scolarité que pour ceux définis selon le sexe. Parmi les femmes et les hommes moins scolarisés, il semble y avoir une diminution substantielle de la durée des emplois pour les cohortes entrées sur le marché du travail après 1982. Par contre, parmi les travailleurs plus scolarisés, il n'y a pratiquement aucune indication d'une telle tendance. En soi, cette observation offre peu d'appui à la notion selon laquelle une transformation profonde de la nature de l'emploi s'est amorcée : si un changement aussi fondamental était en train de se produire, nous devrions l'observer dans la façon dont il touche les nouvelles cohortes de travailleurs hautement scolarisés, mais nous n'avons rien observé de tel.

Le tableau général qu'offre notre analyse par cohorte des résultats du marché du travail en est un d'hétérogénéité considérable. À une extrémité, nous avons des cohortes récentes de femmes hautement scolarisées qui voient leurs gains augmenter et ont des possibilités d'emploi accrues et une stabilité d'emploi plus grande ou inchangée. À l'autre extrémité, nous observons des cohortes récentes d'hommes peu scolarisés dont les gains, l'emploi et la stabilité d'emploi vont en diminuant. Entre ces deux extrêmes, nous retrouvons les hommes ayant une scolarité supérieure qui voient leurs gains diminuer mais sans subir une diminution marquée de l'emploi ou de la stabilité d'emploi. Enfin, nous avons aussi les femmes moins scolarisées, dont la tendance suit à peu près le même profil que celle des femmes ayant une scolarité élevée, sauf qu'elles semblent perdre du terrain sur le plan de la stabilité d'emploi.

FIGURE 17a

EFFET DE COHORTE POUR LE RATIO EMPLOI/POPULATION, FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1972-1994

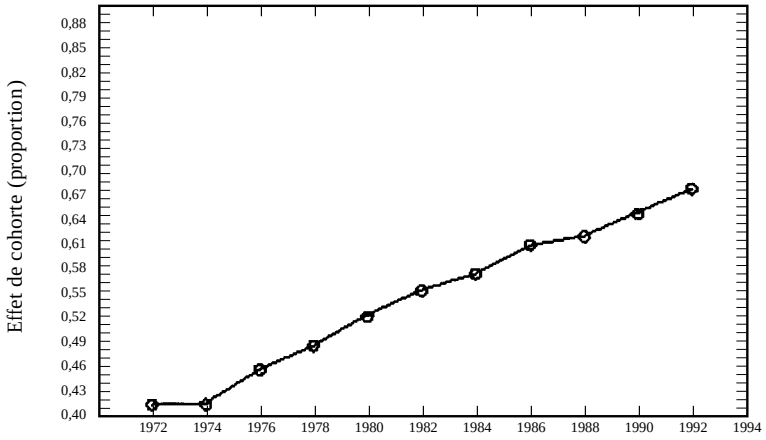


FIGURE 17b

EFFET DE COHORTE POUR LE RATIO EMPLOI/POPULATION, FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1972-1994

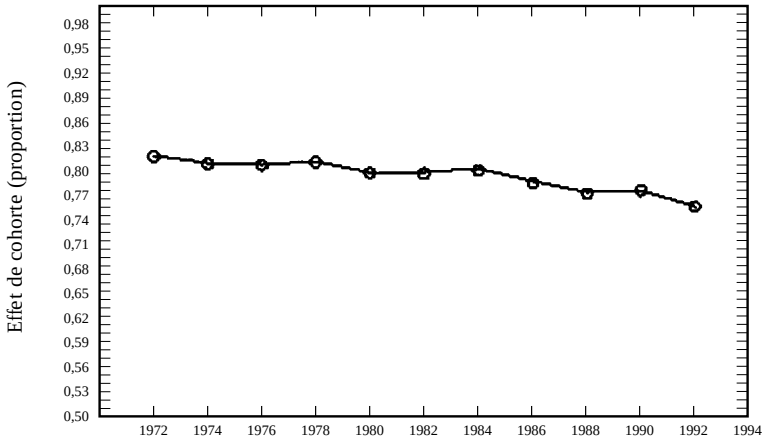


FIGURE 17c

EFFET DE COHORTE POUR LE RATIO EMPLOI/POPULATION, HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1972-1994

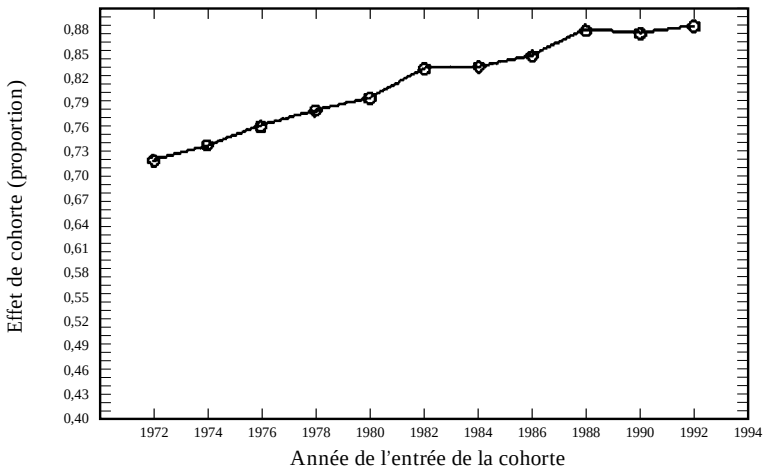


FIGURE 17d

EFFET DE COHORTE POUR LE RATIO EMPLOI/POPULATION, HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1972-1994

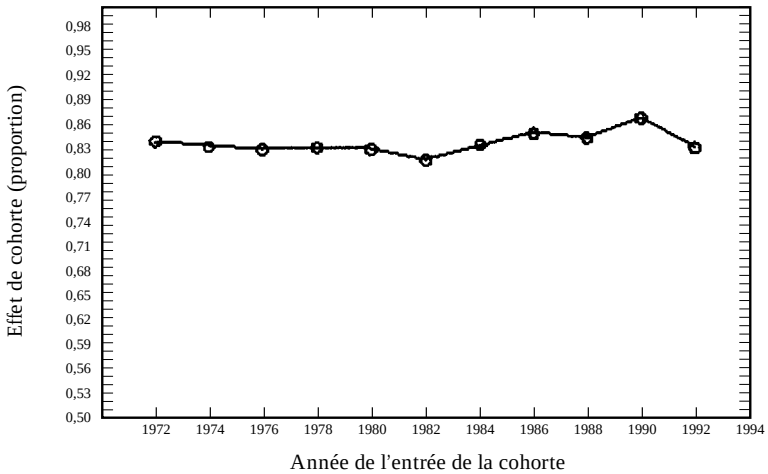


FIGURE 18a

EFFET DE COHORTE POUR LA PROPORTION DES FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE TRAVAILLANT À TEMPS PLEIN, 1972-1992

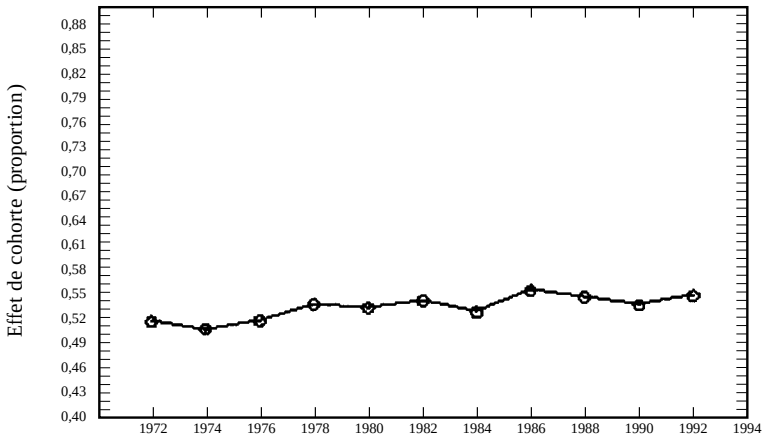


FIGURE 18b

EFFET DE COHORTE POUR LA PROPORTION DES FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE TRAVAILLANT À TEMPS PLEIN, 1972-1992

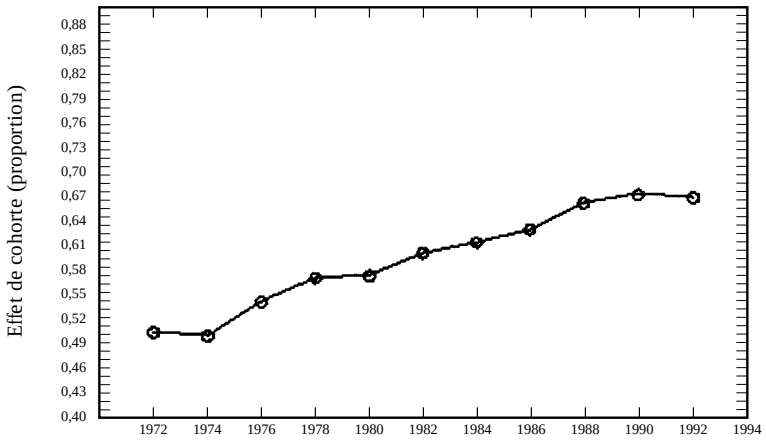


FIGURE 18c

EFFET DE COHORTE POUR LA PROPORTION DES HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE TRAVAILLANT À TEMPS PLEIN, 1972-1992

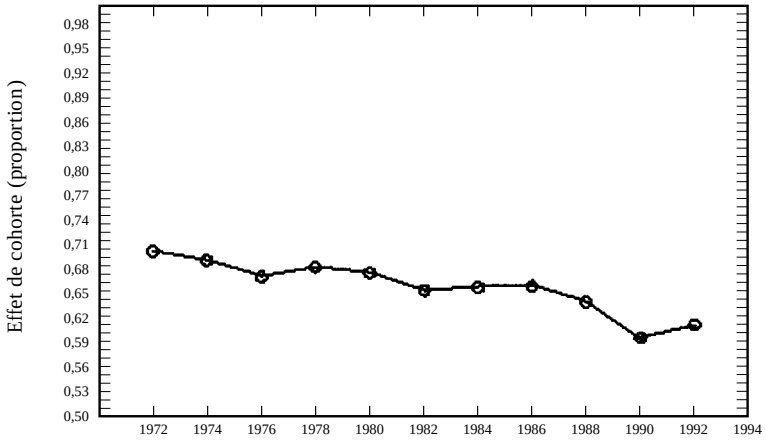


FIGURE 18d

EFFET DE COHORTE POUR LA PROPORTION DES HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE TRAVAILLANT À TEMPS PLEIN, 1972-1992

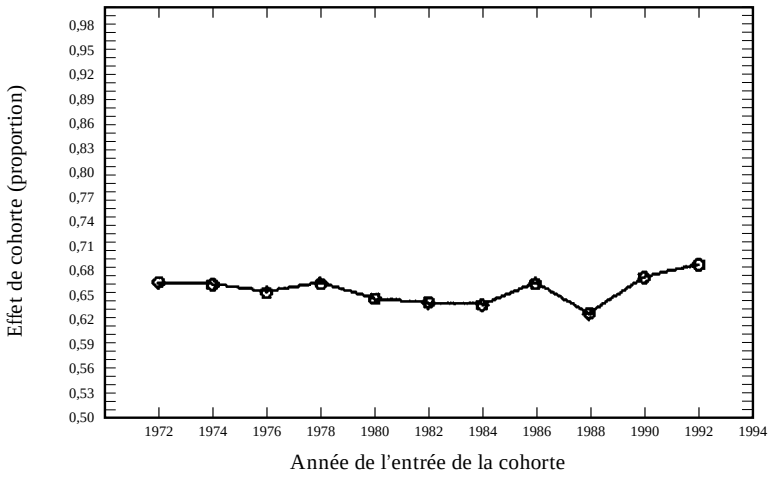


FIGURE 19a

EFFET DE COHORTE POUR LA DURÉE MOYENNE DE L'EMPLOI, FEMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1972-1992

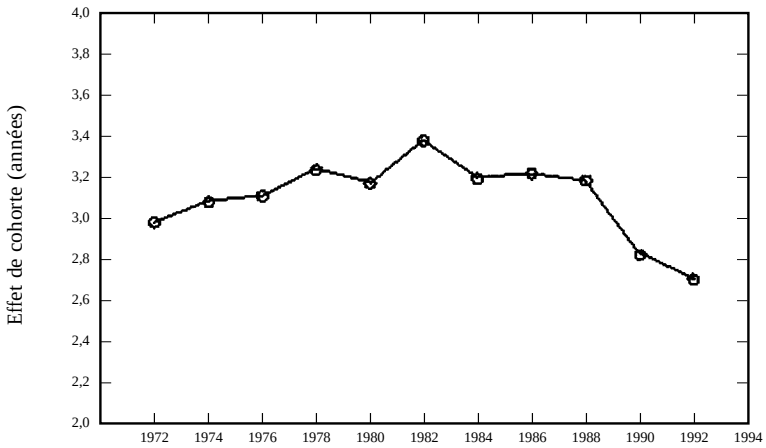


FIGURE 19b

EFFET DE COHORTE POUR LA DURÉE MOYENNE DE L'EMPLOI, FEMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1972-1992

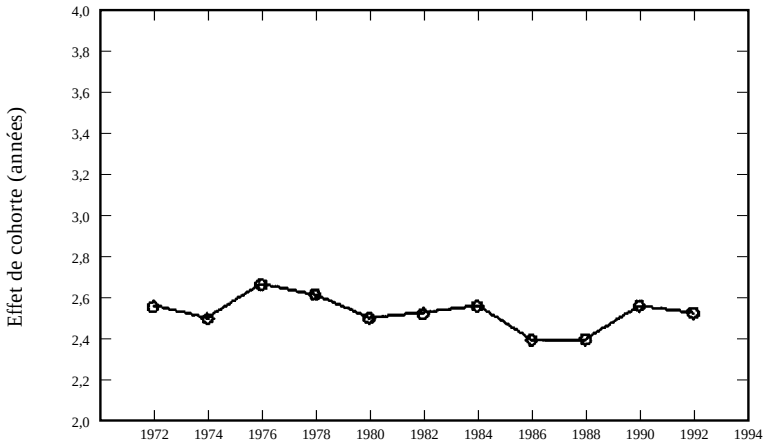


FIGURE 19c

EFFET DE COHORTE POUR LA DURÉE MOYENNE DE L'EMPLOI, HOMMES AYANT UNE SCOLARITÉ PEU ÉLEVÉE, 1972-1992

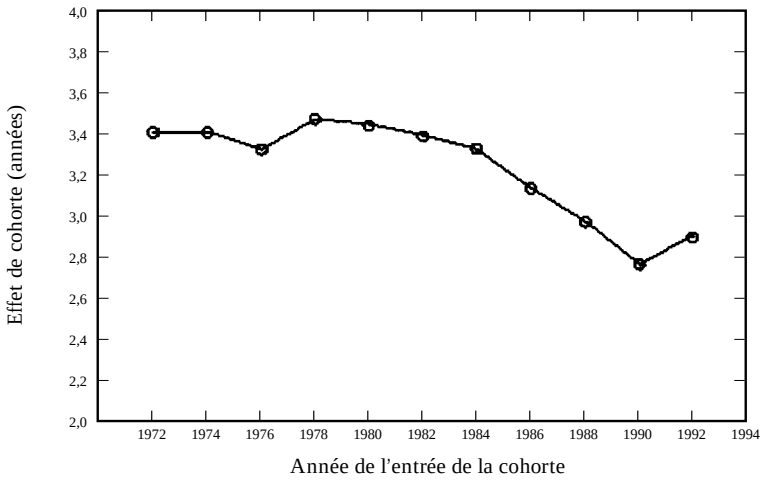
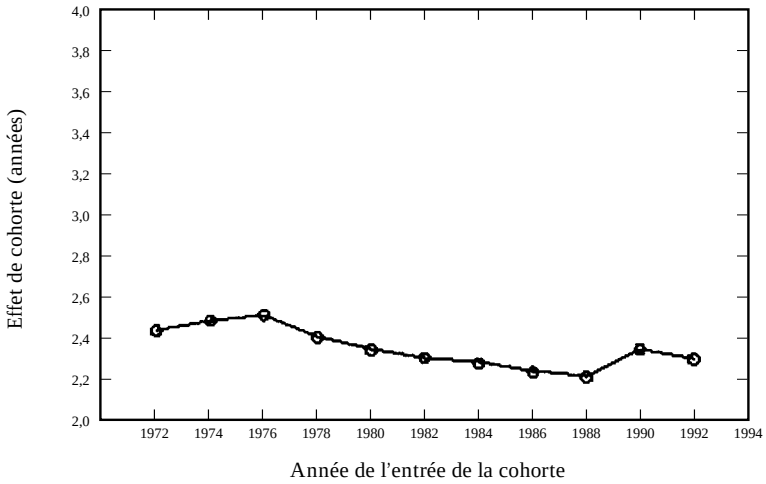


FIGURE 19d

EFFET DE COHORTE POUR LA DURÉE MOYENNE DE L'EMPLOI, HOMMES AYANT UNE SCOLARITÉ ÉLEVÉE, 1972-1992



L'identification des effets du changement technologique est, bien entendu, particulièrement difficile. Dans la plupart des études, ces effets sont interprétés comme ce qui reste après avoir isolé les causes les plus facilement mesurables (par exemple les mouvements dans la composition industrielle de l'emploi). Par conséquent, les effets du changement technologique traduisent aussi toute erreur de mesure, ainsi que les erreurs découlant d'hypothèses trop restrictives quant à la forme fonctionnelle du modèle d'estimation. Une tentative plus directe de mesurer l'incidence du changement technologique dépendra fondamentalement de la définition que l'on donne du changement technologique. Dans son sens le plus large, nous pouvons définir la technologie d'une économie de manière à ce qu'elle englobe non seulement les spécifications techniques du capital, mais également les modalités de travail, les institutions, etc. Une définition aussi vaste semble conforme au traitement de l'incidence du changement technologique comme étant le résidu de l'analyse empirique, mais elle a peu d'utilité pour l'analyste qui tente de comprendre la source de ces tendances. Les auteurs qui ont tenté de donner une définition plus étroite du changement technologique ont eu tendance à centrer leur attention sur la révolution informatique comme source de progrès au cours des années 80 et 90.

Il serait évidemment souhaitable d'avoir une explication unifiée de l'ensemble des changements récents sur le marché du travail. Les principales théories semblent raisonnables à première vue, bien qu'aucune ne nous semble fournir une explication complète de toutes, ou même de la plupart, des tendances que nous avons examinées dans le premier chapitre. Les deux interprétations les plus fréquentes que l'on retrouve dans la documentation actuelle tournent autour de l'idée que ce que nous pouvons observer est le résultat d'un déplacement de la demande et, particulièrement, un déplacement de la demande en faveur des travailleurs plus qualifiés. L'assise de cette hypothèse découle de ce que l'on appelle parfois « le test Econ 1 » : les résultats sur le plan des gains et de l'emploi se sont détériorés pour les travailleurs moins spécialisés par rapport à ceux qui le sont davantage. Dans un cadre simple de l'offre et de la demande, un tel mouvement simultané du prix et de la quantité ne peut provenir que d'un déplacement de la demande. Les deux principales explications diffèrent dans la façon dont elles isolent la cause du déplacement relatif : selon la première, il s'agit d'un changement technologique « axé sur les compétences », tandis que selon la seconde explication, le phénomène est attribuable à une concurrence accrue en provenance des pays à faibles salaires. Quelle que soit la cause sous-jacente, les résultats s'observent principalement en termes de variations de l'emploi plutôt que de la rémunération horaire. La réaction limitée des salaires est peut-être attribuable à des rigidités institutionnelles et à la façon dont l'offre de main-d'oeuvre s'ajuste, sous la forme d'une prolongation des études. En particulier, l'augmentation marquée de l'offre de travailleurs scolarisés nous aide à expliquer pourquoi il n'y a pas eu d'augmentation sensible des salaires pour ce groupe de travailleurs en réaction à des conditions favorables de la demande.

Une troisième explication possible des changements observés au cours des 25 dernières années est centrée sur l'augmentation appréciable de la participation des femmes au marché du travail. Cette autre transformation de la société peut également contribuer à expliquer les profils divergeants des résultats observés pour les deux sexes. De fait, pour le marché du travail féminin, les effets des changements au niveau de la participation à la population active semblent dominer tout effet découlant des changements dans les profils de demande liés aux compétences. L'élément dominant qui ressort dans le cas des femmes, une fois les effets cycliques neutralisés, est celui d'une intégration plutôt réussie.

QUE NOUS RÉSERVE L'AVENIR?

NOUS NOUS TOURNONS MAINTENANT vers la tâche de faire des projections sur la base des renseignements présentés dans les chapitres précédents. Nous procédons en deux étapes. Dans un premier temps, nous examinons les prédictions à court terme, c'est-à-dire sur un horizon d'environ cinq ans. Ce sont les prédictions à court terme de ce que nous estimons être les tendances dominantes du marché du travail; nous croyons que ces prédictions sont plausibles sous divers scénarios ne reposant pas trop fortement sur la cause sous-jacente réelle des changements observés. Pour faire des prédictions plus loin dans l'avenir, il faut élaborer des hypothèses au sujet des causes sous-jacentes des tendances observées et de la façon dont les gens s'y ajusteront vraisemblablement. Malheureusement, il n'y a pas de consensus sur ces causes. Par conséquent, au cours de la seconde étape de notre analyse, nous présentons deux scénarios à plus long terme, chacun étant basé sur des hypothèses différentes au sujet des facteurs fondamentaux qui déterminent l'orientation de l'économie.

PRÉDICTIONS À COURT TERME

L'UN DES THÈMES LES PLUS REMARQUABLES qui se dégage des deux chapitres précédents est l'effondrement du niveau des gains des jeunes travailleurs. Le fléchissement des gains réels moyens s'observe en particulier parmi les hommes de moins de 35 ans. La hausse de la participation des femmes et du nombre d'heures de travail durant cette période masque en partie des profils semblables parmi les femmes. Toutefois, comme nous l'avons signalé précédemment pour le groupe des personnes travaillant à temps plein durant toute l'année, nous pouvons observer la même tendance baissière des gains réels parmi les jeunes femmes. Ces baisses sont relativement continues tout au long des années 80 et semblent s'être accélérées au cours des années 90.

Afin de voir si ces gains continueront de fléchir, nous devons distinguer les résultats négatifs en apparence permanents observés pour les entrants récents sur le marché du travail, des effets plus généraux de la récession des années 90. Autrement, nous risquons de faire des prédictions trop pessimistes tout simplement parce que les observations les plus récentes que nous utilisons proviennent d'une période de récession prolongée. Dans l'analyse présentée au troisième chapitre, nous avons effectué des manipulations empiriques qui nous permettent de faire une telle distinction pour les travailleurs âgés de 25 à 38 ans. Dans ce chapitre, nous faisions valoir que ce groupe était intéressant parce qu'il représentait une période d'importance critique dans le cycle de vie, soit celui où les gens font la transition vers une vie professionnelle stable à long terme. Si les membres de ce groupe obtiennent de mauvais résultats, les prédictions au sujet des nouveaux entrants sur le marché du travail seront effectivement pessimistes. Nous observons un déclin continu des gains pour les cohortes successives d'hommes sur le marché du travail au cours des 15 dernières années,

même après avoir neutralisé les changements liés au cycle économique et les mouvements habituellement observés dans le cheminement naturel des gains sur le cycle de vie. Parmi les femmes, les effets de cohorte estimés à l'aide des données sur les gains moyens, qui englobent des valeurs nulles pour les personnes sans travail, montrent une tendance en sens opposé : une augmentation persistante. Lorsque nous centrons notre attention uniquement sur les personnes travaillant à temps plein durant toute l'année, toutefois, les femmes font également voir un repli continu des niveaux de gains spécifiques à chaque cohorte avec le temps.

On pourrait prédire, ou espérer, que ces profils passablement négatifs ne s'appliquent qu'aux travailleurs les moins scolarisés. De fait, le fléchissement touche autant les hommes plus scolarisés que ceux qui le sont moins; la seule différence observée est que la tendance semble s'accélérer pour ce dernier groupe, tandis que le premier enregistre un léger déclin continu. Pour les femmes travaillant à temps plein toute l'année, la diminution est plus rapide parmi celles qui sont plus scolarisées. Cette situation traduit le fait qu'au Canada (contrairement aux États-Unis), il n'y a pas eu de hausse substantielle des rendements sur l'éducation au cours des 15 dernières années.

Comment pourrions-nous projeter ces tendances dans l'avenir? Notamment dans le cas des travailleurs moins scolarisés, rien n'indique à la lecture de ces données que les tendances des gains ralentiront. Comme nous l'avons déjà mentionné, ces tendances semblent plutôt s'accélérer. Pour les travailleurs plus scolarisés, il y a quelques indications montrant que le déclin pourrait avoir ralenti parmi les cohortes plus récemment entrées sur le marché du travail, mais cela pourrait n'être qu'une lecture optimiste de nos graphiques qui ne repose certainement pas sur une solide base statistique. Il semblerait raisonnable de prédire que les gains réels continueront de fléchir pour les jeunes travailleurs à court terme. Le fait d'avoir une scolarité plus élevée pourrait ralentir légèrement le déclin. À noter que nous analysons ici des effets de cohorte, c'est-à-dire les gains moyens à long terme d'un groupe de travailleurs entrant sur le marché du travail adulte au même moment. Si les mauvaises conditions actuelles du marché du travail persistent, les baisses prévues pour les cohortes futures seront amplifiées par les effets négatifs qui touchent l'ensemble des travailleurs. Si le marché du travail au Canada parvient à sortir de sa léthargie, les nouveaux entrants pourront, de façon générale, obtenir des gains plus élevés que leurs homologues du début des années 90, mais ils auront des gains inférieurs à ceux des cohortes qui sont entrées à un point équivalent du cycle économique. Enfin, nous n'avons trouvé aucune preuve indiquant que la diminution des gains à l'entrée des nouvelles cohortes sera compensée par une croissance plus rapide des gains au cours de la première étape de la carrière. Au contraire, nous constatons que les nouvelles cohortes sont pénalisées tant pour ce qui est du niveau initial des gains que par la croissance plus lente des gains subséquemment.

La forte baisse des niveaux de gains observée pour l'ensemble des cohortes nous incite à nous demander s'il y a eu un effondrement général du marché du travail pour les jeunes travailleurs, qui se manifeste dans les résultats d'emploi et dans les relations d'emploi, tout autant que dans les gains. Selon notre interprétation, la notion populaire veut que l'économie canadienne soit actuellement aux prises avec un changement de paradigme qui touche les relations d'emploi. Celui-ci prendrait supposément la forme d'un déplacement vers les emplois à plus court terme et à temps partiel, et d'une incidence plus grande de l'emploi autonome. Nos données n'ont pas fait ressortir de preuve appuyant un déplacement général de cette nature. Si un tel déplacement s'était produit, il devrait ressortir de l'analyse du taux d'emploi, de la durée d'emploi et de la proportion des travailleurs employés à temps plein durant toute l'année dans notre analyse par cohorte présentée au troisième chapitre. En outre, pour être en mesure d'affirmer que quelque chose d'aussi fondamental qu'un changement de paradigme se soit produit, il faudrait, selon nous, observer des changements importants dans l'ensemble des catégories de travailleurs. Pour les hommes moins scolarisés, on observe effectivement des tendances sensiblement négatives dans les effets de cohorte estimés à l'aide du taux d'emploi, de la durée d'emploi et de la proportion des travailleurs employées à temps plein toute l'année. Cela indique que les hommes moins scolarisés qui sont entrés plus récemment sur le marché du travail peuvent s'attendre à moins bien faire sur ces dimensions, à long terme, que ceux qui sont entrés sur le marché du travail adulte au cours des années 70 ou des années 80. Cependant, il n'y a aucune preuve d'une tendance fortement négative de ces indicateurs pour les hommes plus scolarisés et nous observons des tendances positives durables pour plusieurs de ces mesures parmi les femmes. Nous ne pouvons nier la piètre performance des jeunes travailleurs sur le plan de l'emploi au cours des années 90. L'avantage de notre analyse réside dans le fait qu'elle permet d'évaluer si ces difficultés découlent de problèmes généraux liés à un ralentissement de l'activité économique, au taux de roulement élevé que l'on observe naturellement parmi les jeunes travailleurs, ou encore à des effets négatifs plus permanents qui touchent les entrants plus récents. Selon notre évaluation, mis à part le cas des hommes moins scolarisés, la mauvaise performance observée récemment n'est pas le signe d'une détérioration permanente des conditions pour les nouveaux entrants sur le plan de l'employabilité et de la stabilité d'emploi. Par conséquent, notre seconde prédiction à court terme est que nous n'entrevoyons pas un changement de paradigme dans la nature des relations sur le marché du travail. À noter que pour les hommes, la conséquence de notre analyse est qu'il y a une augmentation importante du rendement tiré d'une éducation supérieure au Canada; cependant, ce rendement accru se manifeste non sous la forme de gains mais de meilleures chances de trouver un emploi stable.

À la lumière des tendances qui semblent marquer les nouvelles cohortes (c'est-à-dire des perspectives de gains réduites pour l'ensemble des travailleurs et de moins bonnes possibilités d'emploi traditionnel pour les hommes moins

scolarisés), comment peut-on s'attendre à ce que les jeunes se comportent? D'abord, nous croyons évidemment que les hausses récentes des taux de fréquentation des établissements d'enseignement se maintiendront. Dans le passé, les taux d'inscription ont affiché un effet de cliquet, c'est-à-dire que l'on a pu observer des hausses importantes de façon intermittente, suivies de périodes de lente croissance ou de stabilité relative, mais jamais de diminution. Ce mouvement à sens unique évoque un processus dans lequel la hausse de la fréquentation scolaire « fait monter les enchères » sur le marché du travail, de sorte que toutes les générations futures sont forcées d'atteindre ce nouveau niveau plus élevé. Il n'y a aucune raison de penser que l'augmentation récente des taux de fréquentation scolaire aura une issue différente; et, compte tenu des prédictions que nous avons faites pour les autres tendances du marché du travail qui concernent les personnes moins scolarisées, tout porte à croire que cette tendance à la hausse de la scolarisation se poursuivra. Par conséquent, nous prévoyons des pressions continues dans le sens d'une expansion de l'enseignement postsecondaire et, tout spécialement, en vue du maintien de l'accessibilité aux établissements d'enseignement supérieur compte tenu des ressources plus limitées des nouvelles cohortes. Deuxièmement, le report de la formation des familles se prolongera pour un important segment de la population plus jeune en raison d'une capacité de gains réduite. Troisièmement, les piètres perspectives du marché du travail pour les jeunes hommes moins scolarisés limiteront vraisemblablement leur intégration sociale, ce qui pourrait avoir des effets secondaires négatifs importants tels qu'une augmentation des taux de criminalité et du nombre de sans-abri parmi ce segment de la population. La situation de moins en moins favorable qui s'offre à ce groupe, s'ajoutant à une polarisation continue des gains et de l'emploi, engendrera vraisemblablement des tensions sociales accrues entre les générations et au sein des générations plus jeunes dans un avenir rapproché.

PRÉDICTIONS À PLUS LONG TERME

POUR FAIRE DES PRÉDICTIONS À PLUS LONG TERME, il serait évidemment souhaitable de disposer d'une explication unifiée des changements récemment observés sur le marché du travail. Trois grandes théories nous semblent raisonnables, bien qu'aucune ne paraisse pouvoir fournir une explication complète de toutes les tendances examinées dans les deuxième et troisième chapitres. Les deux interprétations les plus fréquentes tournent autour de l'idée que nous observons un déplacement de la demande de travail et, en particulier, un déplacement de la demande qui favorise les travailleurs plus spécialisés. Le fondement de cette hypothèse provient d'une interprétation très simple fondée sur le modèle de l'offre et de la demande. Étant donné que les résultats observés sur le plan des gains et de l'emploi se sont détériorés pour les travailleurs moins qualifiés par rapport à ceux qui le sont davantage, le modèle de l'offre et de la demande nous incite à expliquer un tel mouvement simultané comme étant le

résultat d'un déplacement de la demande. Les deux principales causes offertes pour expliquer ce déplacement de la demande sont 1) un changement technologique favorable axé sur les compétences et 2) la mondialisation accrue des marchés et, en particulier, la concurrence plus vive provenant des pays à faibles salaires.

Une troisième explication possible des changements observés au cours des 25 dernières années est centrée sur l'augmentation marquée de la participation des femmes au marché du travail, conjugué au passage de la génération du boum des naissances à travers la structure d'âge. Cette explication des changements observés se fonde sur l'augmentation de l'offre de travail et ses répercussions dans un contexte d'équilibre général. L'attrait de cette explication est qu'elle peut offrir une base unifiée pour faciliter la compréhension des profils extrêmement divergents des résultats observés pour les deux sexes. De fait, pour ce qui est du marché du travail des femmes, les effets des changements observés au niveau de la participation semblent surpasser tout effet découlant des changements de la demande qui seraient liés aux compétences. Le profil dominant qui ressort dans le cas des femmes, après avoir neutralisé les effets cycliques, est celui d'une intégration passablement réussie.

Lequel de ces scénarios semble le plus fidèle à la réalité? À notre avis, les données canadiennes fournissent peu d'indications à l'appui de l'explication axée sur le changement technologique favorable aux compétences. Les études qui ont misé sur cette explication prédisent qu'il devrait y avoir une augmentation des rendements mesurés en termes de gains liés aux compétences de toutes sortes : la formation scolaire, les compétences acquises par l'expérience et les compétences que l'on ne peut observer dans un ensemble de données classiques. Nous n'avons trouvé aucune preuve d'une augmentation des écarts de gains dans le temps entre les groupes définis selon la scolarité. Bien que nous ayons observé un certain creusement des écarts de gains entre les groupes d'âge très largement définis (par exemple entre les travailleurs de plus de 35 ans et les travailleurs plus jeunes), lorsque nous suivons le cheminement d'une cohorte particulière, nous ne trouvons aucune preuve d'un accroissement du rendement par rapport à l'expérience. Encore une fois, cela traduit l'avantage de notre modèle empirique axé sur une différenciation des effets propres à la cohorte, à la génération et à l'ancienneté. Il est vrai que l'on observe des écarts plus importants entre les jeunes travailleurs et les travailleurs plus âgés à des moments particuliers, mais cet accroissement est attribuable à la diminution des effets de cohorte et non à une accentuation des profils propres à l'âge. Pour que le changement technologique axé sur les compétences puisse expliquer les tendances que nous observons, il faudrait pouvoir soutenir que les nouvelles technologies favorisent les travailleurs qui sont entrés sur le marché du travail adulte au début des années 80, et que les nouveaux entrants ne peuvent atteindre ce statut plus privilégié à mesure qu'ils acquièrent de l'expérience. Ce n'est manifestement pas ce que veut dire le changement technologique axé sur les compétences tel qu'il ressort des travaux publiés sur cette question. En outre, le

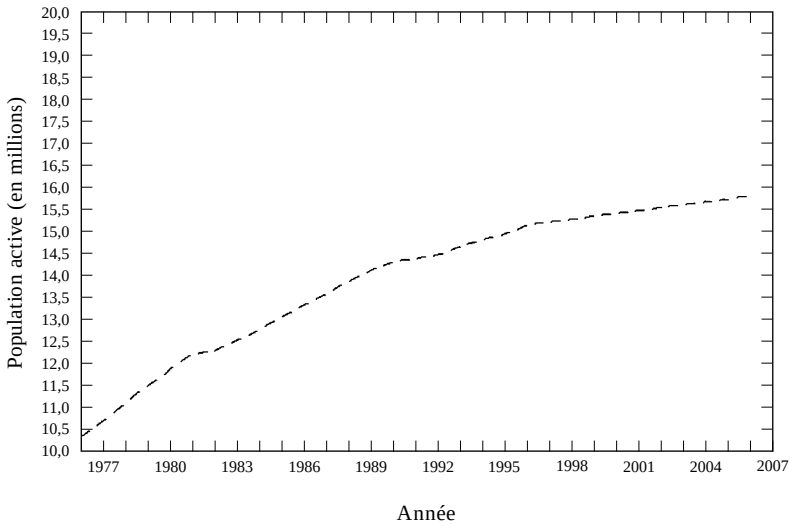
changement technique est souvent attribué à l'impact de la révolution informatique. Il semble particulièrement difficile de prétendre que les cohortes plus âgées ont un avantage sur les nouvelles cohortes quant à leur capacité de s'adapter à la technologie informatique et de l'utiliser. Enfin, le moment auquel les tendances de l'inégalité et les changements dans la structure des gains apparaissent dans nos estimations est le début des années 80. Encore une fois, cela semble mal coïncider avec la révolution informatique[7]. Par conséquent, nous avons choisi d'écarter cette explication pour concentrer notre attention sur la comparaison des prédictions qui découlent des deux autres explications.

Si nous interprétons les changements récents comme étant principalement le résultat d'une concurrence internationale accrue sur les marchés tant du capital que de la main-d'oeuvre, il semble raisonnable de prédire que les tendances définies dans le second et le troisième chapitre se poursuivront et, peut-être, iront en s'accélérant – principalement parce que la mondialisation ne donne aucun signe d'essoufflement pour les 10 à 15 prochaines années. L'ouverture de la Chine et la reconstruction de l'Europe de l'Est sont, en soi, des événements suffisamment importants pour faire en sorte qu'il en soit ainsi. Dans ce cas, nos prédictions à plus long terme sont très semblables à celles que nous avons examinées pour le court terme. La concurrence actuelle provenant de la main-d'oeuvre étrangère peu qualifiée continuera d'assombrir les perspectives des jeunes travailleurs canadiens peu qualifiés, ce qui se traduira par une détérioration continue des gains réels pour ce groupe et une détérioration des possibilités d'emploi pour l'ensemble des travailleurs les moins qualifiés. Encore une fois, nous entrevoyons une forte demande pour les services d'éducation post-secondaire parce que c'est la seule façon dont les jeunes peuvent espérer freiner la détérioration relative de leur situation. Le résultat net sera une polarisation accrue des gains et du revenu total alors que les rendements sur le capital et, plus particulièrement, sur la propriété des entreprises seront poussés à la hausse sous la pression de la concurrence internationale. Cette polarisation engendrera vraisemblablement des tensions considérables entre les générations et les classes sociales et imposera de nouvelles demandes sur le système de redistribution canadien. Bref, dans ce scénario, le Canada se retrouvera probablement avec une répartition du revenu qui ressemble davantage à celle des États-Unis au cours des 10 à 15 prochaines années.

Le second scénario identifie un autre déterminant majeur des tendances observées au niveau des gains et l'emploi au cours des 15 dernières années : la forte augmentation de la population active engendrée par l'arrivée de la génération du boum des naissances à l'âge où l'on peut travailler et la forte hausse du taux de participation des femmes. L'expansion de la population active pourrait avoir eu des effets d'équilibre général engendrant une demande accrue de main-d'oeuvre et rendant possible la forte tendance à la hausse observée dans les taux d'emploi des femmes. Simultanément, les nouveaux entrants sont plus directement en concurrence avec les hommes peu qualifiés et pourraient expliquer la performance relativement mauvaise de ce groupe, jouant le même rôle que celui

FIGURE 20

POPULATION ACTIVE ÂGÉE DE 15 À 64 ANS, 1976-2006



attribué à la concurrence venant de la main-d'oeuvre étrangère peu spécialisée de notre premier scénario. Il est à noter que, de façon générale, une explication qui s'appuie sur l'offre telle que celle-ci est rejetée dans les travaux actuels parce que nous observons à la fois une diminution des gains et de l'emploi. Bien que cela soit vrai dans le cas des hommes peu qualifiés, nous observons, pour les femmes peu qualifiées, une tendance à la baisse des gains mais à la hausse de l'emploi. Il faut également signaler que les hommes et les femmes plus scolarisés au Canada enregistrent aussi une diminution des gains au fil des cohortes successives, parallèlement à des conditions d'emploi stables ou en hausse. Ce résultat concorde avec un choc du côté de l'offre qui varie selon la cohorte d'entrée. De fait, dans l'interprétation la plus généreuse de nos estimations, la diminution des niveaux de gains parmi les hommes scolarisés a cessé pour les trois cohortes d'entrée les plus récentes, qui coïncident avec les cohortes scolarisées pour lesquelles la tendance à la hausse de l'emploi s'est interrompue. Par contre, les taux d'emploi parmi les femmes non qualifiées demeurent en hausse pour l'ensemble des cohortes d'entrée récentes, et les gains des hommes non qualifiés continuent de baisser pour les cohortes récentes. Tous ces résultats concordent avec ceux présentés par Fortin et Lemieux (1996) pour les États-Unis; ces auteurs signalent que l'inégalité croissante des gains est apparente sur le marché du travail masculin, mais si l'on combine les résultats obtenus par les

hommes et les femmes, la tendance à une plus grande inégalité, qui a retenu tant l'attention, n'est pas aussi évidente.

Bien que ce second scénario partage avec le premier l'hypothèse selon laquelle la forte augmentation de la concurrence sur le marché de la main-d'oeuvre non spécialisée est à l'origine des piètres résultats enregistrés par les hommes non spécialisés, il y a une différence essentielle quant au niveau d'optimisme associé aux prédictions qui découlent de chaque scénario. Les prédictions qui ressortent du premier scénario sont pessimistes parce qu'il n'y a aucune raison de penser que la concurrence en provenance de l'étranger diminuera. Par contre, nous voyons des signes que la tendance à la hausse de la participation des femmes ralentit ou se stabilise. En particulier, les taux de participation parmi les jeunes femmes sont déjà très près de ceux des hommes et, par conséquent, il est peu probable qu'ils continueront d'augmenter sensiblement. Si cela s'avère, nous prévoyons que les gains des nouvelles cohortes cesseront de reculer par rapport à ceux des cohortes plus âgées et que les perspectives d'emploi des jeunes hommes moins scolarisés pourraient s'améliorer. Ce déplacement pourrait lui-même indiquer un ralentissement de la hausse des taux d'inscription à l'école et du report de la formation des familles. Cependant, nous ne prévoyons pas un revirement absolu de cette situation et une reprise des gains des nouveaux entrants jusqu'aux niveaux enregistrés par les cohortes entrées sur le marché du travail au début des années 70 et 80. La société doit donc s'ajuster à une situation caractérisée par une plus grande inégalité, un report de la formation des familles et des taux d'inscription scolaires plus élevés que durant les années 70 et au début des années 80 – même si un bon nombre des mesures actuelles de redistribution et des institutions du marché du travail ont été mises en place à une époque où les conditions étaient passablement différentes. Quoi qu'il en soit, un tel défi semble beaucoup plus facile à affronter que celui d'une polarisation sans cesse croissante.

La vérité réside probablement dans une combinaison de ces deux scénarios. Les travailleurs canadiens continueront de subir la concurrence provenant de la main-d'oeuvre étrangère peu spécialisée, mais les sources nationales d'augmentation de l'offre se tariront. Si cela est vrai, alors (dans la mesure où la concurrence étrangère demeure centrée sur le marché du travail peu qualifié), les résultats sur le plan de l'emploi et des gains pour les hommes et les femmes plus scolarisés seront plus favorables, ou à tout le moins non moins favorables, que ceux que nous avons observés durant les années 90. Les hommes moins scolarisés et, peut-être, les femmes moins scolarisées, continueront de subir une détérioration de leur position respective. Il pourrait en résulter une polarisation continue des groupes définis selon la scolarité et une hausse persistante de la demande pour les services d'éducation.

CONCLUSION

DANS NOTRE ANALYSE DU MARCHÉ DU TRAVAIL, nous avons tenté de présenter une synthèse utile des tendances passées et une analyse de la façon dont nous pourrions projeter ces tendances pour la prochaine décennie ou plus loin. Nous avons décelé cinq caractéristiques déterminantes des changements survenus sur le marché du travail au cours des 15 dernières années.

- Premièrement, il y a eu une diminution prononcée et persistante du potentiel de gains pour pratiquement toutes les catégories de travailleurs. Ces tendances sont masquées par les hausses de l'emploi et du nombre d'heures travaillées parmi les femmes; mais lorsque nous centrons notre attention sur les personnes travaillant à temps plein toute l'année, la baisse est évidente également pour les femmes. Il n'y a par ailleurs aucune preuve d'une forte hausse du rendement obtenu sur la scolarité comme celle qui ressort des données américaines pour cette période.
- Deuxièmement, les baisses observées sont en partie attribuables aux mauvaises conditions du marché du travail au début des années 90, mais elles traduisent aussi le déclin relatif des perspectives à plus long terme pour les entrants récents sur le marché du travail. Dans les années 90, les nouveaux entrants doivent s'attendre à ce que le niveau de leurs gains réels sur l'ensemble du cycle de vie soit inférieur de 20 à 30 p. 100 à celui des personnes qui sont entrées sur le marché du travail adulte (c'est-à-dire le groupe des personnes de plus de 25 ans) dans les années 70.
- Troisièmement, jusqu'en 1989, on a pu observer une augmentation prolongée des taux de participation et d'emploi des femmes de plus de 25 ans, mais ces tendances se sont stabilisées durant les années 90.
- Quatrièmement, les résultats obtenus par les hommes sur le marché de l'emploi diffèrent sensiblement selon le niveau de scolarité : pour les moins scolarisés, les taux d'emploi, la durée moyenne d'un emploi et la proportion des personnes travaillant à temps plein durant toute l'année chutent d'une cohorte d'entrée à l'autre, mais dans le cas des plus scolarisés, la tendance est stationnaire. Compte tenu de l'absence d'un mouvement généralisé vers des modalités de travail plus instables pour l'ensemble des groupes définis selon l'âge, la scolarité et le sexe, nous jugeons exagérées les affirmations voulant qu'il y ait eu, ou qu'il y aura bientôt, un changement de paradigme sur le marché du travail.
- Cinquièmement, peut-être en réaction à certains des changements signalés précédemment, on a observé une augmentation très importante des taux d'inscription à l'école parmi les jeunes ainsi qu'un report

de la formation des familles. Dans l'ensemble, il se dégage un tableau fort hétérogène des 15 dernières années. Les jeunes ont vu leurs gains réels diminuer. En outre, les jeunes hommes ont dû composer avec de fortes tendances négatives au niveau de l'emploi. Une scolarité plus élevée a aidé les jeunes hommes à éviter les effets de cette situation négative de l'emploi mais n'a pas ralenti la tendance à la baisse des gains réels dans leur cas. Du côté des femmes, le tableau est dominé par l'intégration réussie d'importants nouveaux contingents au sein de la population active.

Afin de faire des prévisions, nous avons départagé notre analyse entre le court terme et le long terme. À court terme, nous entrevoyons une poursuite de la tendance négative des gains pour l'ensemble des jeunes travailleurs et de celle de l'emploi pour les hommes les moins qualifiés. La hausse des niveaux d'inscription dans les établissements d'enseignement se poursuivra aussi probablement. Par ailleurs, la longue montée des taux de participation et d'emploi des femmes semble s'être stabilisée, en particulier pour les femmes les plus scolarisées. À plus long terme, il est nécessaire d'expliquer les causes sous-jacentes des tendances actuelles et la façon dont ces causes pourront elles-mêmes changer si l'on veut que les prédictions soient utiles. À cette fin, nous avons examiné deux grandes théories. Selon la première, la concurrence accrue provenant de la main-d'oeuvre étrangère non spécialisée est à l'origine des tendances observées, en particulier la tendance négative pour les hommes non qualifiés. Si ce scénario s'avère exact, nous prévoyons une poursuite des tendances que nous avons projetées à court terme, parce qu'il n'y a aucune raison de penser que la concurrence en provenance de l'étranger ira en s'atténuant. Le second scénario attribue les tendances observées à la forte expansion de la population active, elle-même engendrée par le vieillissement de la génération du boum des naissances et l'augmentation des taux de participation des femmes au cours des 15 dernières années. Si ce scénario est exact, bon nombre des tendances observées pourraient aller en s'atténuant ou même disparaître puisque l'entrée des membres de la génération du boum des naissances dans la population active est terminée et que, selon nous, le taux de participation des femmes a peut-être atteint un plateau. Avec une concurrence moins vive de la part des nouveaux entrants sur le marché du travail, la baisse importante des gains et des perspectives d'emploi des hommes non qualifiés pourrait cesser. Nous considérons ce scénario plus optimiste. La vérité se situe probablement entre les deux, la main-d'oeuvre non spécialisée au Canada continuant de subir les effets de la concurrence attribuable à l'étranger mais n'ayant plus à subir la concurrence découlant de l'expansion de l'offre de main-d'oeuvre provenant des sources nationales.

NOTES

1 Les figures 1 à 3 sont fondées sur des données tirées de CANSIM.

2 La variance du nombre d'heures réellement travaillées par semaine a diminué chez les femmes, ce qui vient du fait qu'un plus grand nombre de travailleurs à temps partiel ont travaillé un plus grand nombre d'heures.

3 La composition de la clientèle universitaire selon le sexe a également changé. En 1994, les classes de diplômés se composaient de quatre femmes pour trois hommes (voir *Education Quarterly Review*, printemps 1996).

4 Nos calculs des taux d'inactivité sont tirés des données de l'Enquête sur les finances des consommateurs.

5 Pour des travaux connexes sur les cohortes correspondant à l'âge de 25 à 34 ans, voir Susan Crompton, « Employment Prospects for High School Graduates », *Education Quarterly Review*, vol. 3, n° 1, printemps 1996.

6 Plus précisément, nous avons modifié la spécification précédente pour y ajouter un coefficient d'interaction entre l'âge et la cohorte afin de permettre à la pente du rapport âge-gains de changer de façon linéaire avec le temps. Afin d'estimer cet effet aussi exactement que possible, nous avons également limité les effets liés au niveau de la cohorte à une forme quadratique.

7 Dans son sens le plus général, la technologie d'une économie peut être définie de manière à englober non seulement les spécifications techniques du capital physique, mais également les modalités de travail, les institutions, etc. Une définition aussi étendue concorde avec la pratique empirique actuelle qui consiste à traiter les effets du changement technologique comme le résidu obtenu après avoir déterminé les autres effets mesurables, mais cela n'a que peu d'utilité pour l'analyste qui cherche à comprendre la source des tendances observées. Avec une vision aussi large de la technologie, il est toujours possible de définir le changement technologique de manière à ce qu'il concorde avec les données observées. Nous centrons notre attention sur ce que nous considérons comme une définition plus étroite du changement technique, utilisée principalement dans les travaux de recherche : un changement peut-être lié à la révolution informatique, complémentaire à la main-d'oeuvre spécialisée et pouvant être substitutée à la main-d'oeuvre non spécialisée.

BIBLIOGRAPHIE

Bar-Or, Y., J. Burbidge, L. Magee et L. Robb, « The Wage Premium to a University Education in Canada, 1971-1991 », *Journal of Labor Economics*, vol. 13, nº 4, 1995, p. 762-794.

Betcherman, G. et R. Morissette, *Expériences récentes des jeunes sur le marché du travail au Canada*, Direction des études analytiques, Statistique Canada, Document de recherche nº 63, 1994.

Butlin, G., « Adult Women's Participation Rate at a Standstill », *L'emploi et le revenu en perspective*, Statistique Canada, Ottawa, automne 1995, p. 30-33.

Card, D. et T. Lemieux, « Multiple Modes of Adjustment: A Comparative Study of Youth in the U.S. and Canada, 1970-1995 », document reprographié, 1996.

Crompton, S., « La renaissance du travail autonome », *L'emploi et le revenu en perspective*, Statistique Canada, Ottawa, été 1993, p. 22-32.

Fortin, N. et T. Lemieux, « Rank Regressions, Wage Distributions, and the Gender Gap », Centre de recherche et développement en économique (CRDE), Université de Montréal, document de travail nº 1096, 1996.

Green, D. A. et W. C. Riddell, « Job Durations in Canada: Is Long Term Employment Declining? », Centre for Research on Economic and Social Policy, Université de la Colombie-Britannique, document de discussion DP-40, 1996.

Kaliski, S. F., « Trends, Changes and Imbalances: A Survey of the Canadian Labour Market », dans *Work and Pay: The Canadian Labour Market*, publié sous la direction de W. C. Riddell, University of Toronto Press, Toronto, 1985, p. 77-140.

Krahn, H., « Non-standard Work on the Rise », *L'emploi et le revenu en perspective*, Statistique Canada, Ottawa, hiver 1995, p. 35-42.

Kuhn, P. et L. Robb, « Unemployment, Skill and Labor Supply: Evidence from Canadian Microdata, 1971-1991 », document reprographié, 1995.

Morissette, R., J. Myles et G. Picot, *L'inégalité des gains au Canada : le point sur la situation*, Direction des études analytiques, Statistique Canada, document de recherche nº 60, 1993.

____, « Earnings Polarization in Canada: 1969-1991 », dans *Labour Market Polarization and Social Policy Reform*, publié sous la direction de K. Banting et C. Beach, 1996.

Morissette, R. et D. Sunter, *Heures de travail hebdomadaire au Canada : le point sur la situation?*, Direction des études analytiques, Statistique Canada, document de recherche nº 65, 1994.

Morissette, R., *Pourquoi l'inégalité des gains hebdomadaires a-t-elle augmenté au Canada?*, Direction des études analytiques, Statistique Canada, document de recherche nº 80, 1995.

Morissette, R. et C. Bérubé, *Aspects longitudinaux de l'inégalité des revenus au Canada*, Direction des études analytiques, Statistique Canada, document de recherche nº 94, 1996.

Richardson, D., *Changes in the Distribution of Wages in Canada, 1981-1992*, Université de la Colombie-Britannique, document de travail nº 94-22, 1994.

Riddell, W. C., « Work and Pay: The Canadian Labour Market: An Overview », dans *Work and Pay: The Canadian Labour Market*, publié sous la direction de W. C. Riddell, University of Toronto Press, Toronto, 1985, p. 1-75.

____, « Human Capital Formation in Canada: Recent Developments and Policy Responses », dans *Labor Market Polarization and Social Policy Reform*, publié sous la

direction de Keith G. Banting et Charles Beach, School of Policy Studies, Université Queen's, Kingston, 1995.

____, « Sectoral Structural Change and the State of the Labour Market in Canada », Département d'économique, Université de la Colombie-Britannique, document reprographié, 1996.

Publications de recherche d'Industrie Canada

COLLECTION DOCUMENTS DE TRAVAIL

N° 1 L'intégration économique de l'Amérique du Nord : les tendances de l'investissement étranger direct et les 1 000 entreprises les plus grandes, Industrie Canada, personnel de la Direction de l'analyse de la politique micro-économique, notamment John Knubley, Marc Legault et P. Someshwar Rao, 1994.

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Obstacles officiels et officieux à l'investissement dans les pays du G-7 : résumé et conclusions, Industrie Canada, personnel de la Direction de l'analyse de la politique micro-économique, notamment Ashfaq Ahmad, Colleen Barnes et John Knubley, 1994.

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LE CANADA AU 21e SIÈCLE

II. RESSOURCES ET TECHNOLOGIE

INVESTISSEMENT : LES DÉFIS À RELEVER AU CANADA

Document no 5
Novembre 1998

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II. RESSOURCES ET TECHNOLOGIE

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Par Ronald P.M. Giammarino
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PRÉFACE

À L'APPROCHE DU NOUVEAU MILLÉNAIRE, les Canadiens assistent à une transformation radicale des paramètres de l'économie. La tendance à la mondialisation des marchés et à l'intégration de plus en plus poussée de l'activité économique entre les nations s'accentue. Les progrès spectaculaires de l'informatique et des communications facilitent ce mouvement de mondialisation et changent fondamentalement le milieu de travail et le mode de vie des Canadiens. Du même coup, et comme conséquence première de la révolution de l'information, les activités axées sur le savoir occupent une place sans cesse plus grande dans notre économie et celle des autres pays industrialisés.

Cette mutation fondamentale de l'économie nous incite à faire une comparaison avec la révolution industrielle du 19e siècle. Comme à cette époque, les grands changements structurels engendrent des incertitudes. Les entreprises et les travailleurs luttent pour se tailler une place dans ce nouvel ordre économique. Les Canadiens se demandent si les ressources matérielles, humaines et institutionnelles de leur pays constituent une assise suffisamment solide pour garantir leur prospérité future. Beaucoup estiment que les perspectives qui s'offrent au Canada sont beaucoup moins sûres qu'à l'époque où les richesses naturelles jouaient un rôle clé dans l'édification de l'économie du pays.

Afin d'explorer plus à fond les possibilités et les défis que laissent entrevoir ces développements à moyen et à long terme, la Direction de l'analyse de la politique micro-économique d'Industrie Canada a invité un groupe de spécialistes à présenter leur « vision » du Canada au 21e siècle dans un certain nombre de domaines importants. Chaque auteur devait s'attaquer à deux tâches redoutables : d'abord dégager les grandes tendances historiques en vue d'élaborer des scénarios illustrant comment les choses évolueront vraisemblablement au cours des dix à quinze prochaines années dans le domaine qui lui avait été assigné, puis examiner les conséquences à moyen terme de cette évolution pour l'économie canadienne.

Les essais qui découlent de cet exercice sont en voie de publication sous le thème général « Le Canada au 21e siècle ». La collection englobe onze documents traitant des perspectives qui s'offrent au Canada à moyen terme dans différents domaines. Ces documents sont répartis en trois volets. Le premier, *Mise en situation*, est consacré aux tendances fondamentales qui façonneront le contexte économique à moyen terme au Canada. Le second volet, *Ressources et technologie*, traite de l'évolution de certains facteurs importants sur le plan de la création de la richesse au Canada, ainsi que des mesures requises pour leur donner un solide fondement en vue d'assurer la prospérité du pays. Le troisième et dernier volet, *Relever le défi*, scrute les réactions des particuliers, des entreprises et des gouvernements aux défis qui se présenteront à moyen terme et propose certains éléments de solution en vue d'orienter le pays sur la bonne voie.

S'inscrivant dans le volet *Ressources et technologie*, cette étude du professeur Ronald Giammarino, de l'Université de la Colombie-Britannique,

relève diverses observations qui montrent que le Canada est aux prises avec un problème d'investissement. La performance relativement médiocre de la productivité, les faibles niveaux d'investissement en R-D et le développement laborieux des industries de haute technologie au Canada par rapport à de nombreux autres pays de l'OCDE sont autant d'indices que des lacunes du marché pourraient gêner l'investissement. Afin d'instaurer un climat plus propice à l'investissement, nous devons lever un certain nombre de contraintes. L'auteur affirme que le Canada doit surmonter certains obstacles s'il veut améliorer le climat d'investissement. Premièrement, il importe de tenir compte de la mobilité internationale accrue du capital en alignant les taux d'imposition sur ceux qui sont en vigueur dans les autres pays industrialisés et de consacrer des recettes fiscales à des immobilisations en infrastructure qui amélioreront la qualité de vie tout en accroissant l'efficience du capital et de la main-d'oeuvre. Deuxièmement, il faut soutenir la R-D et les autres formes d'investissement qui engendrent des retombées importantes. À cette fin, l'auteur propose que l'on adopte une perspective internationale – par exemple un engagement multilatéral à améliorer les mesures de protection des droits de propriété. Troisièmement, les politiques environnementales ne devraient pas imposer aux entreprises canadiennes un désavantage sur le plan de la concurrence. Mais si les sociétés canadiennes choisissent de dépasser les normes internationales en matière d'environnement, l'auteur ajoute qu'il serait peut-être approprié de leur accorder certains stimulants financiers.

SOMMAIRE

LA PRÉSENTE ÉTUDE A POUR OBJET de préciser les défis que devront relever les Canadiens au cours des dix à quinze prochaines années en vue de créer et d'exploiter des occasions d'investir. Étant l'activité qui mène à la formation de capital, l'investissement est un agent important de la croissance de la productivité et de la production. La formation de capital augmente la productivité du travail et le revenu car elle fournit les outils qui permettent de démultiplier les efforts de façon à augmenter la production. Le rapport traite d'abord du rôle de l'investissement dans l'économie canadienne, puis des tendances observées au Canada et dans d'autres pays.

Au milieu des années 70, l'industrie canadienne a accusé une forte baisse de productivité comparable à celle observée dans la plupart des pays industrialisés. Cette baisse donne à penser que le niveau d'investissement au Canada était peut-être faible. Cependant, alors que la productivité s'est stabilisée ou légèrement améliorée dans d'autres pays développés au cours des quinze dernières années, au Canada, la croissance de la productivité de la main-d'oeuvre a été inférieure à la moyenne et la productivité globale des facteurs de production a effectivement diminué. Les raisons de cette détérioration ne sont pas claires. La diminution de l'investissement en général, et au titre de la R-D en particulier, pourrait expliquer partiellement ce recul. De surcroît, des données plus récentes laissent entendre que la structure industrielle du Canada n'a pas évolué aussi rapidement que celle d'autres pays vers les domaines de pointe, à valeur plus grande.

Ni le faible niveau d'investissement, ni la composition particulière de l'investissement ne devrait être, en soi, une source de préoccupation, car il se pourrait que les occasions d'investir ne soient pas aussi prometteuses au Canada qu'ailleurs. On irait, certes, à l'encontre du but recherché en encourageant l'investissement dans des projets à faible rendement. En revanche, il arrive que des effets externes ou des échecs du marché entravent l'investissement. Or, quand la baisse de productivité, surtout par comparaison à d'autres pays développés, est le reflet de pareils obstacles, il est possible d'améliorer la situation. Par conséquent, la présente étude vise à repérer les obstacles susceptibles d'entraver l'investissement aujourd'hui ou dans l'avenir, afin de préciser les défis qu'il faudra relever à moyen terme.

Une grande tendance et un concept important sous-tendent la présente étude de l'articulation de la politique en matière d'investissement qui prévaudra au Canada. La tendance est celle de l'accroissement de la mobilité des facteurs de production et de l'intégration internationale observée sur les marchés mondiaux. Le choix des investissements par les sociétés canadiennes et le choix des politiques par le gouvernement doivent tenir compte à la fois des problèmes que pose la mondialisation et des possibilités qu'elle offre. Le concept sous-jacent est celui selon lequel, en général, les meilleures décisions en matière d'investissement sont prises par des personnes qui répondent aux signaux du

marché. Par le passé, il était courant que les responsables de l'élaboration des politiques examinent les domaines ayant une incidence importante sur la croissance économique et qu'ils conçoivent des mesures d'incitation à l'investissement ou à l'épargne pour stimuler l'activité dans ces domaines. Mais il est peu probable que cette stratégie donne de bons résultats dans l'avenir. En premier lieu, les expériences antérieures ne donnent aucune preuve qu'elle est efficace. Plus précisément, dans la plupart des cas, il y a peu de raisons de croire que les stratèges puissent prendre de meilleures décisions que les sociétés privées ou les particuliers en matière d'investissement. Par exemple, il semble que les efforts en vue de stimuler l'investissement dans la R-D ont échoué et que le Canada a tardé à investir dans les nouvelles technologies. De surcroît, l'offre d'encouragements à un secteur particulier est une mesure qui a été et continuera d'être contestée par nos partenaires commerciaux.

Cela ne signifie toutefois pas que les stratèges ne disposent d'aucun moyen d'améliorer la situation en matière d'investissement; les sections qui suivent décrivent certains domaines prometteurs. Cependant, il convient de souligner ici, de façon générale, que les responsables de l'élaboration des politiques devraient se préoccuper moins de décisions particulières et accorder plus d'importance à l'environnement décisionnel. *Le défi consiste à trouver de nouveaux moyens de soutenir l'investissement. À cet égard, il faudrait offrir moins d'encouragements directs et accorder plus d'importance à la coordination internationale des politiques, à la réglementation et à l'investissement public*.

Suit la description des principaux défis qui se posent dans les domaines où le marché ne tire pas toujours pleinement parti des possibilités d'investissement à cause de facteurs externes ou d'échecs du marché.

- L'intensification de la mondialisation augmentera la mobilité des facteurs de production : en particulier, le flux d'investissement se concentrera de plus en plus là où le rendement global est le plus élevé. Ce rendement inclura des composantes pécuniaires et non pécuniaires, de sorte que nombre d'investissements, surtout ceux qui dépendent du capital humain, auront lieu où les coûts d'exploitation sont faibles et où la qualité de la vie est bonne. *Le défi consiste à s'assurer que le Canada fasse les investissements dans l'infrastructure qui sont nécessaires pour maintenir un haut niveau de vie et pour augmenter l'efficacité du capital et de la main-d'oeuvre*. Il se pourrait que le marché ne soit pas tout seul à relever le défi, car l'augmentation de l'infrastructure procure un avantage direct aux Canadiens qui utilisent ces investissements et un avantage indirect en attirant les investisseurs. Par exemple, en augmentant le niveau de scolarité de la population active, non seulement on rehausse le niveau de vie du Canadien moyen, mais on rend aussi l'investissement au Canada plus intéressant.

- Il est prouvé que l'investissement, particulièrement dans la R-D, a des retombées bénéfiques pour bon nombre d'entreprises, outre l'investisseur initial. Donc, la valeur sociale de certains investissements excède celle des avantages privés, ce qui permet de justifier les subventions à l'investissement. Cependant, on sait aussi que les retombées internationales sur le plan des connaissances sont considérables, de sorte que subventionner l'investissement dans un pays pourrait signifier subventionner un transfert de connaissances à un autre. *Le défi consiste à remplacer les subventions directes par des mécanismes internationaux qui permettent aux investisseurs de capter une part plus grande du revenu global de leurs investissements*. Ces mécanismes pourraient notamment viser à mieux coordonner et faire respecter les lois destinées à protéger les brevets et d'autres droits de propriété. Ou bien, ils pourraient avoir pour but de faciliter la collaboration internationale dans les domaines de la recherche fondamentale et de la R-D, de sorte que les réseaux privés se chargent de protéger les bénéfices de l'investissement.

- L'importance et la complexité des problèmes environnementaux et de leur incidence sur le choix des investissements augmenteront à mesure que le Canada s'adaptera à des marchés plus ouverts. En tant que pays riche et développé, le Canada pourrait choisir de surpasser les normes internationales de protection de l'environnement en consacrant plus de ressources à l'amélioration et à la protection de son patrimoine environnemental. Cependant, imposer des normes plus strictes pourrait désavantager concurrentiellement les entreprises canadiennes et causer des fuites de capitaux. Le problème qui se pose aux responsables de l'élaboration des politiques est celui de soutenir les activités d'investissement du secteur privé tout en faisant des choix sociaux particuliers. *Le défi consiste à assurer simultanément que les coûts de base des entreprises soient concurrentiels et que les choix politiques du Canada soient respectés*. Pour cela, il faudra concevoir de nouvelles mesures d'incitation à l'intention des entreprises. Par exemple, si l'articulation de la politique encourage les entreprises canadiennes à excéder les normes internationales de protection de l'environnement, il vaut mieux subventionner les entreprises qui subissent les coûts du dépassement des normes, plutôt que leur imposer les normes et l'augmentation concomitante des coûts de base.

- La façon dont les gestionnaires canadiens évaluent les possibilités d'investissement explique pourquoi le niveau d'investissement en général, et dans la R-D en particulier, est faible et pourquoi le transfert des ressources des domaines peu spécialisés vers les domaines de pointe est lent. D'aucuns pensent que les gestionnaires canadiens sous-investissent dans les projets risqués, à long terme, principalement parce qu'ils sont peu enclins à prendre des risques. Cependant, la diversification

des possibilités d'investissement, sur la scène tant nationale qu'internationale, infirme cette théorie. Une autre explication serait que les gestionnaires ont aujourd'hui tendance à avoir la vue courte parce qu'ils sous-estiment les avantages à long terme des investissements. À cela, les gestionnaires réfutent souvent qu'ils évaluent correctement les possibilités, mais que le comportement des marchés financiers contemporains les décourage d'investir à long terme. Selon eux, le fait que l'investissement dans un projet à long terme réduise les profits courants risque de faire baisser le prix des actions et de susciter une offre publique d'achat hostile. Par conséquent, certains gestionnaires soutiennent qu'ils doivent rejeter des investissements à long terme intéressants (comme l'investissement dans des nouvelles technologies) au profit d'investissements moins valables dont les gains pécuniaires sont plus immédiats (comme l'investissement dans l'extraction de ressources).

- Il n'existe aucune preuve que les marchés financiers n'accordent aucune valeur à l'investissement à long terme. En outre, on n'a pas pu démontrer que la menace d'une offre publique d'achat hostile influe considérablement sur les investissements à long terme. Cependant, on possède des preuves que les gestionnaires canadiens appliquent des méthodes d'évaluation qui ont la réputation de produire des chiffres erronées. Il pourrait s'agir là d'un des facteurs qui empêchent les gestionnaires de reconnaître la valeur intrinsèque des projets risqués à long terme. *Le défi consiste à intensifier les pressions concurrentielles qui s'exercent sur les gestionnaires canadiens, afin de les inciter à poursuivre énergiquement les possibilités d'investissement intéressantes*. Pour cela, il faudra permettre à la concurrence de saisir les occasions d'investissement et rendre le marché de la prise de contrôle d'entreprise (marché des offres publiques d'achat) plus concurrentiel. Les responsables de l'élaboration des politiques devront passer en revue les restrictions quant à la propriété, les lignes directrices concernant le gouvernement d'entreprise, les obstacles à l'accès aux marchés financiers et les barrières à l'entrée sur les marchés des produits.

- La réglementation des marchés financiers influe également sur les décisions que prennent les entreprises. Par exemple, les prêts bancaires représentent une voie importante d'investissement des ressources. Or, il est généralement reconnu que le règlement sur l'assurance-dépôts peut fausser considérablement les modalités de prêt bancaire. *Le défi consiste à mettre en place un système qui permet d'évaluer et d'améliorer régulièrement et de façon cohérente la réglementation des marchés financiers*.

INTRODUCTION

LE BIEN-ÊTRE ÉCONOMIQUE ET SOCIAL FUTUR DES CANADIENS dépendra fondamentalement des décisions que prendront, individuellement et collectivement, les stratèges des secteurs privé et public en matière d'investissement. L'emploi, la consommation, le mode de vie et l'état de l'environnement sont tous des éléments sur lesquels influeront le stock de capital de l'économie et le taux de formation de capital résultant de l'investissement.

La présente étude a pour objectif d'examiner les défis que devront relever les Canadiens au cours des dix à quinze prochaines années en matière d'investissement. Elle met surtout l'accent sur les obstacles à surmonter pour tirer pleinement parti des possibilités d'investissement. Certains défis sont quantifiables et simples. De nombreux autres sont complexes et ont pour origine la mondialisation croissante de l'économie, conjuguée à l'évolution rapide de la technologie et de la société.

La première partie de l'étude vise à déterminer s'il existe réellement un problème d'investissement au Canada. L'investissement accroît le bien-être social et économique parce qu'il augmente la productivité. Or, les tendances de la productivité observées au Canada donnent à penser que l'investissement est assez faible et dirigé principalement vers les industries des technologies de niveau intermédiaire. Ni un faible niveau d'investissement ni une composition particulière de l'investissement ne doit, en soi, susciter des inquiétudes, s'il ou elle reflète un choix optimal d'investissement. Cependant, il arrive que des facteurs externes et des échecs du marché entravent l'investissement et empêchent les Canadiens de profiter pleinement des possibilités d'investissement qui s'offrent à eux. La diminution de la productivité, surtout comparativement à d'autres pays développés, le niveau assez faible d'investissement dans la R-D et l'expansion relativement lente des industries des technologies de pointe semblent indiquer que pareils obstacles existent, donc aussi qu'il devrait être possible d'améliorer la situation.

Dans la suite de l'étude on cherche à cerner les problèmes susceptibles d'entraver l'investissement aujourd'hui et dans l'avenir. Cet exercice permettra de préciser les défis qu'il faudra relever à moyen terme.

En premier lieu, on examine l'incidence de la mondialisation sur le choix des investissements. À cet égard, soulignons que la mondialisation des marchés tant des produits que des investissements a rendu ces derniers « volants ». Cette mobilité des facteurs a des conséquences en ce qui concerne le genre d'investissements choisis et le rôle que joue la politique dans ce choix. Ainsi, un mouvement des investissements vers les pays où les coûts sont faibles pourrait annuler l'effet des politiques conçues pour encourager un type particulier d'investissement. Ou bien, la mondialisation pourrait favoriser l'élaboration de politiques qui avantagent certains grands groupes ou réseaux d'industries.

Ensuite, on se penche sur la question du transfert des connaissances par le biais de l'investissement et du commerce. On examine aussi les répercussions

qu'ont sur l'environnement les investissements des entreprises, la mondialisation et la croissance de l'économie.

Enfin, à la dernière section, on se pose la question de savoir si l'inefficacité de l'investissement pourrait avoir pour source l'environnement décisionnel. À cet égard, on examine minutieusement la possibilité que les gestionnaires aient la vue courte quant aux choix des investissements. De surcroît, on observe l'effet de la réglementation des marchés financiers sur le choix des investissements.

Les tendances démographiques et les considérations d'ordre infrastructurel sont aussi des éléments importants qu'on n'étudie toutefois pas en profondeur ici, car ils sont le sujet d'autres études exécutées à la demande d'Industrie Canada.

EXISTE-T-IL UN PROBLÈME D'INVESTISSEMENT AU CANADA?

> « Quand l'homme primitif a décidé pour la première fois de se servir d'un os comme gourdin plutôt que d'en consommer la moelle, cela a été un investissement. » [Traduction]
> Anonyme, cité dans Copeland et Weston (1988)

LES AUTEURS D'UN TRAITÉ CONSACRÉ sur le financement des entreprises se servent de cette citation pour faire comprendre que le choix d'un investissement est à la fois simple et important. L'investissement fournit à la force de travail les outils nécessaires pour améliorer le bien-être économique. La question « Y a-t-il un problème d'investissement? » est, en fait, celle de savoir si les Canadiens consacrent une part trop grande ou trop faible de la consommation actuelle à la création d'un gain probable dans l'avenir.

La façon classique de répondre à cette question consiste à dire qu'il faut effectuer l'investissement si la valeur des bénéfices futurs supplémentaires tirés de l'investissement excède le coût, autrement dit à appliquer la règle de la valeur actualisée nette (VAN) : investir quand la valeur actuelle des bénéfices excède la valeur actuelle des coûts. Si les marchés financiers fonctionnaient parfaitement, il ne serait pas nécessaire d'examiner le niveau agrégé d'investissement, parce que les particuliers et les entreprises pourraient et voudraient entreprendre tous les investissements intéressants. Les directeurs d'entreprise, craignant un congédiement ou une prise de contrôle, s'efforceraient de maximiser le cours de l'action, donc rechercheraient et exploiteraient toutes les possibilités d'investissement pour lesquelles la VAN est positive. Dans de telles circonstances, il n'y a lieu de s'interroger ni sur le niveau ni sur la composition résultante de l'investissement. Des agents privés répondent aux signaux du marché et exploitent les possibilités d'investissement intéressantes.

En fait, les marchés financiers et les processus décisionnels ne sont pas parfaits. Il est généralement admis que des facteurs externes et des échecs du marché peuvent entraver l'investissement, donc, empêcher qu'un niveau optimal soit atteint. La mise au point d'une nouvelle technologie grâce à des travaux de R-D est l'exemple classique. Un investissement dans la technologie produit un revenu, peut-être sous forme d'efficacité opérationnelle, pour l'entreprise qui finance les travaux de R-D. Mais, les concurrents et d'autres industries bénéficient aussi de la nouvelle technologie. Donc, la valeur sociale de l'investissement est plus grande que sa valeur privée, et la société pourrait estimer que le niveau d'investissement est trop faible.

Dans pareil contexte, il est difficile de juger de la qualité des décisions prises en matière d'investissement au Canada. La méthode idéale consistant à évaluer un ensemble représentatif de choix distincts d'investissement s'avère peu pratique. En effet, il faudrait évaluer les avantages privés et sociaux, ainsi

que le taux approprié d'actualisation pour chaque possibilité d'investissement. Il serait également nécessaire de tenir compte de l'incidence des décisions stratégiques sur les estimations.

On a donc choisi ici d'examiner les déterminants fondamentaux des niveaux d'investissement, c'est-à-dire les tendances démographiques, les grands ratios du capital au travail et, enfin, la proportion de la production réinvestie dans l'économie. Si les grandes tendances globales permettent de dégager des lignes directrices grossières quant au volume requis d'investissement, elles n'offrent que peu de renseignements sur la qualité du stock de capital. Pour étudier cet aspect du problème, il est utile d'examiner la croissance de la productivité. On exprime cette dernière en quantité de produit par unité de facteur de production. Dans la mesure où le rendement des investissements se traduit par une production future plus forte, on peut considérer la croissance de la productivité comme le reflet du rendement global des investissements. On compare aussi dans la présente section le niveau de l'investissement dans la R-D au Canada et dans d'autres pays.

Les conclusions quant à l'existence éventuelle d'un problème d'investissement au Canada sont fondées sur les niveaux globaux d'investissement et sur les tendances générales de la productivité.

REVENU, INVESTISSEMENT ET FACTEURS DÉMOGRAPHIQUES

LA MESURE LA PLUS FONDAMENTALE ET LA PLUS RÉPANDUE de la production est le produit intérieur brut[1] (PIB). Selon les normes internationales, en valeur absolue, le PIB par habitant du Canada est élevé, comme en témoigne le tableau 1. Parmi les pays du Groupe des Sept, seuls les États-Unis et le Japon affichent un niveau de revenu plus élevé.

TABLEAU 1

PIB PAR HABITANT, 1993
CHIFFRES EN $US FONDÉS SUR LA PARITÉ DU POUVOIR D'ACHAT

Canada	19 409
France	18 702
Allemagne	18 506
Italie	17 823
Japon	20 279
Royaume Uni	17 030
États-Unis	24 302
Moyenne du G7	19 435

Source : *Statistiques rétrospectives de l'OCDE*, 1995.

TABLEAU 2

NIVEAUX D'INVESTISSEMENT AU CANADA
MILLIONS DE DOLLARS DE 1986

	1992	1993	1994	1995
Investissement public	16 217	16 334	17 264	17 797
(% du PIB)	2,9	2,9	2,9	2,9
Construction résidentielle	32 908	31 517	32 463	27 973
(% du PIB)	5,9	5,5	5,4	4,6
Construction non résidentielle des entreprises	25 730	25 861	27 196	25 971
(% du PIB)	4,6	4,5	4,6	4,3
Machines et matériel	56 564	48 383	54 010	59 477
(% du PIB)	8,3	8,5	9,0	9,7

Source : Statistique Canada, nº. 13-001 au catalogue.

Ces dernières années, environ 21 p. 100 de la production du Canada ont été réinvestis dans l'économie. Comme l'indique le tableau 2, la composante la plus importante de l'investissement est celle du secteur privé, où l'investissement dans les machines et le matériel vient en tête[2]. De surcroît, on note une forte croissance de l'investissement dans les machines et le matériel qui prolonge la tendance observée pendant la plupart des années 80.

À mesure que la population du Canada augmentera, il faudra accroître le stock de capital national, car la poussée démographique augmentera la demande de produits, l'offre de main-d'oeuvre et, concomitamment, les possibilités d'investissement. Statistique Canada (1995) prévoit que la population du Canada passera de 30 millions environ à 35 millions environ d'ici à l'an 2011. Autrement dit, le taux de croissance moyen sera de l'ordre de 1 p. 100 par an[3].

Ces projections démographiques permettent d'estimer grossièrement les besoins d'investissement au Canada au cours des quinze prochaines années. Par exemple, en émettant des hypothèses raisonnables quant à la croissance de la main-d'oeuvre et au rapport entre le stock de capital et la productivité de la main-d'oeuvre, Slater (1992) estime que l'investissement brut devra se situer entre 20,6 p. 100 et 26.9 p. 100 du PIB si l'on veut soutenir une croissance modeste de la productivité de la main-d'oeuvre. Les prévisions de Slater n'incluent pas les investissements du secteur public dans la protection de l'environnement ou dans l'infrastructure. Selon la méthode choisie pour évaluer ces domaines, les besoins d'investissement du Canada pourraient être encore plus élevés[4].

TABLEAU 3

INVESTISSEMENT EN POURCENTAGE DU PIB
MILLIONS DE DOLLARS DE 1986

1981	82	83	84	85	86	87	88	89	90	91	92	93	94	95
22	20	19	19	20	20	21	22	23	22	22	22	21	22	21

Source : Statistique Canada, nº. 13-531 au catalogue.

Le tableau 3 indique le pourcentage du PIB du Canada consacré aux investissements au cours des quinze dernières années. Le tableau 4, quant à lui, permet de comparer la situation au Canada, au Japon, aux États-Unis et dans les pays de l'OCDE ces dernières années. Les chiffres donnent à penser qu'en moyenne, le taux d'investissement du Canada est comparable à celui des autres pays de l'OCDE.

Cependant, les taux relativement faibles d'investissement enregistrés au début des années 80 pourraient être à l'origine de la baisse de productivité observée ces dernières années. Qui plus est, les parts récentes d'investissement se situent dans la partie inférieure de la fourchette d'estimations de Slater.

Les tendances démographiques permettent aussi de déterminer la répartition géographique des besoins futurs d'investissement. Le tableau 5 donne les estimations récentes et les projections de la migration interprovinciale entre 1996 et 2001. Ces chiffres indiquent qu'on s'attend à voir se poursuivre la migration vers la Colombie-Britannique et l'Ontario à partir des autres régions du pays. L'investissement, particulièrement dans l'infrastructure, pourrait donc être

TABLEAU 4

FORMATION BRUTE DE CAPITAL FIXE
PART DU PIB RÉEL

Moyenne	Années 80	1989
Canada	21,0	23,2
Japon	29,5	34,2
États-Unis	17,3	17,9
OCDE	20,5	22,1

Source : Investissement Canada, tiré des comptes nationaux de l'OCDE.

TABLEAU 5

MIGRATION INTERPROVINCIALE
MILLIERS

	1975-1976	1980-1981	1985-1986	1990-1993	1996-2001
Colombie-Britannique	-5,0	39,0	-3,7	73,2	326,4
Alberta	26,6	46,0	-5,1	6,7	12,8
Saskatchewan	5,3	-3,6	-7,0	-19,8	-88,4
Manitoba	-5,0	-8,8	-1,9	-13,0	-72,3
Ontario	-18,9	-33,9	32,7	-14,6	124,1
Québec	-13,4	-23,5	-4,8	-27,3	-191,0
Provinces atlantiques	10,1	-13,5	-13,2	-6,5	-72,65

Source : Statistique Canada, 1993.

une source importante de demande durant la période observée, surtout en Colombie-Britannique. Selon les chiffres du tableau 6, empruntés à la Canada West Foundation (1992), la croissance de l'investissement pourrait être due, du moins en partie, à l'anticipation d'une croissance future de la population. Il convient néanmoins d'utiliser ces chiffres avec prudence, car la migration et l'investissement manifestent tous deux une tendance cyclique marquée. Une récession en Colombie-Britannique pourrait provoquer une émigration nette et un ralentissement de l'investissement semblables à ceux observés au milieu des années 80.

TABLEAU 6

INVESTISSEMENT RÉGIONAL
TAUX DE VARIATION

	1986-1989	1990-1991
Colombie-Britannique	25,0	-2,0
Provinces des Prairies	7,0	2,0
Ontario	14,0	-8,0
Québec	15,0	-8,0
Provinces atlantiques	11,0	-4,0
Canada	14,0	-4,0

Source : Statistique Canada, 1993.

TENDANCES DU REVENU, DE LA CROISSANCE DU REVENU ET DE LA PRODUCTIVITÉ AU CANADA

EN CE QUI CONCERNE LA PRODUCTIVITÉ, les antécédents économiques du Canada sont fort semblables à ceux d'autres pays industrialisés. Le tableau 7 fait ressortir certaines caractéristiques communes. De 1960 à 1973, période qu'on qualifie souvent d'« âge d'or » des pays industrialisés, le taux de croissance du revenu est demeuré systématiquement élevé. Vient ensuite une période de quinze ans, qui a débuté après la baisse prononcée de 1973, durant laquelle la croissance a été nettement plus lente.

Le ralentissement de la croissance du PIB a-t-il été causé par la baisse de la productivité et de l'investissement? Pour répondre à cette question, il est utile d'examiner diverses mesures de la productivité et leur évolution au cours du temps. Le PIB réel par personne ayant un emploi est une mesure simple de la productivité, de meilleure qualité que le PIB par habitant, parce qu'elle tient compte des variations de la population active. Le tableau 8 montre la tendance observée dans les pays industrialisés pendant quatre décennies en se fondant sur cette mesure de la productivité. Selon ce tableau, où la production du Canada sert de mesure de base chaque année, depuis 1950, le PIB par personne ayant un emploi est plus faible au Canada qu'aux États-Unis, quoique l'écart se soit amenuisé considérablement. Cette mesure montre aussi que l'avantage du Canada par rapport aux autres pays du Groupe des Sept a diminué.

Des tendances similaires se dégagent des autres mesures de productivité. La *productivité du capital* est un indicateur très utilisé qui se fonde sur la production par unité (habituellement, le dollar) d'investissement. La *productivité du travail* est une autre mesure qui tient simplement compte de la production par unité de travail. Ordinairement, la production correspond à la valeur ajoutée au PIB et le travail, au nombre de travailleurs ou d'heures de travail.

TABLEAU 7

CROISSANCE DU PIB RÉEL PAR HABITANT

	1960-1973	1973-1979	1979-1989	1989-1993	1960-1993
Canada	3,6	2,9	1,8	-1,0	2,4
France	4,3	2,3	1,6	0,2	
Allemagne	3,7	2,5	1,7	2,1	2,7
Italie	4,6	3,2	2,4	0,7	3,2
Japon	8,3	2,5	3,4	2,2	5,0
Royaume-Uni	2,6	1,5	2,2	-0,3	1,9
États-Unis	2,6	1,4	1,5	0,8	1,9
Moyenne du G7	3,7	2,0	2,0	1,0	2,6

TABLEAU 8

PIB RÉEL PAR PERSONNE AYANT UN EMPLOI
CANADA=100

	1950	1960	1970	1980	1989
Canada	100	100	100	100	100
France	50,1	60,3	77,0	87,7	91,4
Allemagne	45,3	62,3	74,7	84,8	87,2
Italie	38,6	52,9	76,0	89,4	92,8
Japon	20,0	29,5	55,1	68,5	77,3
Royaume-Uni	70,8	69,1	70,3	72,7	76,0
États-Unis	131,6	126,8	120,6	109,3	106,3

Source : Rao et Lempriere, tels que cités dans Slater, 1992.

Ces deux mesures sont utiles, mais présentent chacune des inconvénients. Par exemple, l'investissement peut produire des gains tardifs et incertains. Un gros investissement pourrait faire diminuer considérablement les chiffres de productivité du capital calculés pour l'année initiale et les années subséquentes durant lesquelles on ne constate pas les produits de cet investissement. Par conséquent, l'indicateur de productivité du capital est remarquablement instable. De surcroît, la productivité du capital est fortement cyclique, car elle dépend des taux d'utilisation des capacités qui sont directement proportionnels à la production.

La productivité du travail est une mesure complexe qui reflète plusieurs éléments. Un premier groupe comprend les facteurs de production, comme le capital, l'énergie et l'infrastructure utilisés pour produire les biens. Toute chose étant égale par ailleurs, le travail sera d'autant plus productif que la complémentarité des facteurs de production sera grande. Le deuxième groupe de facteurs, qui a trait à l'efficacité du procédé de production, englobe les compétences de gestion, le niveau de scolarité des travailleurs, la politique gouvernementale en matière de concurrence et les normes anti-pollution.

La mesure de la *productivité globale des facteurs (PGF)* donne une autre perspective de la productivité. Cette mesure correspond à la production totale moins la somme pondérée des facteurs de production. Donc, la PGF est une mesure résiduelle qui englobe les progrès techniques, le rehaussement de la qualité des facteurs de production, ainsi que les variations de l'échelle de production et de l'utilisation de la capacité de production. Les chiffres de productivité globale des facteurs et de productivité du travail du tableau 9 témoignent d'une baisse générale de la productivité.

TABLEAU 9

PRODUCTIVITÉ DU TRAVAIL ET PRODUCTIVITÉ GLOBALE DES FACTEURS

	Productivité du travail			Productivité globale des facteurs		
	1960-73	1973-79	1979-94	1960-73	1973-79	1979-94
Canada	2,0	0,6	-0,1	2,9	1,5	1,2
France	4,0	1,7	1,7	5,4	3,0	2,6
Allemagne	2,6	1,8	0,5	4,5	3,1	0,9
Italie	4,4	2,0	0,9	2,8	2,9	1,9
Japon	5,6	1,3	1,4	8,3	2,9	2,5
Royaume-Uni	2,6	0,6	1,6	3,9	1,5	2,0
États-Unis	1,6	-0,4	0,4	2,2	0,0	0,8
G7	2,9	0,6	0,8	4,3	1,4	1,4

Source : *Études économiques de l'OCDE*, 1994-1995.

Toutes les mesures mentionnées montrent que la productivité a commencé à diminuer au milieu des années 70 et que la baisse s'est poursuivie jusqu'à la fin des années 80 dans la plupart des pays. Elle se prolonge au-delà de cette période au Canada. En fait, la baisse de productivité est si prononcée et si généralisée que Stanley Fisher (1988) en parle comme du « changement macroéconomique le plus important au cours des deux dernières décennies ».

Il est indispensable de comprendre pourquoi la productivité diminue afin de bien saisir les défis que doit relever le Canada en matière d'investissement. Si on arrivait à enrayer ou à renverser la tendance à la baisse de la productivité, on observerait une modification spectaculaire du taux de croissance du revenu. Pour bien faire comprendre cet argument, Fisher établit le lien entre la productivité et les attentes concernant la croissance du revenu.

> « Quand le revenu par habitant augmente au taux de 4 p. 100, il double tous les 18 ans; quand il ne croît qu'au taux de 2 p. 100, il double tous les 35 ans. Le revenu permanent, défini comme la rente d'une citoyenne allemande de 25 ans qui fonde ses attentes concernant la croissance du revenu sur la moyenne des résultats enregistrés entre 1955 et 1973, surpasserait de 80 p. 100 le revenu courant de cette citoyenne; celui d'une citoyenne de 25 ans qui fonde ses attentes quant à la croissance du revenu sur le taux de croissance observé de 1973 à 1986 ne surpasserait que de 22 p. 100 le revenu courant. » [Traduction]

Bien qu'il s'agisse d'un exemple simple, le contraste marqué entre les attentes concernant le revenu que suscitent les deux périodes choisies permettrait peut-être d'expliquer en partie l'état d'esprit actuel des Canadiens. Taylor (1996) décrit cet état d'esprit dans la presse populaire de la façon suivante :

> « En vérité, selon pratiquement toutes les mesures imaginables... nous comptons parmi les peuples les plus riches, les plus aisés du monde. Sans aucun doute, notre position est aussi beaucoup plus enviable que celle de la génération de nos parents. Ce qui s'est tout simplement passé ces dernières années, c'est que, pour la première fois de mémoire d'homme, notre avidité l'a emporté sur notre capacité de croissance. Au lieu de corriger nos attentes, nous nous sommes accrochés à l'idée que les choses ne cesseraient de s'améliorer, de plus en plus rapidement... Le fait d'être avide n'est pas un mal en soi, mais il a fait de nous un peuple de pleurnicheurs et de râleurs. » [Traduction]

En dernière analyse, la mesure dans laquelle l'investissement et la productivité sont liés est une question empirique à laquelle les chercheurs ont accordé beaucoup d'attention. Slater (1992) donne une vue d'ensemble utile de ce lien et conclut que la force des preuves fournies par les études de la situation durant l'après-guerre dans les pays occidentaux industrialisés montre qu'il existe fort probablement une relation de cause à effet entre l'investissement, l'épargne, la productivité à long terme et la croissance de l'économie.

Le tableau 10, inspiré des travaux de Dennison (1985), donne un aperçu des facteurs qui contribuent à la croissance.

TABLEAU 10

FACTEURS DE CROISSANCE : ÉTATS-UNIS, 1929-1982

Part de la croissance annuelle moyenne de la production réelle des entreprises expliquée par :	3,1%=100%
L'augmentation de la main-d'oeuvre	25%
L'augmentation du niveau d'instruction	16%
L'augmentation du capital	12%
L'amélioration de la répartition des ressources	11%
Les économies d'échelle	11%
Les progrès techniques	34%
Moins les facteurs négatifs inhibant la croissance	9%

Source : Palda, 1993.

Ces travaux montrent que l'augmentation du capital, qui représente la mesure classique de l'investissement, n'est pas le seul facteur, ni le facteur le plus important, de la croissance de la production. D'autres formes d'investissement jouent également un rôle. Par exemple, les investissements dans l'infrastructure et dans le capital humain contribuent à l'éducation; l'éducation, ainsi que la R-D contribuent aux progrès techniques; et le capital humain, l'infrastructure et les mesures réglementaires[5] ont un effet sur la qualité de la gestion et sur son aptitude à réaffecter efficacement les ressources.

Plus récemment, DeLong et Summers (1991) ont prouvé que le rôle de l'investissement dans la croissance de la productivité est beaucoup plus important que ne le laissent entendre les travaux de Dennison. Ils notent une forte corrélation statistique entre l'investissement dans les machines et le matériel, d'une part, et la croissance de l'économie, d'autre part. En examinant les données collectées pour 1960 à 1985, ils constatent que chaque investissement de 1 p. 100 du PIB dans les machines et l'équipement produit une croissance subséquente du PIB d'un tiers de point. Ils estiment aussi que, sur un marché qui fonctionne bien, le produit social de l'investissement dans le matériel est de l'ordre de 30 p. 100.

INVESTISSEMENT DANS LA R-D

L'INVESTISSEMENT DANS LA R-D EST JUGÉ INDISPENSABLE à la productivité et au bien-être économique. La ventilation de la productivité présentée au tableau 10 fait ressortir l'importance des travaux de R-D, car 34 p. 100 de la croissance sont directement liés aux progrès techniques et 16 p. 100 supplémentaires ont trait au niveau d'instruction.

Griliches (1988), qui a passé en revue des études sérieuses en la matière, note que la corrélation entre la R-D et la productivité est importante et statistiquement significative. De surcroît, on peut associer une partie du ralentissement de la productivité observée au milieu des années 70 à des réductions de l'investissement dans la R-D. Cependant, comme ces réductions n'expliquent que 15 p. 100 de la baisse, plusieurs autres facteurs doivent entrer en jeu, comme la politique monétaire adoptée en réaction à la flambée des prix du pétrole.

Étant donné que la productivité du Canada continue d'être à la traîne de celle de nombreux autres pays du Groupe des Sept, il se pourrait que le rendement relatif du Canada dans le domaine de la R-D soit la cause de la situation. Le Conference Board du Canada (1994) émet cette opinion et présente les conséquences d'une telle situation pour le Canada dans le rapport d'une enquête récente sur les intentions d'investir dans la R-D. On lit dans ce rapport :

> « On doute souvent que le Canada soit prêt pour la « nouvelle économie », notamment à cause de la quantité de ressources qu'il consacre aux travaux de R-D. Comparativement à d'autres pays industrialisés... le niveau des dépenses des entreprises commerciales au titre de la R-D au Canada, niveau qui, exprimé en pourcentage du PIB, est égal

> à 0,8 p. 100 en 1991...[est] bien inférieur au niveau observé pour les grandes économies, comme le Japon (2,2 p. 100), les États-Unis (1,9 p. 100), l'Allemagne (1,8 p. 100) et la Suède (1,6 p. 100). » [Traduction]

Pareillement, selon une étude de l'OCDE (1995), le Canada n'a pas su bien saisir les occasions d'investissement dans les secteurs à forte croissance et la productivité globale du pays en a souffert. Le rapport indique que le mouvement de la production du Canada (et de l'Australie) des industries à faible croissance vers les industries à forte croissance est relativement faible. On y précise que le Canada est l'un des deux seuls pays qui affichent un gain dans le secteur de la fabrication axée sur les technologies intermédiaires et que si, dans de nombreux autres pays, la part de la production des industries de pointe a augmenté considérablement, au Canada, elle n'a virtuellement pas changé. Selon nous, cette tendance pourrait refléter une amélioration de l'avantage relatif dont bénéficie le Canada dans les domaines à technologie intermédiaire. Ou bien, il se pourrait que les gestionnaires canadiens n'évaluent pas correctement les nouvelles technologies. Ce point est examiné plus en détail à la section suivante.

Palda (1993) reconnaît l'importance de l'innovation, mais conseille de ne pas la considérer comme équivalente à la R-D. Selon lui, le concept de la R-D a une portée trop étroite. Il défend de façon convaincante l'idée selon laquelle la mesure de la R-D comme approximation de l'innovation totale peut produire des résultats erronés quand on l'utilise isolément. Plus précisément, il note correctement que la R-D fait partie du processus de gestion de l'investissement et qu'il convient de l'étudier sous cet angle. On examine à la section suivante la part des décisions financières dans les défis que pose l'investissement.

CONCLUSION

MÊME SI ELLES NE CONSTITUENT PAS DES ARGUMENTS ÉCRASANTS, les tendances décrites jusqu'ici donnent à penser qu'il existe un problème d'investissement au Canada. La quantité d'investissement, mesurée par la fraction de la production totale qui est investie, concorde avec les taux observés dans d'autres pays développés. Cependant, il se pourrait que les taux enregistrés récemment ne soient pas suffisants pour soutenir une croissance, même modeste, de la productivité. De surcroît, en ce qui concerne cette dernière, le Canada est à la traîne des autres pays développés. Le niveau relativement faible de l'investissement dans la R-D et certaines données indiquant que l'industrie canadienne n'a pas évolué vers les secteurs des technologies de pointe aussi rapidement que d'autres pays laissent aussi entendre que le niveau d'investissement n'est pas optimal. Or, on a tout lieu de s'inquiéter d'une telle situation si des occasions intéressantes d'investissement ne sont pas saisies à cause d'échecs du marché et de facteurs externes.

DÉFIS À RELEVER EN MATIÈRE D'INVESTISSEMENT

LA PRÉSENTE SECTION EST CONSACRÉE À L'EXAMEN de certains domaines dans lesquels il est possible d'améliorer l'investissement. Si certaines difficultés à surmonter sont évidentes, d'autres le sont moins.

INVESTISSEMENT, COMMERCE ET MONDIALISATION

LES DÉFIS LES PLUS IMPORTANTS QU'IL FAUDRA RELEVER au cours des quinze prochaines années résulteront de l'ouverture des marchés à la libéralisation du commerce et de l'accroissement de la mobilité des facteurs de production.

L'effet stimulant du commerce sur l'investissement et, inversement, celui de l'investissement sur le commerce ont fait l'objet d'études et de rapports nombreux. Certains des modèles d'échanges commerciaux[6] les plus classiques ont pour précepte que le commerce international des biens et celui des investissements sont interchangeables. S'il n'existe ni économie d'échelle ni barrière aux flux de capital et de biens à travers les frontières, le commerce et l'investissement sont des substituts parfaits. Une entreprise peut investir dans son pays d'origine et expédier sa production vers un pays étranger ou bien, investir dans le pays étranger et expédier la production dans son pays d'origine.

Ce concept, ancré de longue date dans la théorie économique, est généralement considéré comme un cas particulier. Récemment, les travaux de Reich (1991) l'ont mis à la mode. Cet auteur déclare :

> « Nous sommes en train de vivre une transformation qui mènera à la réorganisation de la politique et de l'économie au siècle prochain. Il n'existera plus de produits nationaux, ni de technologies, de sociétés ou d'industries nationales. Les économies nationales auront disparu. » [Traduction]

Autrement dit, la mondialisation aura un effet non seulement sur la production, mais aussi sur les décisions d'ordre politique et social. Si l'on s'en tient à cette vision, les implications en ce qui concerne l'investissement sont importantes. L'entreprise « sans attache » ne témoignera d'aucune allégeance nationale et l'investissement visera à créer des conditions favorables à la production à faible coût. En outre, les investissements dans l'infrastructure destinés à améliorer la qualité de vie seront essentiels si l'on veut attirer les travailleurs les plus productifs, ainsi que le capital qu'ils utiliseront durant la production.

Pareille position est contraire à celle de Porter (1991) qui voit un « groupement » des investissements et des entreprises pour profiter des occasions qui se présentent sur les marchés des produits et des avantages de la collaboration. Selon Porter, les gouvernements peuvent promouvoir l'investissement en augmentant la compétition sur les marchés des produits pour aiguillonner la productivité, tout en favorisant le couplage de grappes d'industries[7].

L'accumulation de capital humain grâce à l'« apprentissage sur le tas » est un exemple concret et important d'économie d'échelle susceptible de résulter de la libéralisation des échanges. On reconnaît depuis un certain temps les avantages de l'apprentissage sur le tas dans une économie fermée. Récemment, Lucas (1993) a appliqué le concept dans le contexte du commerce pour expliquer ce qu'il nomme le « miracle économique » de la Corée. L'idée fondamentale est celle selon laquelle le commerce permet d'affecter la main-d'oeuvre et le capital à de nouveaux procédés de production. Comme il s'agit de nouveaux procédés, le rendement des investissements de capital humain dans l'apprentissage sur le tas est élevé. À son tour, ce rendement élevé entraîne une augmentation du capital humain et de la productivité. Lucas étaye encore davantage cette théorie en comparant la Corée du Sud aux Philippines. Il constate qu'au début des années 60, ces deux pays étaient très similaires en regard de la taille, du revenu, du taux d'activité et du niveau de scolarité, mais que pendant les 28 années suivantes, le revenu par habitant a augmenté de 6,2 p. 100 par an en Corée, alors que le taux moyen de croissance n'a été que de 1,8 p. 100 aux Philippines. Notant que des « miracles » comparables ont eu lieu à Taïwan, à Hong Kong et à Singapour, Lucas soutient qu'une des caractéristiques communes de ces économies « miraculeuses » d'Asie orientale est qu'elles sont devenues de grands exportateurs de biens manufacturés de plus en plus complexes. Cette situation a donné lieu à l'apprentissage sur le tas dans des domaines de pointe, à des taux élevés de rendement du capital humain et à une spirale positive des investissements.

Ce phénomène sera, sans aucun doute, étudié de façon beaucoup plus approfondie dans les années à venir. Il indique que nombre des possibilités d'investissement qui découleront de la libéralisation du commerce auront trait au capital humain. Donc, il est essentiel d'axer la politique du Canada sur le développement de ce capital.

Le défi consiste à assurer que le Canada fasse les investissements d'ordre infrastructurel nécessaires pour maintenir un haut niveau de vie et pour augmenter la rentabilité du capital et du travail. Il se pourrait que le marché ne relève pas tout seul le défi, car l'accroissement de l'infrastructure a l'avantage indirect d'attirer l'investissement, en plus de l'avantage direct qu'il représente pour les Canadiens qui utilisent l'infrastructure. Par exemple, les bénéfices du rehaussement du niveau de scolarité de la main-d'oeuvre ne se limitent pas à rendre l'investissement au Canada plus séduisant, car cette situation a, à son tour, des retombées sur d'autres Canadiens. En outre, les personnes dont le niveau d'instruction augmente bénéficient directement de ce perfectionnement.

RETOMBÉES ET TRANSFERTS DE CONNAISSANCES

UN AUTRE AVANTAGE DE L'INVESTISSEMENT À L'ÉCHELLE INTERNATIONALE est la diffusion des connaissances. Des transferts de connaissances ont lieu à l'échelon national, à l'intérieur des industries et entre celles-ci, et à l'échelon interna-

tional. On a étudié tous ces transferts et retombées dans le contexte de l'investissement dans la R-D, mais il est raisonnable de penser que des transferts ont également lieu à la suite d'investissements de base.

On considère ordinairement un investissement dans la R-D comme un moyen de diminuer les coûts de production. On reconnaît aussi généralement que les résultats de l'investissement dans la R-D sont difficiles à protéger. La technologie nouvelle qui résulte des travaux de R-D d'une entreprise particulière profite souvent à d'autres entreprises appartenant à la même industrie, à d'autres industries ou à d'autres pays, si bien que l'investisseur privé ne capte pas tous les bénéfices de son investissement dans la R-D. Un écart se creuse donc entre les bénéfices qui reviennent à l'entreprise qui investit (le rendement privé de l'investissement initial fait par l'entreprise en vue de réduire ses coûts) et ceux qui reviennent à l'ensemble des utilisateurs de la technologie (rendement social). Cet écart donne une idée de l'ampleur des retombées de la R-D.

Bernstein (1988) a estimé les retombées intra- et inter-industrielles pour sept industries canadiennes, d'après des données collectées pour la période allant de 1978 à 1981. Selon lui, les retombées sont importantes pour toutes les industries, les plus faibles ayant lieu dans l'industrie des aliments et des boissons et les plus fortes, dans celle des produits chimiques. Puis, grâce à une autre méthode et à des données internationales couvrant une période plus longue (de 1964 à 1986), Bernstein (1996) a étendu ces premiers résultats. Il observe que, au Canada, les taux de rendement social sont de 2,5 à 12 fois plus élevés que les taux de rendement privés. Aux États-Unis, la fourchette s'étend de 3,5 à 10 fois.

Combinés, ces résultats indiquent que les retombées de l'investissement, sur la scène tant nationale qu'internationale, sont très importantes et représentent un avantage direct de l'activité d'investissement. Cependant, comme les bénéfices de l'investissement ne reviennent pas tous à l'entreprise qui investit, les incitations à investir ne sont pas toujours évidentes.

Le défi consiste à faciliter les investissements technologiques dans un contexte mondial. Pour cela, il faudra remplacer les subventions directes par des mécanismes internationaux conçus pour aider les investisseurs à capter une part plus grande des bénéfices totaux de leurs investissements. Ces mécanismes pourraient viser à mieux coordonner et faire respecter les lois qui protègent les brevets et d'autres droits de propriété. Ou bien, ils pourraient avoir pour but de faciliter la collaboration internationale dans les domaines de la recherche fondamentale et de la R-D, de sorte que les réseaux privés soient prêts à protéger les bénéfices de l'investissement.

PROTECTION DE L'ENVIRONNEMENT

LA MONDIALISATION ET L'INTENSIFICATION DU COMMERCE poseront de nouvelles difficultés de gestion de l'environnement. Même si le travail et le capital ne deviennent pas aussi mobiles que le prétend Reich, ils demeureront des facteurs importants qui contribueront à la mobilité grandissante de la scène du travail.

Cette situation aura des répercussions importantes sur les pratiques de protection de l'environnement et sur la capacité du gouvernement à contrôler ces pratiques. Les conséquences éventuelles de la mondialisation sont très diverses et les travaux de recherche effectués jusqu'à présent dans ce domaine ne sont pas suffisamment avancés pour qu'on puisse tirer des conclusions. Olewiler (1992) distingue deux grandes écoles de pensée économique en la matière, à savoir les « optimistes » et les « pessimistes ».

La vision optimiste de la mondialisation est celle selon laquelle l'importance moins grande accordée aux préoccupations nationales dans le processus de prise de décisions, pour faire progressivement place à une perspective mondiale, se traduira par de plus grandes richesses et une plus haute qualité de l'environnement. La notion fondamentale est que la mondialisation mènera à l'augmentation du patrimoine national grâce aux gains provenant du commerce et à la convergence des richesses à l'échelon international. L'examen des indicateurs de productivité présentés à la section précédente donne à penser qu'une convergence importante a déjà eu lieu. Si on suppose que l'augmentation de la qualité de l'environnement est un article de luxe, la croissance du revenu entraînera une demande plus forte d'investissement dans l'environnement à mesure que le monde pourra « se permettre » des niveaux de pollution plus faibles. Par conséquent, les entreprises se feront concurrence pour fabriquer des produits « verts ». De surcroît, les transferts de technologie s'intensifieront, si bien qu'il sera possible d'avoir accès aux technologies les plus récentes. Donc, les pays en voie de développement ne suivront plus le chemin habituel consistant à adopter d'abord des industries polluantes puis à passer à des industries non polluantes. Les transferts de technologie et l'intégration des marchés financiers permettront aux entreprises d'adopter directement des technologies non polluantes.

Les pessimistes, quant à eux, réfutent fondamentalement tous ces points. La divergence de vue tient à des hypothèses différentes quant à l'attitude du consommateur en ce qui a trait à la qualité de l'environnement. Au lieu de voir l'investissement dans l'environnement comme un avantage, à l'instar des optimistes, les pessimistes considèrent la lutte contre la pollution et l'investissement dans l'amélioration de l'environnement comme un coût qu'il faut réduire au minimum. La mondialisation rend plus difficile la mise en application de mesures publiques de protection de l'environnement visant à optimiser les avantages sociaux, car, si on leur impose des normes plus sévères, les entreprises dirigent simplement leurs investissements ailleurs. Dans ce contexte, le manque de restrictions commerciales et la concurrence pour l'investissement entraveront l'élaboration des politiques. Qui plus est, étant donné la mobilité croissante du capital, les efforts en vue de financer les coûts énormes de l'assainissement des régions polluées seront contrecarrés par des fuites de capitaux. Les ressources s'envoleront vers des « paradis » non pollués, où les coûts d'assainissement seront faibles.

TABLEAU 11

INDICATEURS ENVIRONNEMENTAUX

	PIB[a]	CO_2[b]	SO_2[c]	Déchets[d] municipaux	Intensité[e] énergétique
Canada	15,5	4,8	146,4	632	9,6
Allemagne de l'Ouest	11,3	3,2	21,3	331	4,5
Japon	12,8	2,2	6,8	394	3,3
Espagne	5,0	1,5	N.A.	322	2,2
Royaume-Uni	9,3	2,9	63,1	353	3,7
États-Unis	18,4	5,8	84,0	864	7,8
OCDE	12,2	3,4	48,3	513	4,8
Monde	N.D.	N.D.	N.D.	N.D.	1,6

a $US de 1989 au prix et au taux de change de 1985.
b CO_2 en tonnes de carbone émises en1988.
c SO_2 en kilos, moyenne annuelle à la fin des années 80.
d Déchets municipaux en kilos, à la fin des années 80.
e Intensité énergétique en tonnes d'équivalent-pétrole, 1988.

Source : OCDE, 1991, cité dans Olewiler, 1992.

Ni l'une ni l'autre de ces vues extrêmes ne dépeint un tableau exact. Cependant, elles permettent d'illustrer un des défis les plus importants que doit relever le Canada en matière d'investissement. Étant donné le désir de protéger le patrimoine environnemental du pays, comment le Canada peut-il s'assurer que l'investissement soit fait à bon escient, compte tenu des nouvelles répercussions concurrentielles d'un tel investissement? À cet égard, le gouvernement doit jouer un rôle important. Cependant, les renseignements permettant d'orienter le choix des mesures dans ce domaine sont assez limités.

Olewiler (1992) résume certains résultats pertinents, en soulignant qu'il s'agit d'observations préliminaires. Voici ses observations :

- Le lien entre les mesures classiques du bien-être (PIB par habitant, par exemple), l'activité économique associée à la croissance et la pollution n'est pas bien défini. Cependant, l'OCDE[8] (1991) a rassemblé les estimations ci-après qui donnent à penser qu'il pourrait exister un lien.
  La comparaison des données par habitant de six pays montre qu'à l'époque, le Canada occupait la deuxième place par ordre décroissant de PIB par habitant, mais affichait les émissions les plus fortes de dioxyde de carbone (CO_2), d'azote, et d'anhydride sulfureux (SO_2), ainsi que l'utilisation la plus forte d'énergie.

- La plupart des pays, y compris le Canada, ne possèdent pas de données chronologiques sur les dépenses de protection de l'environnement comparativement au PIB, mais les données existantes font penser que ces dépenses sont assez faibles. Par exemple, aux États-Unis, les dépenses de lutte contre la pollution ont représenté, en moyenne, 1,7 p. 100 du PIB au cours des 25 dernières années. Ce taux, qui est resté relativement constant, est passé par un maximum de 1,9 p. 100 en 1981 et par un minimum de 1,4 p. 100 en 1972. D'aucuns prétendent que cette situation tient à ce qu'on a réussi à réduire la pollution aux États-Unis, de sorte qu'un investissement plus faible dans la lutte contre la pollution suffit. En revanche, selon une étude effectuée en 1990 par l'Environmental Protection Agency (EPA), les dépenses au titre de la protection de l'environnement augmenteront pour atteindre 2,6 p. 100 du PIB d'ici à l'an 2000.

- L'effet de la politique environnementale sur le lieu et sur le volume de l'investissement n'est pas bien établi. Cependant, comme le fait remarquer Olewiler, la plupart des augmentations envisagées des niveaux actuels de dépenses n'auront vraisemblablement pas une incidence importante sur l'investissement dans la lutte contre la pollution. En outre, si les exigences en matière de protection de l'environnement incitent les industries à s'établir ailleurs, ce sont les industries prétendument « sales » qui risquent le plus de partir, si bien que le coût net de l'investissement perdu diminuera quelque peu. Les résultats de l'étude de Leonard (1988) sur le lien entre la réglementation en matière de protection de l'environnement et le lieu de l'investissement étayent cette hypothèse. Ils indiquent qu'aux États-Unis, cette réglementation influence le choix du lieu d'investissement d'un très petit nombre d'industries seulement. Les industries concernées sont i) les fabricants de produits toxiques, dangereux ou cancérigènes, ii) les transformateurs de cuivre, de zinc et de plomb et iii) les fabricants de produits chimiques organiques.

- D'autres chercheurs ont étudié théoriquement la question ou effectué des simulations et des estimations. Par exemple, Jorgenson et coll. (1993) montrent, à l'aide d'une simulation, que si on décidait de percevoir une taxe de 60 $ par tonne de dioxyde de carbone produit, les émissions baisseraient de 30 p. 100 d'ici à l'an 2020, la production de charbon, de 50 p. 100, l'extraction de pétrole et de gaz, de 10 p. 100, le stock de capital national, de 2,2 p. 100 et le PNB, de 1,6 p. 100. Bien que l'effet d'un changement aussi grand soit considérable, les modifications effectivement apportées à la politique sont fort peu importantes.

- La réglementation en matière de protection de l'environnement pourrait réduire l'investissement en faisant baisser la productivité, donc le rendement de l'investissement. Comme l'augmentation de la productivité est la raison principale de la décision d'investir, une diminution du rendement pourrait réduire l'investissement, car elle réduit la productivité.

Sur le plan des politiques, le problème qui se pose au Canada est celui de soutenir l'investissement du secteur privé et d'effectuer simultanément certains choix d'ordre social. *Le défi consiste à s'assurer que les coûts de base des entreprises soient concurrentiels, tout en faisant respecter les choix politiques du Canada.* Pour cela, il faudra offrir de nouvelles formes d'encouragement aux entreprises. Par exemple, si l'articulation de la politique exige que les Canadiens excèdent les normes environnementales internationales, il peut être nécessaire de subventionner les entreprises qui subissent le coût qu'occasionne le dépassement de ces normes.

ÉVOLUTION TECHNIQUE

NOUS VIVONS À UNE ÉPOQUE où les activités de la vie quotidienne changent radicalement. Les progrès techniques ont rendu le milieu de travail plus souple et jouent un rôle très important dans l'adoption de nouveaux modes de vie. Ces changements sociaux et économiques posent deux défis importants.

Premièrement, l'économie doit acheminer les ressources vers les nouveaux marchés et les nouvelles possibilités d'investissement. Le développement, la production et la commercialisation doivent être financés dans le secteur privé. Ce financement aura vraisemblablement lieu dans des conditions où l'initiateur possède plus de renseignements que l'investisseur sur la rentabilité du projet, situation que l'on qualifie d'information asymétrique. Il est reconnu que, dans le cas des transactions financières, l'information asymétrique peut mener à des échecs de marché, si des investissements potentiellement rentables ne sont pas financés. Les remèdes à ce problème englobent rarement l'intervention du secteur public, car ce dernier n'a pas souvent l'avantage d'être mieux renseigné. Les entreprises offrant des capitaux de risque et les contrats financiers innovateurs représentent une solution, au moins partielle, du problème. La création d'un secteur financier efficace et concurrentiel est peut-être le moyen le plus important de faciliter ce genre d'investissement.

Deuxièmement, le secteur public doit faire les investissements appropriés dans l'infrastructure. Par exemple, le travail qu'on pourra accomplir à domicile, selon un horaire souple, pourrait nécessiter de plus grands moyens de communication, mais peut être une moins grande expansion du réseau de transport municipal. La formation est un autre domaine qu'il faudra financer davantage, afin que la main-d'oeuvre puisse comprendre et utiliser les nouvelles technologies.

Étant donné l'incertitude considérable quant à l'orientation de la vague technologique actuelle, il est impossible de faire des projections quantitatives exactes des besoins d'investissement du Canada dans ce domaine. Néanmoins, il est indispensable de relever le défi, car les nouveaux investissements auront une incidence énorme sur la productivité et sur le niveau de vie du pays.

MILIEU DÉCISIONNEL

L'ÉTUDE INDIQUE JUSQU'À PRÉSENT que les efforts d'élaboration des politiques doivent viser à offrir des possibilités d'investissement au secteur privé. Donc, en dernière analyse, les avantages que les Canadiens tireront de ces possibilités d'investissement dépendront des décisions prises par les entreprises. À leur tour, ce sont les mécanismes de gouvernement d'entreprises, y compris le rôle du conseil d'administration, la prise de contrôle d'entreprises par offre publique d'achat (OPA) et par course aux procurations, ainsi que le rôle joué par les investisseurs institutionnels et les responsables de la réglementation dans le choix des investissements, qui influenceront le plus les prises de décisions.

On a trop souvent sous-estimé l'incidence du milieu décisionnel sur le rendement global de l'investissement. Il suffit d'examiner les pertes massives d'investissement subies par les établissements financiers durant les années 80 pour comprendre l'importance de la gouvernance et de la réglementation. Malgré les avertissements indiquant que le système d'assurance-dépôts créait des incitations dangereuses à l'investissement, le Canada et les États-Unis ont ignoré en grande partie cet aspect problématique de la réglementation des banques. Il a fallu que se produisent des pertes et des échecs de grande envergure pour qu'on prenne toute une série de mesures réglementaires. Le prix de la leçon est énorme. Les estimations du coût de la crise de l'épargne et de l'emprunt aux États-Unis indiquent que les pertes essuyées par le contribuable seront de l'ordre de grandeur de la dette totale du gouvernement fédéral du Canada. Similairement, au Canada, ces pertes, quoique loin d'être aussi importantes, sont massives.

À l'heure actuelle, en matière de réglementation, le Canada se trouve aussi dans une conjoncture critique en ce qui concerne le gouvernement d'entreprise. Le grand nombre d'échecs et d'excès apparents des chefs d'entreprises obligent à se demander si le coût du système de gouvernance actuel n'est pas trop élevé et s'il n'y aurait pas lieu de mettre en place une nouvelle structure. Étant donné le rôle important des marchés boursiers organisés dans le processus, il n'est pas surprenant que ces marchés, ainsi que les responsables de leur réglementation fassent effectuer partout dans le monde des études détaillées sur le gouvernement d'entreprise. Au Canada, la Bourse de Toronto a formé un comité qui a publié un rapport (1995) intitulé *Where Were The Directors?* (Où étaient les administrateurs). Si certains ont applaudi l'effort, beaucoup ont jugé les recommandations du rapport insuffisantes, compte tenu de l'ampleur du problème.

La présente section donne un bref aperçu de certaines questions qui se posent dans le domaine de la prise de décisions par les entreprises. Il comprend la description des questions fondamentales que soulève le choix des investissements au Canada, ainsi qu'une comparaison des méthodes d'évaluation couramment appliquées au Canada et ailleurs. L'examen semble indiquer que le

faible niveau d'investissement dans des projets risqués à long terme, comme l'investissement dans la R-D, pourrait être dû à l'attitude myope des cadres. Il tient également compte de l'argument voulant que le manque d'investissement dans la R-D au Canada soit le résultat des pressions exercées sur les cadres par les investisseurs à court terme, c'est-à-dire un marché financier impatient. D'aucuns estiment que le marché financier ne tolère pas les investissements à long terme et ne recherche que les profits à court terme. Le présent rapport confirme qu'il n'existe aucune preuve à l'appui de cette affirmation. Certaines questions pressantes d'ordre réglementaire sont également examinées dans cette section.

COMMENT CHOISIT-ON LES INVESTISSEMENTS AU CANADA?

À L'HEURE ACTUELLE, les entreprises appliquent plusieurs méthodes pour évaluer l'investissement en capital[9]. La méthode la plus largement reconnue consiste à fonder le choix des investissements sur la valeur actualisée nette (VAN) d'un projet. La VAN tient compte de la quantité de ressources utilisées et du moment où elles sont utilisées, de la valeur chronologique de l'argent et d'une correction appropriée pour le risque. D'autres méthodes très répandues sont celles du taux de rendement interne (TRI), du délai de récupération et du taux de rendement nominal. Toutes ces méthodes, sauf celles de la VAN, présentent des défauts qui peuvent mener à des choix d'investissement incorrects.

Selon une enquête effectuée en 1991 par Jog et Srivastava (1994), les entreprises canadiennes adoptent des méthodes de budgétisation des investissements multiples. Le questionnaire a été envoyé à 582 entreprises sélectionnées d'après le TSE 300, ainsi qu'à plusieurs grandes entreprises privées sous contrôle étranger. En tout, 133 entreprises ont répondu. Les répondants ont indiqué non seulement qu'ils utilisent plusieurs méthodes de budgétisation des investissements, mais aussi, très souvent, qu'ils appliquent simultanément plus d'une méthode. Parallèlement, l'enquête montre que presque toutes les entreprises utilisent soit la méthode de la VAN, soit celle du TRI pour évaluer leurs plans d'expansion. Environ la moitié des entreprises recourent à la méthode du délai de récupération et un certain nombre continuent d'utiliser le taux de rendement nominal. L'utilisation des deux dernières méthodes est surprenante et alarmante, étant donné qu'elles sont conceptuellement imparfaites et risquent d'aboutir à une mauvaise répartition des ressources, particulièrement dans le cas de la méthode du taux de rendement nominal.

Jog et Srivastava examinent également la méthode du coût de renonciation à une possibilité d'utiliser les fonds et constatent que plus de la moitié des répondants utilisent la méthode du coût moyen pondéré du capital qui fournit une mesure précise dans de nombreux cas. Étonnamment, le quart environ des répondants choisissent le coût de l'endettement pour évaluer le coût du capital de l'entreprise, bien qu'il soit difficile de justifier ce choix. Les entreprises canadiennes mettent plus de temps que leurs homologues américaines à corriger

cette pratique erronée. En effet, une étude similaire effectuée auprès d'entreprises américaines il y a plus de dix ans par Schall et coll. (1978) indique qu'à l'époque, aux États-Unis, seulement 17 p. 100 des répondants utilisaient la méthode du coût de l'endettement.

L'utilisation de plus en plus fréquente des méthodes de la valeur actualisée des rentrées nettes de fonds est certes encourageante, mais rien n'indique qu'on tienne compte des progrès plus récents en matière de budgétisation des investissements. L'application des méthodes types de budgétisation des investissements aux projets risqués à long terme pose deux grands problèmes qui donnent parfois l'impression que le choix des investissements témoigne d'une attitude myope.

Le premier problème tient à ce que les applications types des méthodes d'actualisation des flux ne tiennent pas toujours compte du fait que le risque posé par l'investissement évolue durant le projet. Au lieu de cela, on estime et applique un taux d'actualisation unique à chaque rentrée nette de fonds pendant une période d'investissement qui peut être longue. En raison de l'incertitude de l'investissement, on choisit souvent un taux d'actualisation assez élevé. Or, en général, cette méthode ne permet pas d'évaluer correctement la valeur des investissements risqués à long terme, comme les investissements dans la R-D. Par exemple, on effectue habituellement un premier investissement dans un projet pilote. Les résultats servent à déterminer la viabilité des étapes de développement subséquentes. Les renseignements fournis à chaque étape permettent de redéfinir le risque. Par conséquent, le risque que pose un nouveau projet pourrait être élevé au départ, puis diminuer considérablement une fois qu'on dispose de nouveaux renseignements. En appliquant le taux d'actualisation élevé choisi au départ aux rentrées nettes de fonds à long terme, l'analyste surestime le risque et la correction nécessaire pour tenir compte de ce dernier et, conséquemment, sous-estime la valeur du projet.

Le deuxième problème tient au fait que certains cadres n'arrivent pas à reconnaître les « options réelles » inhérentes à tout projet à long terme et très risqué. Quand une entreprise pénètre sur un nouveau marché ou met au point une nouvelle technologie, elle investit dans l'option de pouvoir profiter de possibilités futures. L'entreprise n'a pas besoin d'investir des fonds supplémentaires futurs pour augmenter sa capacité. Elle a le choix d'abandonner toute capacité de production mise en place si de nouvelles données indiquent que l'investissement ne vaut pas la peine d'être entrepris.

On a montré qu'il existe une corrélation *positive* entre la valeur des options inhérentes à une possibilité d'investissement, d'une part, et le temps qui s'écoule avant qu'il ne soit nécessaire d'effectuer les dépenses d'investissement subséquentes, d'autre part. Aussi, ignorer les options inhérentes à un investissement produit une sous-estimation de la valeur de l'investissement qui est d'autant plus importante que l'investissement est risqué et que son terme est long.

Pour illustrer ce problème, supposons qu'un producteur de gaz naturel canadien fasse une soumission en réponse à l'invitation à développer des

ressources dans un pays d'Asie faite par une autorité contractante[10]. L'investissement passera par les étapes suivantes : i) exploration initiale; ii) mise en valeur du gisement; iii) production et iv) distribution. Le projet complet durera 30 ans. La direction décide que, dans le contexte de ses opérations au Canada, le taux de rendement requis de pareils projets est de 20 p. 100. Cependant, les directeurs concluent qu'il est nettement plus risqué d'exploiter une entreprise dans le pays étranger en question; ils craignent, d'une part, que la situation politique soit instable et, d'autre part, que les compétences de l'entreprise ne donnent pas d'aussi bons résultats dans un climat social et politique différent. Par conséquent, ils portent le rendement requis à 30 p. 100.

Les erreurs commises sont fondamentales. Premièrement, le risque sociopolitique auquel doit faire face l'entreprise pourrait être éliminé rapidement. Durant la première année, les directeurs pourront déterminer dans quelle mesure leurs compétences sont efficaces dans le nouveau milieu. Donc, s'il faut éventuellement appliquer un taux d'actualisation plus élevé la première année, il n'est pas nécessaire de continuer à le faire les années suivantes. Deuxièmement, la direction ne tient pas compte de l'option qui consiste à abandonner le projet s'il ne peut être exécuté rentablement. Troisièmement, la direction ne tient pas compte de l'option consistant à élargir les opérations. Si l'entreprise peut acquérir les compétences nécessaires pour fonctionner en Asie, elle peut appliquer ces compétences à d'autres pays. En faisant ces erreurs d'évaluation fondamentale, la direction prive non seulement les actionnaires d'une occasion d'investir de façon rentable, mais elle empêche aussi les Canadiens de bénéficier d'une occasion d'investissement en capital humain à forte valeur ajoutée.

LES MARCHÉS FINANCIERS SONT-ILS IMPATIENTS?

LE FAIT QUE LES MARCHÉS FINANCIERS SOIENT INEFFICACES et poussent les chefs d'entreprise à ne voir que le court terme est une autre raison avancée pour expliquer l'incapacité des Canadiens à exploiter les possibilités d'investissement intéressantes. Cette explication se fonde en outre sur l'hypothèse selon laquelle, sur les marchés financiers actuels, nombre d'investisseurs ne sont intéressés que par les gains à court terme. Les courtiers en valeurs mobilières et les administrateurs de fonds dont la subsistance dépend d'évaluations régulières de leur rendement doivent souvent se préoccuper plus des profits tirés des négociations à court terme que des gains en capital et des revenus de dividendes à long terme. D'aucuns soutiennent que de tels investisseurs ne seraient pas disposés à avoir dans leur portefeuille des actions d'entreprises qui font des investissements dans des projets à long délai d'exécution.

Cet argument est en contradiction avec nombre d'éléments de la théorie financière classique et de preuves empiriques. Qu'ils prévoient garder les actions à court ou à long terme, les investisseurs anticipent rationnellement la vente de leurs actions à d'autres investisseurs à la fin de leur horizon d'in-

vestissement. Ils se préoccupent du prix de vente et du fait que celui-ci dépend de la période de conservation future des actions par un investisseur inconnu. Même si on suppose que les actions doivent être vendues à une série d'investisseurs à court terme, le prix de vente dépendra chaque fois de la chaîne anticipée de prix auxquels les actions seront vendues et, dans son ensemble, cette chaîne reflète la valeur à long terme de l'entreprise.

Il existe de nombreuses preuves que le prix de l'action reflète la valeur à long terme de l'entreprise. McConnell et Muscarella (1985) en donnent un exemple quand ils évaluent collectivement les hypothèses que la direction maximise la valeur de l'entreprise et que la valeur de l'entreprise reflète les investissements de capitaux à long terme. Ils analysent 547 annonces d'investissement à long terme faites par 285 sociétés industrielles distinctes. Les résultats empiriques sanctionnent les hypothèses conjointes : le prix du marché de l'action a effectivement augmenté après les annonces.

À cet égard, les marchés financiers canadiens ne semblent pas différer des marchés américains. À l'occasion d'une autre étude des entreprises canadiennes, Johnson et Pazderka (1993) ont cherché à déterminer si le marché accorde une valeur positive aux dépenses au titre de la recherche et du développement. Au moyen de données couvrant la période de 1985 à 1988, ils estiment la corrélation qui existe entre la valeur de marché des capitaux propres, d'une part, et la valeur comptable de ces capitaux, une mesure de la puissance commerciale, les dépenses en R-D et d'autres dépenses en immobilisations, d'autre part. L'analyse tient compte de plusieurs sous-périodes; tous les cas montrent qu'il existe une corrélation significative et positive entre la valeur au marché de l'entreprise et les dépenses en immobilisations.

Ces études et plusieurs autres se concentrent sur la R-D et sur les choix stratégiques d'investissement, et n'accordent aucune importance à l'effet des gains actuels sur la réaction du marché. Les entreprises observées pourraient n'avoir investi dans la R-D que pendant les périodes fastes, quand les gains étaient positifs et que les pressions en vue d'améliorer le rendement à court terme étaient négligeables. À l'occasion d'une étude plus récente, Chan, Martin et Kensinger (1990) abordent directement cette question et, ce faisant, fournissent de nouvelles preuves que les marchés boursiers ne peuvent ordinairement être taxés de myopie.

Ces auteurs examinent les annonces de travaux de R-D au cours d'une période de six ans allant de 1979 à 1985. L'étude est limitée aux entreprises pour lesquelles des données sur le prix de l'action sont disponibles. D'autres contraintes produisent un échantillon final de 95 annonces. Les annonces ne suscitent une réaction du marché que si ce dernier ne connaît pas déjà l'information (les auteurs ont dû commencer par décider quels renseignements étaient ou n'étaient pas nouveaux). Les auteurs ont considéré, de façon prudente, qu'une annonce faisant état d'une modification des dépenses au titre de la R-D par rapport à l'année précédente entrait dans la classe des nouveaux renseignements. Comme le marché s'attend vraisemblablement à une certaine augmen-

tation générale des dépenses en R-D, cette classification aurait plutôt tendance à réduire la réaction estimée du marché aux renseignements sur la R-D.

Les résultats empiriques obtenus par Chan, Martin et Kensinger sont assez frappants. Ils indiquent un rendement anormal de 0,85 p. 100, statistiquement significatif et assez important d'un point de vue économique, le jour de l'annonce. De surcroît, ce rendement est suivi, après l'annonce, par un rendement de 0,53 p. 100 qui, de nouveau, est statistiquement significatif.

Pour déterminer quelle est l'incidence des gains actuels sur la réaction du marché, Chan, Martin et Kensinger ont divisé l'échantillon en un groupe comprenant les entreprises (62) qui ont annoncé une augmentation de leurs profits au cours du trimestre durant lequel l'annonce des travaux de R-D était faite et en un groupe d'entreprises (33) qui ont annoncé une diminution de leurs profits. Pour les deux groupes, l'estimation du rendement anormal pendant deux jours était positive et statistiquement significative. En outre, bien que l'estimation soit égale à 1,54 p. 100 pour le groupe ayant annoncé une augmentation de profits et à 1,01 p. 100 pour celui ayant annoncé une diminution, les auteurs n'ont pu rejeter statistiquement l'hypothèse selon laquelle l'effet de l'annonce est le même pour les deux échantillons.

Ordinairement, les investisseurs réagissent positivement à l'annonce de travaux de R-D. Toutefois, dans certains cas, la réaction du marché est négative. L'étude de Chan, Martin et Kensinger apporte certains éclaircissements à cet égard. Selon ces auteurs, les annonces faites par les entreprises des secteurs techniquement peu spécialisés produisent un rendement négatif, dont le caractère anormal est faiblement significatif, tandis que les annonces des entreprises du secteur des technologies de pointe produisent des rendements positifs significatifs. Il n'y a aucune raison de supposer que la R-D n'a aucune valeur dans le secteur des technologies peu avancées; cependant, la probabilité que les travaux soient fructueux dans ce cas est plus faible et il se pourrait que le marché réagisse en conséquence.

Chan, Martin et Kensinger montrent aussi la relation qui existe entre l'effet de l'annonce et i) l'intensité des activités de R-D de l'entreprise comparativement à la norme pour l'industrie, ii) le niveau technologique de l'industrie, iii) l'augmentation des activités de R-D comparativement au chiffre de vente de l'entreprise, iv) la concentration de l'industrie et v) une annonce de la puissance marchande de l'entreprise. La seule variable significative qui pourrait avoir une incidence sur une annonce est celle correspondant au ratio entre l'intensité des activités de R-D de l'entreprise et la norme pour l'industrie, et ce, uniquement si l'entreprise appartient au secteur des technologies de pointe.

En résumé, les données empiriques donnent à penser que le marché effectue ordinairement les évaluations patiemment, car le cours des actions en bourse reflète les décisions à long terme. Comme on l'a montré, le marché répond de façon générale à l'annonce de plans stratégiques à long terme et de façon plus précise à des décisions concernant la R-D. De surcroît, la réponse est généralement positive et significative, mais le marché semble faire la distinc-

tion entre les investissements dans la R-D faits par diverses industries. La réponse positive pourrait se limiter aux entreprises du secteur des technologies de pointe. On a même observé une réponse positive dans le cas d'entreprises qui déclarent des pertes d'exploitation au cours de la période durant laquelle l'annonce des travaux de R-D est faite. Ces résultats indiquent que les chefs d'entreprise n'abandonnent pas les investissements à long terme dans la R-D afin de rehausser les bénéfices à court terme.

Une autre question préoccupante est celle de savoir si les efforts déployés en vue d'éviter les perturbations coûteuses causées par la focalisation du marché de la prise de contrôle d'entreprise sur le court terme ne risquent pas de causer une attitude myope chez les chefs d'entreprise. À titre d'exemple, supposons que les directeurs d'une entreprise en savent plus que le marché sur la valeur de cette entreprise et sur ses options d'investissement[11]. L'asymétrie informationnelle est plus prononcée dans le cas des projets à long terme que dans celui des projets à court terme. Par conséquent, les directeurs qui ont la possibilité d'adopter des projets à long terme intéressants mais qui doivent répondre à la menace d'une offre publique d'achat réagiront en passant à des projets à court terme auxquels le marché est mieux en mesure d'attribuer une valeur et de répondre. Les coûts social et privé d'une décision de ce genre se traduisent par la perte de possibilités intéressantes d'investissement à long terme. C'est à cet égard que l'action gouvernementale peut avoir de l'importance. Il est, en effet, possible d'augmenter la valeur de l'entreprise grâce à des politiques qui protègent les directeurs contre les menaces de prise de contrôle.

La réaction du marché boursier à l'adoption de mesures protectionnistes consistant à modifier les dispositions anti-OPA est mitigée. Linn et McConnell (1983) observent des rendements positifs anormaux, tandis que DeAngelo et Rice (1983), ainsi que Jarrell et Poulsen (1987), constatent des rendements non significatifs. Donc, il n'est pas prouvé que le renforcement de la protection de la direction augmente la valeur d'une entreprise. Le cas échéant, il est difficile de savoir si l'augmentation de la valeur est due à l'attente de meilleurs choix d'investissement ou à celle du renforcement du pouvoir de négociation des directeurs de l'entreprise.

Meulbroek et coll. (1990) examinent cette situation plus en détail en tenant compte du niveau d'investissement dans la R-D choisi par les entreprises avant et après l'adoption de dispositions anti-OPA. Ils fondent leur étude sur un échantillon de 554 modifications proposées à la charte anti-OPA entre 1979 et 1985. Après exclusion des entreprises qui n'ont déclaré aucune dépense en R-D durant la période de référence, les auteurs ont retenu un total de 203 propositions dont 179 ont été adoptées au cours des trois dernières années de la période de référence.

Les auteurs examinent le ratio des dépenses en R-D aux ventes et observent l'évolution du ratio pendant trois périodes entourant la date d'adoption de la modification. Les périodes considérées sont (-1,1), qui représente la période débutant un an avant la modification et s'étendant jusqu'à un an après l'adop-

tion de la modification, (-1,2) et (-1,3). Ils notent qu'aucun changement estimé ne diffère statistiquement de zéro. Puis, ils corrigent les chiffres afin de tenir compte de l'évolution générale des dépenses en R-D durant la période en question en soustrayant le taux de croissance du ratio R-D/ventes pour toutes les entreprises couvertes par la base de données Compustat. Ici, une variation négative significative des dépenses en R-D est mentionnée pour toutes les périodes : comparativement au marché, les dépenses en R-D ont baissé de 15 p. 100 durant la période (-1,1), de 25 p. 100 durant la période (-1,2) et de 36 p. 100 durant la période (-1,3). Étonnamment, une meilleure protection contre les prises de contrôle mène à des dépenses moins grandes au titre de la R-D.

Les auteurs supposent que les dépenses au titre de la R-D diminuent à cause du risque d'offre publique d'achat, malgré les modifications des dispositions de protection. En fait, 52 des 203 entreprises étudiées ont fait subséquemment l'objet d'une tentative de fusion, réussie ou soldée par un échec, ou d'une offre publique d'achat. Les auteurs présentent aussi des résultats comparables pour un sous-échantillon d'entreprises qui ne sont pas subséquemment l'objet d'une tentative de prise de contrôle. Donc, il semble que réduire la menace d'une offre publique d'achat ne mène pas à l'intensification des activités de R-D.

Une prise de contrôle ou une restructuration effective est une autre cause éventuelle de comportement focalisé sur le court terme. Ici, les cadres craignent qu'à cause du haut niveau d'endettement dû à une offre publique d'achat ou à d'autres raisons, l'entreprise ne peut pas se permettre d'investir dans des projets de R-D intéressants, parce qu'elle diminuerait ainsi sa capacité de servir la dette à court terme. Lors d'une étude approfondie de la question, Hall (1990) examine les données annuelles collectées auprès d'un panel de 2 500 entreprises manufacturières. Les données couvrent la période allant de 1959 à 1987 et fournissent des renseignements sur les dépenses au titre de la R-D et d'autres caractéristiques des entreprises. L'étude vise à déterminer l'effet i) des prises de contrôle par emprunt, ii) des fusions et des acquisitions et iii) des augmentations de l'endettement sans changement de propriété sur les dépenses au titre de la R-D.

Comme le fait remarquer Hall, bien qu'on ait accordé beaucoup d'attention aux prises de contrôle par emprunt, celles-ci ne représentent qu'une proportion assez faible de l'activité totale. En effet, des 780 acquisitions recensées parmi les entreprises étudiées, 76 seulement peuvent être considérées comme des prises de contrôle par emprunt. Dans le cas d'une telle prise de contrôle, l'entreprise devient une société fermée appartenant à un groupe qui recourt à grande échelle au financement par emprunt pour faciliter l'acquisition. Comme on l'a fait remarquer, on pense que le degré d'endettement résultant mène à la réduction des dépenses au titre de la R-D.

Cependant, Hall renverse cette hypothèse en professant que, pour cette raison précise, les entreprises qui accordent une grande importance à l'investissement dans la R-D ne seront pas sujettes à une prise de contrôle par

emprunt. En fait, des 76 prises de contrôle par emprunt examinées, six seulement ont eu lieu dans des industries qui paraissent investir des sommes importantes (c.-à-d. plus de 3,5 p. 100 du chiffre de vente) dans la R-D. Le fait que les entreprises victimes d'une prise de contrôle par emprunt n'étaient à l'origine que de 1 p. 100 des activités globales de R-D en 1982 est un exemple supplémentaire du peu d'importance des prises de contrôle par emprunt en ce qui concerne les dépenses en R-D. L'investissement dans la R-D après une prise de contrôle par emprunt est difficile à évaluer, car les entreprises fermées ne sont pas obligées de produire les mêmes états financiers que les autres. Quel que soit l'effet, il est peu probable que les prises de contrôle par emprunt aient une incidence importante sur le rendement global de la R-D.

Hall examine aussi l'intensité des activités de R-D (R-D/ventes) des 336 entreprises ayant participé à des acquisitions durant la période. Elle effectue une analyse par régression pour déterminer si les entreprises qui ont procédé à des acquisitions modifient l'intensité de leurs activités de R-D comparativement à d'autres entreprises appartenant à la même industrie. Elle effectue d'abord l'analyse pour l'ensemble des acquisitions, puis, séparément, pour le groupe d'entreprises qui n'ont déclaré aucune activité de R-D durant la période. Les résultats indiquent que l'intensité de la R-D diminue. Bien que l'effet estimé ne soit pas statistiquement significatif pour l'échantillon complet, il l'est pour les entreprises qui ont déclaré des activités de R-D. Les entreprises faisant de la R-D qui acquièrent d'autres entreprises réduisent l'intensité de leurs activités de R-D comparativement à l'intensité moyenne enregistrée pour leur industrie. Cette situation reflète sans aucun doute des économies d'échelle au chapitre des activités de R-D, comme la suppression des activités en double et une meilleure coordination des travaux et des services de soutien. Ces économies d'échelle pourraient en fait fournir la synergie qui motive l'offre publique d'achat au départ. Elles sont aussi partiellement la raison pour laquelle la formation de groupes et de coalitions de recherche est sanctionnée à la section précédente.

Enfin, Hall examine l'effet de l'endettement sur l'intensité des activités de R-D. Parmi les entreprises qu'elle étudie, elle en repère 177 en tout qui ont entrepris une restructuration financée par emprunt. Sont classées dans cette catégorie les entreprises qui ont augmenté leur passif à long terme de plus de 75 p. 100 de leur valeur de marché au début de l'année. Cette analyse est comparable à celle effectuée dans le cas des acquisitions. Les résultats indiquent que les restructurations financées par emprunt entraînent une réduction significative de l'intensité de la R-D comparativement à la norme pour l'industrie. De surcroît, Hall exécute des régressions distinctes pour tenir compte des acquisitions. Elle constate que tout effet des acquisitions sur les activités de R-D est essentiellement dû à l'augmentation de l'endettement qui accompagne l'acquisition.

Selon ces études, les acquisitions et les augmentations de l'endettement entraînent les unes et les autres une réduction de l'intensité de la R-D. Cependant, la menace d'une offre publique d'achat ne semble pas avoir une

incidence significative sur ces activités. Que cela signifie-t-il en ce qui concerne la décision d'investir ou non dans la R-D? Malheureusement, les études susmentionnées ne font état que de corrélations et ne déterminent pas les relations de cause à effet. Il se pourrait qu'un plus grand endettement oblige les chefs d'entreprise à réduire l'investissement dans des projets de R-D valables. Cependant, si le marché financier n'est pas myope, pourquoi les chefs d'entreprise augmenteraient-ils volontairement le degré d'endettement alors que ce dernier mène à une activité qui réduit la valeur de l'entreprise? Une autre explication de cette corrélation serait que, à cause de l'asymétrie de l'information, les directeurs des entreprises qui ont la possibilité d'investir dans des projets de R-D ne recourent pas à l'emprunt, préférant financer les activités grâce à des fonds générés à l'interne, tandis que les directeurs des entreprises qui ont épuisé toutes les possibilités valables d'investir dans la R-D peuvent émettre des titres d'emprunt et le font pour bénéficier des avantages fiscaux de l'endettement.

RÉGLEMENTATION

LES RÈGLEMENTS IMPOSÉS AUX MARCHÉS FINANCIERS ont aussi une incidence importante sur l'investissement. La réglementation des banques est peut-être l'exemple le plus important. Les prêts bancaires représentent une voie importante d'acheminement de l'épargne vers l'investissement. Les règlements qui ont une incidence sur la politique bancaire auront aussi une incidence sur le choix des investissements. Deux faits nouveaux importants survenus ces quinze dernières années, à savoir i) la concurrence dans le secteur bancaire et ii) la réglementation de l'assurance-dépôts, continueront de jouer un rôle important dans l'avenir.

Avant le remaniement de 1981 de la *Loi sur les banques*, la concurrence entre les banques était fortement restreinte. En revanche, depuis le remaniement, les banques étrangères et les établissements financiers autres que les banques ont obtenu l'accès aux marchés bancaires traditionnels. Parallèlement, les banques canadiennes sont en train d'obtenir l'accès à de nouveaux marchés, comme celui des services de banque d'affaires. Enfin, les banques canadiennes sont en train de faire une percée sur le marché international et la pénétration du marché canadien par les banques internationales augmente. La concurrence accrue sur le marché des produits devrait mener les banques à prendre de meilleures décisions en matière d'investissement. Cependant, les plus grandes banques du Canada sont assujetties à des contraintes touchant la concentration de la propriété qui diminue l'efficacité du marché de la prise de contrôle d'entreprise.

La réglementation du secteur bancaire a eu des répercussions considérables sur le choix des investissements et continuera d'en avoir. Le régime d'assurance-dépôts penche du côté des établissements posant plus de risques, donc produit des investissements très risqués dont la valeur est souvent faible.

Les règlements ont également une incidence sur le gouvernement d'entreprise et sur le marché de la prise de contrôle. Le présent rapport a pour précepte fondamental qu'un marché financier bien rôdé fonctionnerait à un niveau optimal d'investissement. Ce précepte se fonde sur l'hypothèse selon laquelle les directeurs agissent pour le plus grand bien des actionnaires et, conséquemment, recherchent énergiquement les projets d'investissement intéressants. Le gouvernement d'entreprise, qui englobe le conseil d'administration et les actionnaires actifs, est le mécanisme qui maintient l'alignement des récompenses de la direction sur le bien-être des actionnaires. Les obstacles au bon fonctionnement du marché mettront les directeurs à l'abri des mesures disciplinaires et permettront l'adoption de pratiques inefficaces. Un de ces obstacles est la limite maximale visant la possession d'actions imposée par la loi dans le secteur bancaire et dans d'autres secteurs de l'économie. Les lois anti-OPA atténuent aussi les pressions disciplinaires qui s'exercent sur la direction. *Le défi consiste à examiner régulièrement les obstacles au gouvernement d'entreprise, de façon à obliger les directeurs à faire preuve d'une plus grande discipline financière*.

DÉFIS À VENIR

LA PRÉSENTE ÉTUDE A PERMIS DE CERNER PLUSIEURS DÉFIS que les Canadiens devront relever à moyen terme en matière d'investissement. Ces défis sont résumés plus bas. Toutefois, il se dégage aussi de l'analyse un message plus général. L'ouverture de l'économie canadienne, l'accroissement de la mobilité des facteurs de production et la rapidité des progrès techniques signifient que des investissements importants seront nécessaires au cours des dix à quinze prochaines années. Compte tenu de la mondialisation et de l'intégration des marchés financiers, les fonds consacrés à l'investissement seront tirés d'une réserve « mondiale » plus importante que cela n'était le cas dans le passé. Par conséquent, la capacité qu'auront les Canadiens de tirer parti des possibilités d'investissement dépendra de la capacité qu'auront les chefs d'entreprise de reconnaître et d'exploiter ces possibilités. Elle dépendra aussi des politiques qui facilitent l'investissement. Ces politiques ne devraient pas inclure la participation directe du gouvernement aux mesures visant à encourager l'investissement ni compromettre le mode de vie auquel aspirent les Canadiens. Atteindre cet équilibre difficile à maintenir sera peut-être le défi le plus important qu'il faudra relever.

Suit un résumé des autres défis à venir :

- Les tendances démographiques indiquent que, à long terme, le Canada devra au moins maintenir, mais, de préférence, augmenter la part de la production consacrée à l'investissement afin d'atteindre un niveau ne fut-ce que modeste de croissance de la productivité. À l'échelle régionale, la migration vers la Colombie-Britannique et vers l'Ontario en provenance des autres régions nécessitera une répartition supplémentaire et différente des investissements. Si le secteur privé doit s'adapter à ces mouvements grâce à des déplacements des marchés, le secteur public doit également modifier la répartition des fonds affectés à l'infrastructure et aux services sociaux.
- La mondialisation sera un des défis les plus importants qui se poseront à moyen terme. Durant cette période, la gestion des conditions d'investissement sera essentielle, compte tenu de la mobilité accrue des facteurs – tant de la main-d'oeuvre que du capital. Les conséquences de la mobilité des facteurs ne sont pas claires à ce stade. D'aucuns pensent que le simple fait d'empêcher les coûts de production d'augmenter et d'investir dans l'infrastructure qui améliore la qualité de la vie favorisera l'investissement. D'autres estiment qu'il est nécessaire de créer un environnement concurrentiel qui permettra aux entreprises de former des groupes mutuellement avantageux. Quelle que soit la politique adoptée, il est manifeste que le commerce rehausse les possibilités d'investissement et d'augmentation de la productivité.

- Les préoccupations environnementales et leur incidence sur le choix des investissements posent aussi un défi important aux secteurs public et privé. À l'heure actuelle, on consacre une fraction assez faible de la production à la protection et à l'amélioration de l'environnement. Il est difficile de dire si ce type d'investissement augmentera à la suite de la mondialisation. Cependant, les données existantes laissent entendre que la politique actuelle de l'environnement n'a pas eu de répercussions importantes sur le lieu et sur le montant des investissements. En revanche, les simulations de modifications plus prononcées de la politique donnent à penser que celle-ci pourrait avoir une incidence importante sur l'investissement et les revenus. Il faudra poursuivre les travaux afin de préciser si des décisions politiques plus importantes quant à la protection de l'environnement auront une forte incidence sur l'investissement.
- L'investissement produit certaines retombées que ne peut capter l'investisseur. Cet « effet externe » aboutit parfois à une diminution de l'investissement et de la valeur sociale totale qui pourrait découler d'une telle activité. Les mesures visant à permettre aux investisseurs de s'approprier les produits de l'investissement sont donc souhaitables, particulièrement dans les secteurs de l'économie engagés dans des activités d'échanges que l'on sait donner lieu à d'importantes retombées internationales.
- La productivité de l'économie canadienne ne s'est pas améliorée dans la même mesure que celle des autres pays de l'OCDE. Cette situation pourrait être due à la lenteur avec laquelle les entreprises saisissent les occasions d'investissement dans le secteur des technologies de pointe. Le niveau significativement plus faible des dépenses au titre de la R-D au Canada pourrait être une autre raison. Par le passé, on a cherché à résoudre ces problèmes grâce à des mesures publiques d'encouragement. Cette stratégie, qui ne semble pas avoir donné de bons résultats à l'époque, est encore moins susceptible de fonctionner aujourd'hui, à cause de l'intégration plus prononcée des marchés.
- Les pratiques de gestion relevées au Canada semblent indiquer que la prise de décisions est indûment axée sur le court terme. Rien ne dit que cette myopie est due aux imperfections du marché financier ou aux menaces d'offre publique d'achat. Il semble que la concurrence sur le marché de la prise de contrôle d'entreprise pourrait fournir les incitations nécessaires pour améliorer les pratiques de gestion.

NOTES

1 Bien que le PIB soit une mesure très répandue du revenu, il inclut l'investissement brut, donc surestime le revenu net d'une valeur correspondant à l'amortissement, c'est-à-dire la quantité de stock de capital utilisée pour atteindre le niveau de production en question.

2 Les chiffres du tableau 2 ne sont pas directement comparables à ceux du tableau 1, car, pour faciliter les comparaisons entre pays, il a fallu exprimer toutes les données du tableau 2 d'après des points de référence communs.

3 Ces chiffres correspondent aux projections de Statistique Canada fondées sur un scénario de croissance moyenne de la population. Statistique Canada considère aussi les scénarios de faible et de forte croissance selon lesquels, en 2011, la population du Canada se chiffrerait à 33 et à 37 millions, respectivement.

4 Certains aspects de l'investissement dans l'infrastructure et dans l'amélioration de l'environnement sont examinés à la section suivante.

5 En particulier, les règlements qui ont un effet sur le gouvernement d'entreprise et sur la concurrence sur les marchés des produits.

6 Consulter, par exemple, Melvin (1996).

7 Pour une analyse excellente de Porter, de Reich et de travaux effectués par Thurow (1992), consultez Harris et Watson (1992). À la section suivante, on examine comment le regroupement facilite l'internalisation des effets externes associés aux progrès techniques.

8 On trouvera des renseignements supplémentaires et un exposé des mesures fournies dans Olewiler (1992).

9 Cette sous-section s'inspire de l'article intitulé « Patient Capital? R&D Investment in Canada » publié par l'auteur (1995).

10 Cet exemple, quoique fictif, se fonde sur une possibilité d'investissement réelle qu'une société canadienne a choisi de ne pas poursuivre.

11 Cet exemple s'inspire de Stein (1990).

BIBLIOGRAPHIE

Bernstein, J. I., « Le coût de production et les effets intra- et inter-industriels de débordement de la R-D : résultats canadiens », *Revue canadienne d'économique*, vol. 21, 1988, p. 324-347.

_____, « Trade and Investment with Constant and Increasing Returns to Scale », *Revue canadienne d'économique*, 1996, p. S463-S467.

Canada West Foundation, *Canada 2000*, Canada West Foundation, 1992.

Chan, Su Han, John D. Martin et John W. Kensinger, « Corporate Research and Development Expenditures and Share Value », *Journal of Financial Economics*, 1990, p. 255-276.

Copeland, Thomas et J. Fred Weston, *Financial Theory and Corporate Policy*, Addison-Wesley Publishing Company, 1988.

Crane, David, *The Next Canadian Century*, Stoddart Publishing Company, 1992.

DeAngelo, Harry et Edward M. Rice, « Anti-Takeover Charter Amendments and Stockholder Wealth », *Journal of Financial Economics*, 1983, p. 329-359.

De Long, J. Bradford et Lawrence H. Summers, « Equipment Investment and Economic Growth », *Quarterly Journal of Economics*, 1991, p. 445-502.

Denison, E., *Trends in American Economic Growth*, Brookings Institution, 1985.

Fischer, Stanley, « Symposium on the Slowdown in Productivity Growth », *Journal of Economic Perspectives*, 1988, p. 3-7.

Giammarino, Ronald M., « Patient Capital? R&D Investment in Canada », dans *Corporate Decision Making in Canada*, publié sous la direction de Ronald J. Daniels et Randall Morck, University of Calgary Press, 1995.

Giammarino, Ronald M. et Robert L. Heinkel, « A Model of Dynamic Takeover Behaviour », *Journal of Finance*, 1986, p. 465-480.

Griliches, Zvi, « Productivity Puzzle », *Journal of Economic Perspectives*, 1988, p. 3-7.

Hall, Bronwyn H., « The Impact of Corporate Restructuring on Industrial Research and Development », *Brookings Papers on Economic Activity*, 1990, p. 85-135.

Harris, Richard G. et William G. Watson, « Three Visions of Competitiveness: Porter Reich and Thurow on Economic Growth and Policy », dans *Productivity, Growth and Canada's International Competitiveness*, publié sous la direction de Tomas J. Courchene et Douglas D. Purvis, collection Bell Canada Papers on Economic and Public Policy, 1992.

Hirschey, Mark, « Intangible Capital Aspects of Advertising and R&D Expenditures », *Journal of Industrial Economics*, 1982, p. 375-390.

Jarrell, Gregg A. et Annette B. Poulsen, « Shark Repellents and Stock Prices: The Effects of Anti-Takeover Amendments since 1980 », *Journal of Financial Economics*, 1987, p. 127-168.

Jog, Vijay M. et Ashwani K. Srivastava, « Corporate Financial Decision Making in Canada », *Revue canadienne des sciences de l'administration*, 1994, p. 156-176.

Johnson, Lewis D. et Bohumir Pazderka, « Firm Value and Investment in R&D », *Managerial Decision Economics*, 1993, p. 15-24.

Jorgenson, D. W. et P. J. Wilcoxen, « Energy, the Environment, and Economic Growth », dans *Handbook of Resource and Energy Economics*, publié sous la direction de A. V. Kneese et J. L. Sweeney, North Holland Press, vol. 3, 1993.

Leonard, H. J., *Pollution and the Struggle for the World of Product*, Cambridge University Press, 1988.

Linn, Scott C. et John J. McConnell, « An Empirical Investigation of the Impact of Antitakeover Amendments on Common Stock Prices », *Journal of Financial Economics*, 1983, p. 361-399.

Lucas, Robert E. Jr., « Making a Miracle », *Econometrica*, 1993, p. 251-272.

Maddison, Angus, « Long-Run Dynamics and Productivity Growth », *Banco Nazional del Lavoro Quarterly Review*, 1979.

McConnell, John J. et Chris J. Muscarella, « Corporate Capital Expenditure Decisions and the Market Value of the Firm », *Journal of Financial Economics*, 1985, p. 399-422.

Melvin, James R., « Trade and Investment with Constant and Increasing Returns to Scale », *Revue canadienne d'économique*, 1996, p. S361-S365.

Meulbroek, Lisa K. et coll., « Shark Repellents and Managerial Myopia: An Empirical Test », *Journal of Political Economy*, 1990, p. 1108-1117.

OCDE, *L'état de l'environnement*, Organisation de coopération et de développement économiques, 1991.

_____, *Études économiques : Canada*, Organisation de coopération et de développement économiques, 1995.

Olewiler, Nancy, « Environmental Quality and Policy in a Global Economy », dans *Productivity, Growth and Canada's International Competitiveness*, publié sous la direction de Tomas J. Courchene et Douglas D. Purvis, collection Bell Canada Papers on Economic and Public Policy, 1992.

Pakes, Ariel, « On Patents, R&D, and the Stock Market Rate of Return », *Journal of Political Economy*, 1985, p. 390-409.

Palda, Kristian, *Innovation Policy and Canada's Competitiveness*, The Fraser Institute, 1993.

Porter, M. E. et Monitor Company, *Le Canada à la croisée des chemins : les nouvelles réalités concurrentielles*, Conseil canadien des chefs d'entreprise et Approvisionnements et Services Canada, 1991.

Reich, R. B., *The Work of Nations: Preparing Ourselves for the 21st Century Capitalism*, Alfred A. Knopf, 1991.

Schall, L. D. K., G. L. Sundem et W. R. Geijsbeek, « Survey and Analysis of Capital Budgeting Methods », *Journal of Finance*, 1978, p. 281-287.

Sinclair, W., « Controlling Effluent Discharges from Canadian Pulp and Paper Manufacturers », *Analyse de politiques*, 1991, p. 86-105.

Slater, David et coll., *The Contribution of Investment and Savings to Productivity and Economic Growth in Canada*, Investissement Canada, Document de travail n° 10, 1992.

Squires, Robert J., « R&D Outlook 1995 », Conference Board du Canada, 1994.

Statistique Canada, *Projections démographiques pour le Canada, les provinces et les territoires, 1993-2016*, publication no 91-520 au Catalogue, hors série, 1995.

Stein, Jeremy C., « Takeovers and Managerial Myopia », *Journal of Political Economy*, 1988, p. 61-80.

Taylor, Peter Shawn, « Melancholy Babies », *Saturday Night*, mai 1996, p. 23-28.

Thurow, L. C., *Head to Head: The Coming Economic Battle Among Japan, Europe and America*, William Morrow & Co., 1992.

Tobin, James, « Monetary Policies and the Economy: The Transmission Mechanism », *Southern Economic Journal*, 1987, p. 421-431.

TSE Committee on Corporate Governance, *Where Were the Directors: Corporate Governance and the TSE*, Toronto Stock Exchange, 1995.

Woolridge, Randall, « Competitive Decline and Corporate Restructurings: Is a Myopic Stock Market to Blame? », *Journal of Applied Corporate Finance*, 1988, p. 26-36.

Publications de recherche d'Industrie Canada

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PUBLICATIONS CONJOINTES

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LE CANADA AU 21e SIÈCLE

II. RESSOURCES ET TECHNOLOGIE

VISUALISER LE 21e SIÈCLE — INVESTISSEMENTS EN INFRASTRUCTURE POUR LA CROISSANCE ÉCONOMIQUE, LE BIEN-ÊTRE ET LE MIEUX-ÊTRE DES CANADIENS

Document no 6
Novembre 1998

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On ne peut parler sérieusement du futur à partir du moment où la réalité commence à être difficile, alors que c'est précisément là qu'il faudrait en parler. On se retrouve alors dans la propagande, avec un futur officiel qui empêche de poser les vrais problèmes.

Nicole Morgan
Le Sixième continent - L'Utopie de Thomas More
Paris, Vrin, 1996
cité dans *Le Devoir*, 5 août 1996, p. B1

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PRÉFACE

À L'APPROCHE DU NOUVEAU MILLÉNAIRE, les Canadiens assistent à une transformation radicale des paramètres de l'économie. La tendance à la mondialisation des marchés et à l'intégration de plus en plus poussée de l'activité économique entre les nations s'accentue. Les progrès spectaculaires de l'informatique et des communications facilitent ce mouvement de mondialisation et changent fondamentalement le milieu de travail et le mode de vie des Canadiens. Du même coup, et comme conséquence première de la révolution de l'information, les activités axées sur le savoir occupent une place sans cesse plus grande dans notre économie et celle des autres pays industrialisés.

Cette mutation fondamentale de l'économie nous incite à faire une comparaison avec la révolution industrielle du 19e siècle. Comme à cette époque, les grands changements structurels engendrent des incertitudes. Les entreprises et les travailleurs luttent pour se tailler une place dans ce nouvel ordre économique. Les Canadiens se demandent si les ressources matérielles, humaines et institutionnelles de leur pays constituent une assise suffisamment solide pour garantir leur prospérité future. Beaucoup estiment que les perspectives qui s'offrent au Canada sont beaucoup moins sûres qu'à l'époque où les richesses naturelles jouaient un rôle clé dans l'édification de l'économie du pays.

Afin d'explorer plus à fond les possibilités et les défis que laissent entrevoir ces développements à moyen et à long terme, la Direction de l'analyse de la politique micro-économique d'Industrie Canada a invité un groupe de spécialistes à présenter leur « vision » du Canada au 21e siècle dans un certain nombre de domaines importants. Chaque auteur devait s'attaquer à deux tâches redoutables : d'abord dégager les grandes tendances historiques en vue d'élaborer des scénarios illustrant comment les choses évolueront vraisemblablement au cours des dix à quinze prochaines années dans le domaine qui lui avait été assigné, puis examiner les conséquences à moyen terme de cette évolution pour l'économie canadienne.

Les essais qui découlent de cet exercice sont en voie de publication sous le thème général « Le Canada au 21e siècle ». La collection englobe onze documents traitant des perspectives qui s'offrent au Canada à moyen terme dans différents domaines. Ces documents sont répartis en trois volets. Le premier, *Mise en situation*, est consacré aux tendances fondamentales qui façonneront le contexte économique à moyen terme au Canada. Le second volet, *Ressources et technologie*, traite de l'évolution de certains facteurs importants sur le plan de la création de la richesse au Canada, ainsi que des mesures requises pour leur donner un solide fondement en vue d'assurer la prospérité du pays. Le troisième et dernier volet, *Relever le défi*, scrute les réactions des particuliers, des entreprises et des gouvernements aux défis qui se présenteront à moyen terme et propose certains éléments de solution en vue d'orienter le pays sur la bonne voie.

S'inscrivant dans le volet *Ressources et technologie*, cette étude du professeur Christian DeBresson, de l'Université du Québec à Montréal, et de Stéphanie Barker, du Département de communication de l'Université de Montréal, s'intéresse aux possibilités d'investissement les plus prometteuses à long terme au niveau des infrastructures. Les auteurs mettent en relief certaines tendances importantes à long terme, notamment la place de plus en plus grande occupée par les activités axées sur l'apprentissage et le savoir, le rythme plus lent de la croissance économique au Canada et dans d'autres pays hautement industrialisés, l'émergence de l'Asie comme nouveau centre de la croissance économique mondiale et, enfin, l'aggravation des problèmes environnementaux à l'échelle planétaire.

À la lumière de ces tendances, les auteurs dressent une liste de projets d'infrastructure prometteurs, en fonction de quatre objectifs. Premièrement, accroître la participation du Canada à l'économie mondiale de l'apprentissage – notamment par des investissements dans la formation préscolaire, des programmes visant à améliorer le rendement des élèves au niveau secondaire et l'élaboration d'instruments et d'applications pour l'Internet. Deuxièmement, renforcer la confiance entre les acteurs économiques grâce à des institutions locales qui évalueraient les projets de grande envergure et communiqueraient les résultats aux citoyens des collectivités concernées. Troisièmement, améliorer la qualité de vie et de l'environnement, peut-être en faisant la promotion de l'utilisation de véhicules électriques dans les villes et en instaurant des programmes de recyclage en milieu urbain. Enfin, quatrièmement, repositionner le Canada sur l'échiquier économique mondial en créant des centres d'excellence multidisciplinaires qui mèneraient des recherches sur des questions économiques et sociales d'envergure mondiale.

SOMMAIRE

IL EST PROPOSÉ QUELQUES INVESTISSEMENTS D'INFRASTRUCTURE :

- Un réseau d'éducation préscolaire.
- Des programmes expérimentaux d'excellence pour réduire le décrochage scolaire au niveau secondaire.
- Deux instituts d'apprentissage des langues étrangères contemporaines.
- Des recherches sur les applications possibles d'Internet, en particulier des évaluations des possibilités d'échanges interactifs.
- La mise en place de réseaux de veille technologique.
- La mise en place de forums locaux d'évaluation technologique.
- Le remplacement progressif des carburants fossiles par l'électricité dans les transports urbains et interurbains, le recyclage et la purification des eaux.
- La restauration des infrastructures des quartiers et des centre-villes.
- Des investissements relationnels en vue de réduire les coûts de transaction entre les partenaires de ces projets d'infrastructure.

Étant donné le déficit public, le financement de ces infrastructures doit être assuré par le secteur privé. Tout emprunt public ne pourrait aujourd'hui qu'aggraver notre vulnérabilité aux crises financières. Les trois paliers de gouvernement doivent, comme au XIX^{e} siècle, susciter et assister des partenariats privé-public pour ces projets et mobiliser d'emblée les utilisateurs. Le principe de la *subsidiarité* doit commander la gestion de ces infrastructures.

Ces choix d'infrastructure visent quatre objectifs :

1. Accroître notre participation à l'économie de l'apprentissage.
2. Instaurer et préserver un climat de confiance.
3. Améliorer la qualité de la vie et de l'environnement.
4. Repositionner le Canada dans l'économie mondiale.

Dix grandes tendances irréversibles président au choix de ces objectifs :

- La domination croissante de l'économie de l'apprentissage.
- La recherche du mieux-être comme motivation centrale de nos économies.
- L'Asie comme nouveau centre de l'économie mondiale et de la croissance.
- L'aggravation de la crise environnementale.
- L'émulation avec des jeux à somme positive remplace de plus en plus les jeux compétitifs à somme nulle.

- L'économie de l'innovation comporte de plus en plus de coûts de transaction qui ne peuvent être réduits que par la confiance entre acteurs.
- La réduction de la taille de toutes les organisations, y compris les gouvernements.
- L'accélération du changement technique.
- La mondialisation, qui va de pair avec une réaffirmation du rôle des métropoles.
- La domination d'un secteur financier international volatil.

La position du Canada est évaluée relativement à chacune de ces tendances. Nous élaborons des scénarios extrêmes, nous analysons leurs interactions et nous imaginons les réactions des différents acteurs. Il devient ainsi possible de mieux cerner les points critiques et les moyens d'action pertinents. Le texte s'attache au retour en force de différents types de collectivités, particulièrement celles où règne la confiance entre les membres.

INTRODUCTION[1]

NOUS SOMMES HONORÉS DE L'INTÉRÊT porté à notre vision de l'avenir canadien et nous apprécions l'occasion qui nous est offerte de la formuler. Il est peu fréquent que des représentants élus, qui réfléchissent et calculent dans le cadre temporel d'un mandat électoral, fassent appel à des personnes qui oeuvrent dans un cadre plus pertinent : celui du long terme.

Les choix d'investissements en infrastructure concernent l'avenir de nos enfants et de leurs enfants. Les bénéfices économiques des investissements en infrastructure peuvent difficilement être mesurés[2]. C'est au delà de ces considérations que se situe le propos de Robert Heilbroner :

> *L'efficience collective . . .(d'une) économie ne peut dépasser (les limites) de son infrastructure*[3]

L'état de l'infrastructure définit ce que les économistes désignent comme la frontière des possibilités de production collective. Comme n'importe quel capital fixe, l'investissement en infrastructure précède logiquement toute activité productive. Le capital immobilisé permet la production privée; l'infrastructure, elle, est nécessaire à l'échange et aux transactions économiques entre agents et de là, au fonctionnement même de la société.

Les investissements en infrastructure peuvent produire des effets qui ne seront visibles qu'à la génération suivante – ces effets seront souvent indirects et difficilement prévisibles[4]. Depuis les travaux de Nicolai Kondratieff (1922, 1984)[5], il est reconnu que les investissements en infrastructure tendent à être massifs, indivisibles et concentrés dans le temps[6], alors que leurs effets économiques se manifestent sur de longues périodes dont il est impossible de prévoir la durée exacte[7]. Ce sont souvent les investissements auxiliaires et complémentaires aux grands investissements initiaux qui rendent l'infrastructure efficiente[8]. Nous estimons que, malgré les expériences d'analyse avantages-coûts, il est impossible d'évaluer *ex ante* les valeurs relatives des investissements en infrastructure, de la même manière qu'il est impossible de prévoir, avec la première application d'une innovation, si celle-ci sera ou non une innovation radicale[9]. Il est aussi impossible de prévoir *ex ante* si l'investissement initial en infrastructure sera suivi des investissements connexes nécessaires pour en tirer tous les avantages économiques. Les retombées économiques – en infrastructure et autres – viennent bien après les investissements initiaux. Nous verrons plus loin que nous sommes confrontés à une telle situation avec Internet.

Nous apprécions cette occasion de suggérer quelques pistes de choix sociaux dans un cadre temporel qui donne tout son sens aux considérations d'investissement en infrastructure : c'est à long terme qu'il faut y réfléchir.

Nous apprécions et relevons ce défi, non sans hésitation. Notre jugement, quoiqu'informé, sera nécessairement subjectif. Mais tout choix d'infrastructure est partiellement subjectif. Expliciter une *vision* quant à ce qui pourrait transformer

notre partie du monde en un lieu meilleur – ce que les Grecs appelaient *ætopia* – est nécessaire car les choix d'infrastructure se font en fonction de la société désirée. Aussi, nous admettons que nos choix procèdent d'une vision sociale et écologique subjective. Mais ceci comporte deux dangers : d'abord, de s'envoler par optimisme dans une bulle irréaliste (ce que Thomas More appelait *utopia* – le non lieu), pour ensuite sombrer dans une obsession pessimiste, victime du syndrome apocalyptique et millénariste si fréquent aujourd'hui où n'existent que les problèmes et les dangers.

Nous tentons d'éviter ces pièges en commençant par identifier dix tendances que nous croyons irréversibles, de manière à voir comment le Canada se situe par rapport à ces tendances; puis, nous identifions les plus importantes incertitudes du futur. Dans le contexte de celles-ci, nous considérons les situations les plus extrêmes; ensuite, nous suggérons les réactions probables des acteurs principaux confrontés à ces situations extrêmes; enfin, nous identifions où, quand et comment les choix sociaux quant aux investissements à long terme peuvent améliorer les perspectives qui s'offriront à la génération future. Notre approche n'est pas exclusivement économique, mais aussi sociale et culturelle. Dans un si court document, toutefois, nous ne pouvons qu'énumérer un ensemble d'investissements en infrastructure et proposer des conjectures quant à la nature de leurs effets. Estimer rigoureusement l'ampleur de leurs effets et de leurs coûts tiendrait du mirage. Nous ne visons finalement qu'à susciter la réflexion et le débat.

DES TENDANCES IRRÉVERSIBLES

IL EST PEU PROBABLE QUE CERTAINES TENDANCES se renversent. Leur direction ne peut pas être modifiée par nos choix économiques et politiques futurs. Seules leur amplitude et leur vitesse peuvent être influencées. Le Canada ne peut que se préparer à orienter ses choix et ses actions dans le sens de ces tendances, de la manière la plus profitable possible. À notre sens, les tendances les plus importantes sont les suivantes.

TENDANCE 1 : LA DOMINATION CROISSANTE DE L'« ÉCONOMIE DE L'APPRENTISSAGE »[10]

UNE PART DE PLUS EN PLUS IMPORTANTE de l'activité humaine se consacre non plus à l'usage d'artefacts (outils, ustensiles) pour la production de biens, mais plutôt à la conception, au design et à la préparation de ces biens. L'accélération de cette tendance depuis la Seconde Guerre mondiale se manifeste par l'accroissement de la proportion de travailleurs hautement scolarisés sur le marché du travail. Tout comme le cycle de vie des produits se raccourcit, il n'est pas rare de voir des travailleurs bénéficier dans leur vie de plus d'un cycle de formation, souvent deux ou trois.

Les services et les investissements immatériels et intangibles occupent une part croissante de l'activité économique aux dépens des biens matériels (OCDE, 1996)[11]. C'est ainsi que, par exemple, le savoir et le savoir-faire humains, encodés et transcrits par l'informatique en logiciels, ont rapidement surpassé en importance la machine d'exécution, l'ordinateur. Le point de mire de l'activité économique passe d'un effort d'utilisation maximale des facteurs de production à un effort de création de nouveaux facteurs, et de l'exploitation d'avantages comparatifs à la création de nouveaux avantages.

Par voie de conséquence, les investissements en infrastructure se traduiront par un passage des investissements visant à soutenir les échanges de biens (le transport) ou d'informations (communications) à l'échange et à la création de connaissances (éducation, formation, relations, technologie). En ce qui concerne les infrastructures de communication, le Canada se porte bien (voir les figures 1-A et 1-B). Dans un contexte politique où les interventions publiques des États-nations sont de plus en plus perçues comme protectionnistes et anti-concurrentielles, les investissements en infrastructure pour des biens publics et non-rivaux sont devenus des objectifs de politique acceptés (Banque mondiale, Tassey)[12].

Le positionnement canadien en regard de l'économie de l'apprentissage s'est amélioré depuis dix ans, en particulier au sein de l'ALENA et en comparaison avec les États-Unis. Mais les récessions, l'endettement et les contraintes fiscales menacent de compromettre ce progrès somme toute fragile. Même si l'infrastructure institutionnelle de l'économie de l'apprentissage est déjà en place (sans être utilisée à sa pleine capacité), elle devrait être renforcée pour que les Canadiens en tirent le maximum d'avantages.

FIGURE 1-A

INVESTISSEMENTS EN INFRASTRUCTURES PAR LES TROIS PALIERS DE GOUVERNEMENT, 1956 À 1993

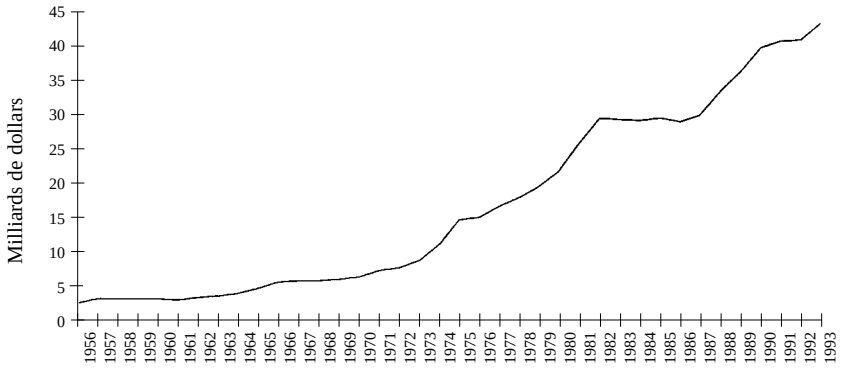
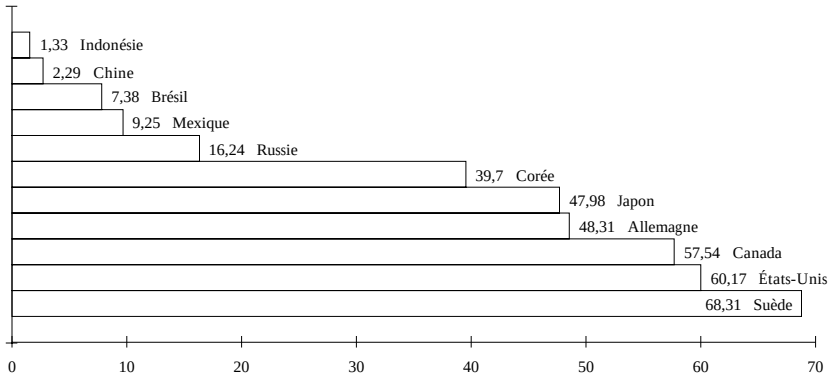


FIGURE 1-B

NOMBRE DE LIGNES TÉLÉPHONIQUES PAR 100 HABITANTS, 1994



TENDANCE 2 : DE L'ACQUISITION DE BIENS DE CONSOMMATION À LA RECHERCHE DU MIEUX-ÊTRE

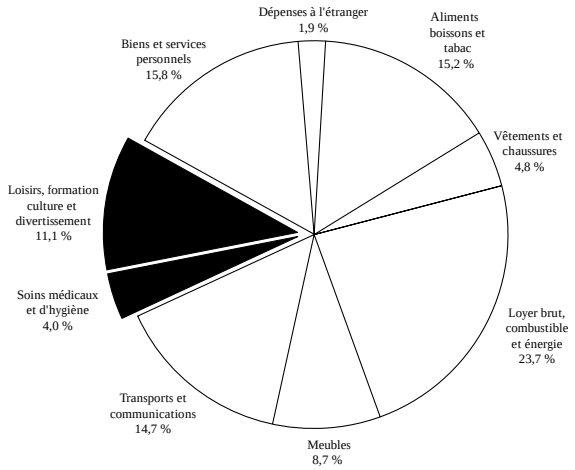
LES CONSOMMATEURS DES PAYS INDUSTRIALISÉS AVANCÉS allouent une part croissante de leur revenu à l'achat de biens immatériels et de services pour lesquels la recherche de la qualité surpasse celle de la quantité, par exemple les loisirs, le tourisme, l'éducation ou la santé (voir la figure 2). Pour une large fraction de la population des pays riches, la motivation sous-jacente à ce glissement des habitudes de consommation est la recherche d'une meilleure qualité de vie, d'un mieux-être[13]. Si les pays riches ne consacrent plus une part aussi élevée de leurs revenus à l'acquisition de biens de consommation durables qu'il y a cinquante ans, c'est qu'ils en ont assez, la satisfaction marginale procurée par de l'équipement additionnel est décroissante. Nous sommes passés d'une « économie acquisitive » à une « économie de suffisance » ou de « saturation ».

Ce glissement se reflète partiellement dans les rapports du Programme des Nations unies pour le développement (PNUD)[14]. Dans les pays riches, ceci veut dire qu'il faut réorienter les investissements en infrastructure, en particulier ceux touchant le milieu urbain et l'environnement.

Les pays scandinaves font participer tous les segments de leur population à cette nouvelle activité économique motivée par la quête du mieux-être. Le Canada, comme les États-Unis, maintient un modèle bipolaire de consommation : une large part de sa population, jouissant d'un emploi stable, suit – ou

FIGURE 2

RÉPARTITION EN POURCENTAGE DES DÉPENSES PERSONNELLES EN BIENS ET SERVICES DE CONSOMMATION, PAR HABITANT, 1992
EN DOLLARS DE 1996



même précède – l'évolution des dépenses vers le mieux-être; par contre, un segment important de la population, à revenu précaire (notamment à Terre-Neuve et dans les Maritimes, l'est du Québec, l'est de Montréal et d'autres zones déprimées, agricoles ou industrielles) alloue encore l'ensemble de ses maigres revenus au logement et à l'alimentation et demeure aux prises avec un faible taux de scolarisation et un fort niveau d'anomie sociale. Un taux de chômage élevé et endémique, de longues périodes de chômage saisonnier, une forte proportion de jeunes hors du marché du travail, beaucoup de crimes liés à l'abus des drogues (le troisième rang mondial) et un taux de suicide s'approchant de la moyenne mondiale : voilà des indicateurs qui montrent que le Canada a permis la formation d'une sous-classe urbaine largement exclue de l'activité économique[15]. Sans croissance et création d'emplois, combattre ce dualisme apparaît très difficile à moins de procéder à des changements radicaux.

La majeure partie de la croissance économique mondiale a lieu dans les grands pays nouvellement industrialisés de l'est et du sud de l'Asie (Chine, Indonésie, Inde). La population cherche à améliorer sa condition par l'acquisition de biens de consommation durables, avec tout ce que cela entraîne comme effet multiplicateur du revenu et d'accélération de la formation de capital. Dans ces régions, les objectifs premiers des investissements en infrastructure restent le transport, l'irrigation et l'énergie. Ailleurs, un tiers de la population mondiale (Afrique, une partie de l'Asie et de l'Amérique latine) tente toujours de s'assurer un minimum de subsistance – aux limites d'un seuil absolu de pauvreté – pendant que s'éloignent de sa portée les droits économiques minimaux nécessaires pour bénéficier d'une économie de marché[16]. Dans ces économies de subsistance, les préoccupations de base (logement, aqueducs et égouts, écoles et hygiène) monopolisent les investissements en infrastructure.

Toutes les études internationales contemporaines montrent l'accroissement des écarts entre ces trois types d'économie. Les deux dernières tendances laissent présager des conséquences cruciales : il est illusoire de s'attendre à revoir une croissance économique supérieure à quelques points de pourcentage dans les pays industrialisés avancés comme le Canada[17]. Le rythme de croissance soutenu des Trente Glorieuses, nous devons l'admettre, est chose du passé et nous devons réviser nos attentes à la baisse. Il s'agit maintenant de rechercher les conditions qui favoriseront au mieux la croissance timide de notre économie et celles qui permettront à tous ses membres de bénéficier du mieux-être collectif.

Nous distinguons deux phénomènes à l'origine de cette situation. D'abord, l'éloignement irréversible de la dynamique des économies des pays industrialisés avancés d'un modèle d'économie de type *keynésien*, caractérisé par une demande de biens de consommation durables. Ces économies ne peuvent plus commander la croissance en manipulant la demande parce que les dépenses pour des biens immatériels – représentant une part croissante des budgets des ménages – ne génèrent pas localement l'effet multiplicateur de revenu et accélérateur des investissements qui permettrait de supporter une croissance rapide. Désormais, la structure interne de notre économie ne requiert ni ne sup-

porte une telle croissance[18]. Le second phénomène se traduit par ce que nous considérons comme la troisième tendance irréversible.

TENDANCE 3 : L'ASIE, NOUVEAU CENTRE DE GRAVITÉ DE L'ÉCONOMIE MONDIALE

LA CROISSANCE ÉCONOMIQUE RAPIDE DU PROCHAIN CYCLE historique sera l'affaire des pays nouvellement industrialisés, notamment ceux de l'Asie (Chine, Indonésie, Inde et d'autres pays plus petits). À l'exception des Philippines et de la Birmanie, durant les vingt dernières années, tous les pays asiatiques ont connu une croissance rapide, parfois de l'ordre de plus de 10 p. 100 annuellement et ce, souvent, de façon continue. Cette croissance est l'exemple classique d'un véritable décollage économique. Hier encore, ces économies de survivance étaient aux prises avec des épidémies et des famines. Aujourd'hui, elles profitent d'une forte croissance des revenus, des investissements des consommateurs en biens durables produits localement (pour un effet multiplicateur de revenu et accélérateur de formation de capital), d'une forte épargne et de taux d'investissements industriels élevés (notamment dans les infrastructures).

L'Asie de l'est profite de deux circonstances. D'abord, sa population, scolarisée et efficacement formée, représente un grand bassin relativement peu coûteux de *capital humain*. Son infrastructure éducative devient ainsi un atout clé pour maintenir sa croissance industrielle dans une nouvelle économie axée sur le savoir. Ensuite, elle compte dans son voisinage la nouvelle « dynamo technologique » de l'économie mondiale : le Japon. Ce pays est non seulement la seconde puissance industrielle du monde mais il doit, pour éviter la surchauffe de son économie, investir à l'étranger une bonne partie de ses considérables réserves financières. Les pays est-asiatiques possèdent aussi une homogénéité culturelle que les pays du sud de l'Asie (Inde, Indonésie et même le Pakistan, aux prises avec des tensions ethniques sérieuses) ne connaissent pas.

L'absence d'accords de sécurité en Asie pourrait cependant freiner la prépondérance économique de cette région. Les conditions de paix et de guerre sont maintenues en équilibre précaire par un ensemble de facteurs : les tensions ethniques et religieuses, les pressions concernant les ressources naturelles, la politique étrangère des États-Unis sur les ventes d'armes évoluées aux puissances rivales. Il demeure que, sauf en cas de conflit armé majeur, la domination économique asiatique reste prévisible au cours du siècle prochain.

En contrepartie, il faut admettre – non sans regret, dirons-nous, en tant que nord-américain[19] – le déclin économique des États-Unis et de l'ensemble du continent. Si le rythme du déclin des États-Unis est discutable, la tendance reste irréversible, tant en raison des facteurs externes décrits plus haut qu'en raison de cercles vicieux internes : l'effondrement du système scolaire public et le taux de décrochage élevé ont engendré un taux d'analphabétisme fonctionnel important. Le système de maintien à niveau du capital humain – nécessaire au maintien de la prospérité – fait défaut; d'ailleurs, si les universités américaines

conservent leur hégémonie[20], elles comptent dans leurs rangs de plus en plus de professeurs et de chercheurs récemment immigrés. Mais la recherche et l'enseignement n'attirent plus les meilleurs cerveaux aux États-Unis[21]. Le système de renouvellement du capital humain nécessaire à une économie prospère est en panne.

D'autres types d'infrastructure, tout comme l'éducation, se trouvent dans un triste état. En 1990, le Department of Transportation des États-Unis estimait nécessaires les investissements suivants : 50 milliards de dollars pour réparer 240 000 ponts, 315 milliards de dollars pour ramener l'état des routes à un niveau comparable à celui de 1983, 25 milliards de dollars pour le contrôle du trafic aérien. Le Department of Housing and Urban Development estimait pour sa part à 20 milliards de dollars les coûts de réhabilitation du stock national d'habitations publiques, et pour les réparations et l'entretien annuel, il fallait compter entre 60 et 118 milliards de dollars[22]. Si la fin de la guerre froide et la chute de l'Union soviétique ont donné espoir à plusieurs économistes de voir les États-Unis saisir l'occasion de consacrer le *dividende de la paix* à des investissements en infrastructure, peu de signes concrets permettent de croire qu'il en sera ainsi.

Deux facteurs provoquent une augmentation phénoménale des coûts de transaction (nous reviendrons à l'importance accrue des coûts de transaction à la tendance 6) : le manque de solidarité sociale entre les différents groupes ethniques et sociaux de la société américaine ainsi que la domination d'une culture d'individualisme acquisiteur où le recours en justice doit trancher tous les conflits possibles. La « colle sociale » (selon une expression de Douglas North) est en train de se dissoudre, ce qui entraîne, à un pôle, la déchéance sociale d'un très grand nombre et à l'autre, la formation d'un camp retranché de nantis qui dépensent, directement ou par leurs impôts, des parts croissantes de leurs budgets pour maintenir un « ordre public » de plus en plus contesté. Voilà un ensemble de facteurs pointant vers un déclin économique américain qui semble irréversible.

Les bénéfices que les Canadiens pourront récolter de la croissance économique mondiale dépendront de leur habileté à tirer avantage de la croissance de l'Asie et, malheureusement, du déclin de la position économique des États-Unis[23], tout en réduisant progressivement la dépendance du Canada envers le marché nord-américain. Une large part de cette réalisation dépendra de l'exportation vers les pays d'Asie de biens et de services à haut coefficient de savoir.

En termes d'infrastructure, ces tendances ont des conséquences immédiates. Nos institutions (de commerce, de transport et d'éducation, notamment au niveau des langues) sont toutes axées vers les relations avec les États-Unis, le Royaume-Uni, la France et, à un degré moindre, avec d'autres pays européens. Nous ne possédons pas l'infrastructure nécessaire pour bénéficier des nouveaux pouvoirs économiques émergeant en Asie : des investissements considérables en infrastructure seraient ici nécessaires.

La perspective d'une forte croissance économique dans les pays nouvellement industrialisés dépendra de leur habileté – et de leur succès – à résoudre le problème que les pays maintenant en déclin ont créé et leur ont légué : la précarité de l'écologie de la planète[24]. Pour cette raison, nous ne devons pas prendre pour acquise une croissance économique soutenue, même si celle-ci trouve sa source dans d'autres régions du monde.

TENDANCE 4 : L'APPARITION D'UNE CRISE ENVIRONNEMENTALE

LES ÉCOLOGISTES COMMENCENT À PEINE, depuis une dizaine d'années, à découvrir les mécanismes par lesquels l'activité humaine affecte – parfois paralyse ou même renverse – les boucles de rétroaction autorégulatrices des systèmes naturels. Pensons aux cas suivants : l'amincissement de la couche d'ozone avec l'émission de CFC; le réchauffement de la planète (l'effet de serre) avec les émissions de CO_2; les pluies acides avec un éventail d'émissions polluantes; l'épuisement des sols avec l'exploitation agricole et industrielle intensive et les largages chimiques (notamment les pesticides et engrais), etc. L'écologie, science relativement jeune, trouvera probablement d'autres cycles vicieux (naturels ou provoqués par l'homme) grâce à la dynamique heuristique de ses chercheurs. Comme les préoccupations quant à la durabilité des systèmes écologiques sont encore un phénomène récent, il faut parier que nous découvrirons de nouveaux problèmes seulement en y portant attention.

La durabilité est devenue un objectif et une priorité, depuis au moins dix ans, pour les pays qui profitent du confort économique relatif leur permettant de réfléchir à long terme. Les consommateurs, en quête d'une meilleure qualité de vie, demandent – et maintenant exigent – la mise au rancart des installations industrielles polluantes (comme les centrales nucléaires), le remplacement des technologies polluantes (comme celles qui utilisent les CFC et les combustibles fossiles), le nettoyage des rivières et des lacs, etc. Nous ne devons toutefois pas croire, du seul fait d'un consensus officiel apparent dans les pays industrialisés avancés sur la nécessité de la durabilité environnementale pour assurer la croissance, que l'économie sera réorientée dans cette direction. Si la quête d'un mieux-être dans les pays industrialisés avancés va dans ce sens, dans le Tiers Monde par contre, la recherche de la sécurité économique et du bien-être joue en sens opposé.

Dans les pays frappés par des épidémies et des famines endémiques, les préoccupations de subsistance quotidienne des familles restent les seules priorités. Toute restriction venant du monde industrialisé quant à l'exploitation des ressources naturelles pour assurer la subsistance suscite immédiatement une opposition virulente (et légitime), à moins que cette restriction ne soit financièrement compensée. Dans les pays qui amorcent un décollage économique (comme la Chine ou l'Indonésie), le moteur de la croissance est la quête d'un confort économique par l'acquisition de biens de consommation durables; cette croissance est justement la source principale, directe et indirecte, de la pollution

industrielle. À moins que les pays attachés au développement durable, conjointement avec les pays nouvellement industrialisés, n'investissent, ne développent et ne distribuent des technologies propres, bon marché et économiquement avantageuses (capables de satisfaire la soif de croissance et de confort des nouveaux pays industrialisés), il est peu probable que la croissance globale puisse être soutenue. Si le développement coopératif de technologies propres (du moins, sous forme de prototypes) semble un objectif réaliste à moyen terme, il est moins sûr que ce soit aussi le cas pour le développement et la diffusion de technologies *bon marché, économiquement avantageuses et durables*. Une croissance durable s'avère fort incertaine.

Les dangers environnementaux identifiés à ce jour nécessitent déjà au Canada des investissements considérables en infrastructure. Malgré une population et une industrie relativement petites, le Canada se classe, en chiffres absolus, au 5e ou au 6e rang mondial quant aux émissions de CO_2[25]. En 1990, le pays occupait le 4e rang mondial des plus importants pollueurs par les dioxydes de soufre et d'azote, toujours en chiffres absolus[26]. En termes d'émission de gaz à effet de serre par habitant, le Canada se classait aussi au quatrième rang mondial en 1991[27]. Surtout, le Canada est l'un des plus grands producteurs, en volume, de déchets nucléaires et d'autres déchets dangereux[28]. En dépit d'efforts considérables depuis les années 70 pour contrer la pollution industrielle, un avantage nord-américain – la ressource naturelle clé qu'est l'eau[29] – reste mal protégé : des efforts considérables seront encore nécessaires pour rendre aux eaux de nos lacs et rivières leurs usages multiples. De plus, le Canada recycle bien peu ses matériaux réutilisables[30].

Les médias et les politiciens ont claironné haut et fort la première position du Canada octroyée par le Programme des Nations Unies pour le développement (PNUD) sur l'échelle d'un indice composite conjuguant l'espérance de vie, le niveau d'éducation et le revenu[31] : l'attention fut ainsi détournée d'un portrait somme toute assez négatif quant à l'écologie et mitigé quant à un ensemble de problèmes sociaux (chômage, consommation de drogues, décrochage scolaire, etc.). Toutes ces considérations nécessitent des investissements en infrastructure, mais il faut aussi prévoir des ressources pour affronter des problèmes environnementaux encore insoupçonnés aujourd'hui.

Voyons maintenant les conséquences *qualitatives* des quatre premières tendances.

TENDANCE 5 : D'UN JEU COMPÉTITIF À SOMME NULLE À UNE ÉMULATION DE JEU À SOMME POSITIVE

L'ACTIVITÉ ÉCONOMIQUE GLISSE DE LA PRODUCTION et de l'échange de biens matériels à l'offre de services où de nouvelles connaissances sont créées par le fournisseur alors même que le client-utilisateur consomme ces services. Dans une économie de création de connaissances, nous passons d'un modèle de *« jeu à somme nulle » – si vous le produisez, moi, je ne le produis pas* – à un modèle

TABLEAU 1

MATRICE DE GAIN DANS UN JEU À SOMME NULLE : BÉNÉFICES TIRÉS D'UNE ÉMULATION DE TYPE *« JE GAGNE, VOUS PERDEZ; JE PRODUIS OU VOUS PRODUISEZ »* PARTS EN POURCENTAGE

Premier acteur	Second acteur	
	Coopère	Ne coopère pas
Coopère	50 50	65 35
Ne coopère pas	30 70	40 60

TABLEAU 2

MATRICE DE GAIN DANS UN JEU À SOMME POSITIVE « STAG GAME »[34] : BÉNÉFICES SOUS FORME DE CONNAISSANCES ACQUISES D'UNE ÉMULATION DE TYPE *« NOUS GAGNONS PLUS TOUS LES DEUX SI NOUS COLLABORONS »*

Premier acteur	Second acteur	
	Coopère	Ne coopère pas
Coopère	Préalable + transfert + création jointe Préalable + transfert + création jointe	Préalable + transfert Préalable
Ne coopère pas	Préalable Préalable + transfert	Préalable Préalable

coopératif d'émulation de *« jeu à somme positive » – si je partage mes connaissances avec vous, je les conserve toujours et elles ne s'épuisent pas durant le processus.* La coopération de différents acteurs techniques devient de plus en plus nécessaire. La collaboration est plus que jamais nécessaire pour créer de la valeur.

Dans un jeu à somme nulle, les acteurs n'ont guère intérêt à coopérer. Un acteur prendra l'initiative (conscient que l'autre peut répliquer) pour tirer le maximum d'une situation dans laquelle les intérêts sont nécessairement antagonistes[32]. Ce n'est pas le cas dans une économie de l'apprentissage, la connaissance n'étant pas un objet de rivalité mais d'émulation : contrairement au cas d'un bien matériel : *je peux partager mes connaissances avec vous sans que j'en perde en cours de route.* Le savoir est inépuisable : le mettre à profit ne le réduit pas; au contraire, il l'affine. Plus encore, l'interaction entre partenaires qui échangent leurs connaissances permet souvent la création de nouveaux savoirs qui n'auraient jamais été obtenus isolément. Il s'agit d'un phénomène de synergie,

la propriété émergente d'un système coopératif[33]. L'analogie mathématique illustrant le mieux cette idée serait celle d'une partie de chasse au cours de laquelle les chasseurs ont avantage à collaborer dans une battue pour, par la suite, attraper un gibier de choix (« stag game »)[34].

La compétition devient émulation : la course à la supériorité n'implique pas nécessairement l'exclusion de l'autre, mais crée un modèle d'émulation pour le perdant. La création de nouvelles connaissances techniques par l'innovation est souvent conditionnelle à la coopération entre acteurs économiques. L'innovation ne peut pas se produire sans cette coopération[35]. L'apprentissage qui en résulte est *interactif*[36]. L'innovation et la création de nouvelles connaissances techniques sont les propriétés émergentes d'une relation systémique entre les entreprises; sans collaboration, il n'y aurait pas d'innovation et de nouvelles connaissances. Les nouvelles connaissances créées transcendent la seule addition des connaissances préalables[37]. Quand ils entreprennent leur collaboration, en général, les partenaires ne soupçonnent pas qu'ils créeront, éventuellement, des techniques nouvelles. Si l'aspect coopératif de la production et de l'échange de biens dans un système de libre échange est un résultat *ex post* du respect des règles communes d'échange, la coopération est un prérequis *sine qua non*, *ex ante* du processus d'apprentissage – sans lequel ce processus ne peut être amorcé.

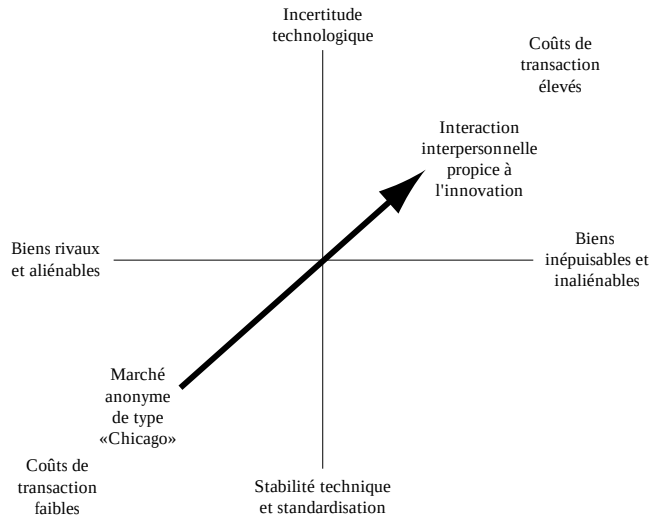
La performance du Canada sur le plan de la coopération s'améliore, même si elle demeure incertaine, voire pauvre. Certaines régions métropolitaines (par exemple : Montréal, Ottawa et d'autres villes du sud-est ontarien) et certaines industries (foresterie, pâtes et papiers, électronique et télécommunications) possèdent une culture de collaboration. Toutefois, à l'échelle du territoire canadien, le portrait reste sombre. Il y a peu d'institutions suscitant une telle coopération au Canada, comparativement au Japon, à la Corée, à l'Italie, à la Scandinavie et aux Pays-Bas. Quoique notre situation en ce domaine se démarque positivement de celle des États-Unis, il reste que cela n'est pas très difficile.

TENDANCE 6 : UNE ÉCONOMIE À COÛTS DE TRANSACTION ÉLEVÉS

CES DIX DERNIÈRES ANNÉES, il est devenu de plus en plus clair que les entreprises ne rivaliseront plus seules mais plutôt en réseaux d'entreprises coopérant entre elles. Avec l'accélération du rythme de lancement de nouveaux produits, les réseaux se sont probablement étendus. Par le phénomène des réseaux, la coordination des activités et les transactions extérieures au marché augmentent. Nous pouvons représenter l'évolution de l'économie vers une zone intense en coûts de transaction comme nous l'avons fait dans la figure 3[38].

Avec l'accélération du changement au niveau des produits et des technologies, l'économie passe d'une zone de faibles coûts de transaction à une zone de coûts de transaction élevés. On les croit plutôt bas au Japon; aux États-Unis, Douglas North (récemment récipiendaire du Prix Nobel d'économie) a évalué que les coûts de transaction représentaient déjà au moins 45 p. 100 de tous les coûts économiques.

FIGURE 3



On peut considérer que les coûts de transaction sont l'ensemble des coûts engagés pour assurer le fonctionnement du système économique (de marché) . . . plus une économie est complexe, plus ses membres devront participer à la coordination et au fonctionnement du système. Il n'est donc pas étonnant de constater que le secteur transactionnel . . . dans l'économie américaine représentait 45 p. 100 du PIB en 1970 [39].

Une économie souhaitable – riche en innovations – engendre nécessairement beaucoup de coûts de transaction. Nous n'entendons pas ici les coûts des facteurs traditionnels (travail, ressources naturelles, capital), mais bien les coûts *relationnels ou d'interaction sociale* – avant la signature d'un contrat de marché. À court terme, les organisations comme les entreprises réduisent les coûts les plus importants. Mais avec l'augmentation générale des coûts de transaction, le nouveau point de mire de la concurrence sera leur réduction, puisqu'ils seront devenus le principal coût. Tous les facteurs permettant de réduire les coûts de transaction prendront une importance croissante.

Réduire dans l'absolu les coûts de transaction n'est cependant pas un objectif désirable. Seule une économie où l'on ne trouve que des biens standardisés et une technologie immuable peut avoir des coûts de transaction peu élevés. Si la zone inférieure gauche de la figure 3 montre des coûts de transaction peu élevés, c'est que l'acheteur sait exactement ce qu'il achète. Toute activité innovatrice entraîne nécessairement des coûts de transaction élevés.

Comme on ne peut les éviter, il faut simplement s'assurer que la valeur créée compense largement ces coûts supplémentaires.

Les facteurs qui abaissent les coûts de transaction sont ceux qui facilitent les négociations, limitent le degré de surveillance requis par l'exécution des contrats, simplifient les procédures de coordination dans les organisations et améliorent les communications et la compréhension. Le facteur le plus important reste sans doute la confiance mutuelle[40] : la confiance dans les règles du jeu – ce que Douglas North appelle les institutions –, la confiance que les autres respecteront les règles du jeu, implicites ou explicites. Plus généralement, la confiance revient à pouvoir escompter que les autres travaillent dans l'intérêt commun du groupe au lieu de saisir les occasions de gain individuel immédiat aux dépens de celui-ci.

La confiance est multidimensionnelle. Orientée vers un objectif précis, elle peut se construire par des engagements mutuels. Il reste toutefois que la confiance repose souvent sur l'appartenance à une même collectivité. Une collectivité se différencie d'un marché par les liens qu'elle tisse entre les gens sur plusieurs dimensions; un marché, par contre, relie deux personnes par et pour une seule transaction dans un but instrumental. Dans un marché anonyme, les agents ne doivent pas obligatoirement se connaître ni même se rencontrer, alors que l'établissement et le maintien d'un climat de confiance nécessitent des relations interpersonnelles. Étant donné la hausse inéluctable des coûts de transaction, nous estimons que les collectivités et les relations coopératives à long terme connaîtront une remontée importante. Par leur capacité à mobiliser les engagements des membres sur une base de confiance, les collectivités réduisent efficacement les coûts de transaction.

Au cours de la dernière décennie, on a assisté à de virulents réquisitoires contre *Japan Inc*. et même *Québec Inc*. Les Japonais répliquent que s'ils comptent, proportionnellement, autant d'ingénieurs que les Américains comptent d'avocats au sein de leur population, c'est peut être qu'ils coopèrent efficacement pendant qu'une véritable culture du litige gonfle les coûts de transaction aux États-Unis[41]. Malgré les cas évidents de collusion et d'exclusion auxquels donnent lieu *Japan Inc*. et *Québec Inc*., nous devons accepter qu'il est économiquement rationnel et plus efficace, plus rapide, moins coûteux et moins incertain de coordonner des activités avec des personnes de même langue et de même culture, qui connaissent les mêmes règles implicites et explicites, qu'avec des personnes appartenant à d'autres traditions[42]. Un des avantages que possède Silicon Valley sur la Route 128 aux environs de Boston est précisément lié au niveau de développement et de dynamisme de son réseau social et de ses clubs[43]. Rien dans ce comportement n'apparaît foncièrement protectionniste; plus encore, les gains mutuels du libre échange des biens et des services requièrent comme condition préalable une telle diversité de cultures.

Dans une économie d'innovation et d'apprentissage, les marchés anonymes – où les acheteurs et les vendeurs ne se connaissent pas et ne négocient pas face à face – perdent du terrain au profit des marchés à interfaces per-

sonnelles : la notion de foires et de carrefours permanents est réhabilitée. Les vieux faubourgs des villes du Moyen Âge et les marchés des villes de la révolution industrielle, où les gens de l'extérieur savaient trouver des biens et des services précis, réapparaissent : c'est ce qu' Alfred Marshall appelait les nouveaux *districts industriels*. Ceux-ci prospéraient grâce à des liens multidimensionnels puissants et à la confiance répandue. L'importance croissante des coûts de transaction provoque également, parallèlement à une nouvelle domination des économies de gamme par rapport aux économies d'échelle, une réduction de la taille (« downsizing ») des unités participant aux échanges.

Le Canada ne semble pas particulièrement concurrentiel sur le plan des coûts de transaction. Si les agglomérations innovatrices autour de Toronto, Montréal, Ottawa et Vancouver semblent effectivement bénéficier de réseaux sociaux denses qui réduisent les coûts de transaction, le niveau de confiance entre différentes collectivités d'affaires reste peu élevé. En comparaison avec les États-Unis, le Canada semble toutefois occuper une position intéressante; mais par rapport aux pays scandinaves et même à l'Italie, a fortiori le Japon ou la Corée, sa position n'est pas avantageuse. Peut-être qu'un effort d'engagement envers la réalisation d'un projet d'infrastructure commun (comme des trains à grande vitesse entre le Québec, l'Ontario et le triangle économique du Nord-Est des États-Unis) permettrait d'établir la confiance nécessaire pour atteindre l'efficience concurrentielle sur le plan des coûts de transaction.

TENDANCE 7 : RÉDUCTION OU « DOWNSIZING »

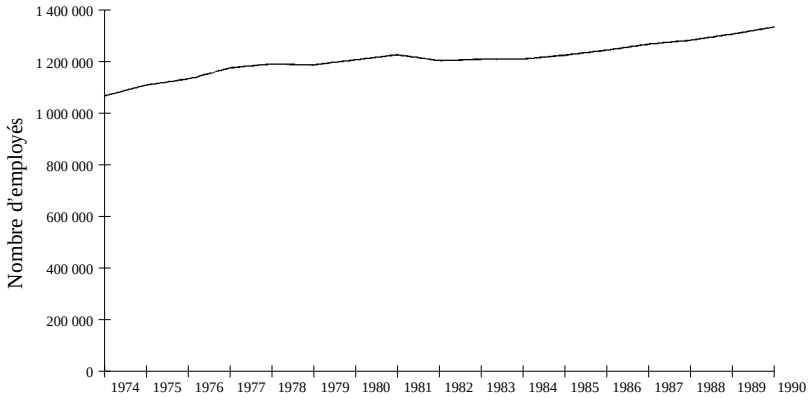
COMME D'AUTRES AUTEURS S'INTÉRESSENT À CETTE TENDANCE, nous n'en traitons que sommairement. La hausse des coûts de coordination interne (le complément interne des coûts de transaction du marché) suppose la réduction (ou « downsizing ») de toutes les organisations. La flexibilité et les économies de gamme nécessaires pour assurer la rotation rapide des produits offerts suppose aussi la réduction de la taille des unités de production et des installations manufacturières au sein des organisations.

Dans une « économie de saturation » de plus en plus axée sur le mieux-être et les services, le rapport direct et personnel entre le client et le fournisseur redevient une condition sine qua non de l'activité économique. Après un demi-siècle dominé par la production de masse de produits standard que l'on supposait identiques et banales, nous revenons à la production sur mesure ou en petits lots et à des services spécialisés.

Cette tendance devrait éventuellement s'étendre aux administrations publiques et aux États-nations. Malgré la forte tendance à la réduction et à la rationalisation dans les administrations publiques, il ressort de la figure 4 que les administrations publiques canadiennes ne semblent pas encore en porter d'importantes traces.

FIGURE 4

ENSEMBLE DES EMPLOYÉS DES ADMINISTRATIONS PUBLIQUES FÉDÉRALE, PROVINCIALES ET LOCALES, 1974 À1990



Simultanément à cette dernière tendance se dessine celle de faire assumer une même fonction administrative à plusieurs unités décentralisées de taille réduite. À l'échelle mondiale, la réduction de la taille moyenne des États-nations ne peut s'expliquer par une coïncidence historique : nous pouvons interpréter ce phénomène comme un moyen de réduire les coûts de coordination.

Sur ce plan, le Canada occupe une position peu enviable. Malgré l'échelle réduite de ses unités de production (à l'instar des producteurs « sur mesure » ou par petits lots[44]), ses industries sont, plus souvent que chez ses concurrents, intégrées verticalement (c'est le cas des pâtes et papiers); de plus, ses sociétés manufacturières et bancaires sont lourdes et inflexibles. Le Canada doit aussi composer avec une population dispersée géographiquement, ce qui oblige à des tours de force administratifs. La tendance au « downsizing » ne semble pas encore avoir affecté les institutions canadiennes, mais cela surviendra forcément un jour, volontairement ou non. De telles perspectives supposent nécessairement une désintégration verticale, une décentralisation des fonctions, ainsi qu'une dévolution de prérogatives et d'autorité vers des unités autonomes pour assurer une utilisation plus efficace des infrastructures existantes.

TENDANCE 8 : L'ACCÉLÉRATION DE LA CRÉATION DE CONNAISSANCES ET DU CHANGEMENT TECHNIQUE

L'ACCÉLÉRATION DE LA PRODUCTION de connaissances scientifiques[45] multiplie les possibilités techniques de changements de produits et de modes de production. À mesure qu'augmente la fréquence de lancement de nouveaux produits,

la recherche de la flexibilité dans les installations de base et la réduction des coûts totaux à long terme deviennent plus importantes que la réduction des coûts variables et marginaux. Les investissements dans les nouvelles technologies et les capacités d'apprentissage deviennent des éléments stratégiques pour affronter la concurrence. Certains investissements axés sur les capacités peuvent être si spécifiques qu'ils risquent de devenir irrécupérables si et quand une entreprise décide de se retirer d'un marché. Mais le degré de spécificité des éléments d'actif semble avoir été exagéré : les entreprises décident d'acquérir de nouvelles capacités en vue de l'exploitation à long terme de leurs nouveaux éléments d'actif, pour toute une gamme d'activités. Néanmoins, de telles décisions d'investissement, qui comportent des enjeux considérables, restent incertaines : il est impossible de leur assigner un facteur de risque. Même si les coûts irrécupérables représentent une barrière protectrice contre l'entrée sur le marché de nouveaux concurrents, ils représentent toujours un risque accru d'échec pour celui qui les engage.

La concurrence technologique dépend de plus en plus d'investissements dans la formation et l'apprentissage. Dans un monde où les possibilités, les cibles économiques ainsi que l'identité et le comportement des acteurs changent constamment, la veille scientifique, technologique et commerciale acquiert une importance cruciale. Dans ces conditions, les alliances de réseaux peuvent contribuer à réduire les risques et permettre d'être informé des multiples développements nouveaux et, ainsi, abaisser les coûts éventuellement irrécupérables.

Le Japon, le Brésil, l'Union européenne et la France ont systématiquement entrepris des veilles technologiques dans le secteur public. Les tentatives canadiennes, de la part d'institutions publiques comme le Centre national de recherches, n'ont eu qu'un impact limité. Le soutien public à la mise en commun de ces fonctions dans les réseaux d'entreprises ou d'industries connexes a eu plus de succès. Toutes les industries devraient être consultées en vue de s'assurer qu'elles ont accès à des services de veille technologique rapides et efficaces.

TENDANCE 9 : LA MONDIALISATION

À LA FAVEUR DE LA LIBÉRALISATION MULTILATÉRALE d'après-guerre (GATT, Bretton Woods) et avec l'importance croissante du facteur « savoir » – par nature international – dans la production, la part des activités économiques internationales a augmenté dans tous les pays : c'est le phénomène de la *mondialisation*. Cette tendance est amplement documentée, nous en traitons très brièvement.

Nous tentons ici d'en dégager certains aspects qui sont moins souvent mis en lumière. Le caractère de plus en plus interdépendant des courants d'échange entre les pays avancés masque l'émergence d'une caractéristique nouvelle et importante de l'économie mondiale : l'interdépendance internationale en matière d'investissements directs et, en complément, l'interdépendance entre

ces investissements et le commerce international. Au moins la moitié du commerce se déroule à l'intérieur des organisations transnationales ou entre leurs filiales. Ces sociétés transnationales se comportent, économiquement, comme dans un oligopole mondial usant de tous les moyens pour conquérir les marchés[46], y compris de représailles. Ces transnationales oligopolistes prennent en considération la répartition locale des ressources et leurs avantages comparatifs (naturels ou créés) et exploitent ceux-ci partout dans le monde. La concurrence au sein des oligopoles et entre ceux-ci utilise la recherche de l'innovation technologique : l'innovation renforce la position d'un acteur et ébranle celle du concurrent visé. Ainsi, pouvoir s'établir dans le milieu local le plus propice à contribuer au processus d'innovation technologique revêt une importance critique pour les transnationales oligopolistes.

Toutefois, l'intérêt pour la mondialisation est en partie une mode. Certaines tendances pointent en direction opposée : non plus du national vers l'international, mais du national vers le régional. Paradoxalement, les régions métropolitaines, qui engendrent le plus d'externalités positives, jouent ici un rôle prédominant : ces collectivités géographiques fournissent les infrastructures scientifiques et technologiques nécessaires en plus de bénéficier de coûts de transaction plus faibles (voir la sixième tendance).

Les deux tendances décrites ci-dessus nous font insister sur l'importance de « cultiver » les milieux métropolitains innovateurs en leur assurant de solides capacités scientifiques et technologiques, ainsi qu'un capital social de confiance. Ainsi, les transnationales déjà installées au Canada (peu importe leur nationalité d'origine) y trouveraient des bases solides à leurs activités et, par la suite, une gamme étendue d'investissements y seraient attirés. Ces investissements faits par des consortiums internationaux confèrent tous les avantages liés à l'accès facile et à la participation rapide aux plus récents développements. Le second aspect de la mondialisation représente un changement structurel important depuis la fin des années 70 : il s'agit du saut qualitatif dans le niveau d'intégration des marchés financiers mondiaux.

TENDANCE 10 : LA DOMINATION D'UN SECTEUR FINANCIER VOLATIL INTÉGRÉ À L'ÉCHELLE INTERNATIONALE

DEPUIS LE SECOND CHOC PÉTROLIER DE 1979, les relances économiques limitées ont été surtout de nature financière et spéculative. Si l'économie est maintenant mieux protégée des crises financières que dans les années 1920-1930, les reprises financières ont aujourd'hui moins d'effets économiques.

Les marchés financiers fonctionnent maintenant vingt-quatre heures par jour, les intermédiaires pouvant spéculer jusqu'à cinquante fois par jour, ce qui a pour effet d'amplifier la vitesse de rotation et les changements de valeur des titres. La rapidité des échanges d'information financière augmente. Les émissions gouvernementales sont offertes à des échéances de plus en plus courtes, elles s'échangent de plus en plus sur des marchés secondaires et sont conservées

pour des périodes de plus en plus brèves dans les portefeuilles (en moyenne de 2,5 à 10 jours). L'effet de levier et le « leveraging » des éléments d'actif deviennent plus faciles; les bulles spéculatives – le gonflement des prix des éléments d'actif – deviennent plus probables. Tous ces aspects sont des conditions identifiées par Kindleberger comme susceptibles de provoquer une crise financière[47].

La vitesse extrême des élans spéculatifs serait d'une importance marginale si ce n'était de son impact non seulement sur les faillites et la masse monétaire, mais aussi sur les taux d'intérêt, la dette des gouvernements, le rôle du dollar comme monnaie internationale et, peut-être à long terme, sur la coopération internationale et, par voie de conséquence, sur le niveau général d'activité économique.

L'impact immédiat d'une crise purement financière peut être la ruine complète des retraités qui dépendent de pensions modestes. Une crise peut affecter les détenteurs de fonds communs de placement et de caisses de retraite (qui représentent aujourd'hui quatre à cinq fois la taille des banques multinationales). Une telle crise peut, si elle survient, anéantir leurs actifs et occasionner de sérieux problèmes sociaux.

Le nouveau degré d'interdépendance ressort de certains des processus du crash d'octobre 1987 à Wall Street[48]. Au cours de la seconde journée de correction boursière, la U.S. Federal Reserve Bank promettait non seulement « de l'argent facile » mais offrait sélectivement des taux d'intérêt dérisoires de manière à sauver les maisons de courtage menacées d'écroulement; ce, en partie pour éviter une crise de paiements, qui aurait pu rendre les faillites contagieuses. La perte de confiance subséquente dans le dollar américain comme monnaie internationale n'est certes pas étrangère à sa dévaluation de près de 20 p. 100. Dans les années qui ont suivi, les économies d'Europe et du Japon ont été forcées d'effectuer des rajustements majeurs sur leur marché intérieur et dans l'optique de la compétitivité, notamment par des investissements étrangers directs, qui ont contribué à des récessions internes et à des fuites de capital. Les États-Unis ont ensuite subi des pressions inflationnistes alimentées par les importations.

Il faut reconnaître que la chute du dollar en 1987 n'a été freinée que par l'achat massif par les Japonais des émissions de titres du gouvernement américain. Même s'il est loin d'avoir reçu autant de reconnaissance, on estime que l'aide du Japon a coûté autant que le plan Marshall[49]. Voilà qui illustre le degré de fragilité et d'interdépendance du système financier international.

La prédominance des processus financiers est telle que les gouvernements ne disposent que d'une marge de manoeuvre restreinte pour influencer leur monnaie en manipulant les taux d'intérêt. Une hausse des taux d'intérêt peut immédiatement entraîner une dépréciation des émissions gouvernementales passées. La surévaluation d'une monnaie expose celle-ci à des fluctuations spéculatives. Tout plan de dépenses gouvernementales, objet de mouvements contre-spéculatifs, provoquera une révision de la cote de crédit. Si le pays – comme c'est le cas du Canada – porte déjà une lourde dette, le gouvernement

perd alors de facto son degré de liberté sur le plan des politiques économiques. Selon Lawrence Summers :

> *Si . . . les nations orientent leur politique monétaire de manière à atteindre un taux de change cible, elles perdent la capacité d'utiliser celle-ci pour atteindre des objectifs de politique intérieure*[50].

Ces processus financiers ne sont pas nouveaux. Ce sont plutôt leur vitesse, leur impact et l'ampleur des corrections qu'ils entraînent qui ont modifié la façon de faire des affaires et de gouverner. Rien ne laisse présager que ce nouveau climat changera; au contraire, il ira en s'intensifiant[51].

Une tendance qui peut être particulièrement dangereuse est la pression croissante sur le dollar américain. Le dollar et la Federal Reserve Bank sont de plus en plus sollicités comme prêteurs de dernier recours. La récente crise mexicaine illustre bien ce phénomène : la spéculation contre un peso surévalué a provoqué une fuite de capitaux et l'écroulement du marché secondaire des titres gouvernementaux. En une journée, les banques mexicaines se sont trouvées aux prises avec 20 p. 100 de prêts irrécouvrables et incapables de consentir aucun nouveau crédit. Malgré l'opposition du Congrès américain, le président Clinton, invoquant l'importance de la stabilité financière du Mexique au succès de l'ALENA, a soutenu le peso en puisant à même les réserves des États-Unis destinées à stabiliser le dollar américain, risquant même de les épuiser. En 1991, Lawrence Summers (avant qu'il ne devienne membre de l'administration Clinton, il pouvait s'exprimer plus librement) résumait ainsi les dangers pour le dollar d'une crise financière dans l'optique de la politique de la Federal Reserve Bank :

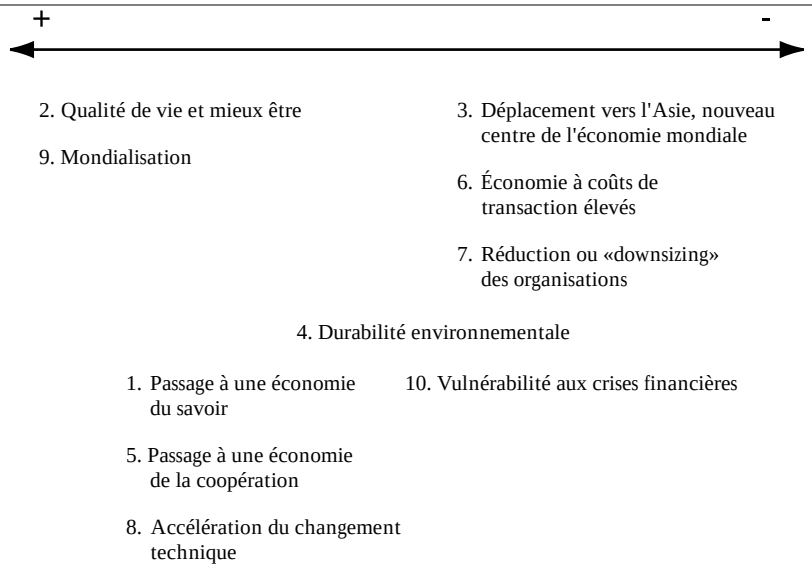
> *Le point névralgique ici est que la dimension internationale vient compliquer considérablement le problème du prêteur de dernier recours. Si une politique du prêteur de dernier recours suffisamment déterminée peut venir à bout d'une crise de liquidités, elle risque par ailleurs de déclencher une crise de la devise*[52].

Une telle pression sur le dollar comme principale monnaie internationale rappelle la situation de 1931 : avant de s'écrouler, la livre anglaise était la monnaie du commerce mondial; sa crise a entraîné la fin du multilatéralisme, la montée du protectionnisme, le retour à des zones monétaires et, avec l'effondrement du commerce mondial, la propagation de la récession à tous les pays. Évidemment, la situation actuelle présente nombre de similitudes mais aussi bien des différences avec celle des années 30; cependant, certaines de ces différences n'avantagent pas le présent par rapport au passé.

Les risques de crise financière et les pressions sur le dollar américain ne peuvent qu'augmenter. Il est probable que le Canada en sera profondément touché. Les banques multinationales, les caisses de retraite et les fonds communs de placement sont totalement intégrés à Wall Street et sont fortement

FIGURE 5

LA POSITION DU CANADA PAR RAPPORT AUX DIX GRANDES TENDANCES DÉCRITES



engagés dans des activités de prêts à court terme, ce qui augmente leurs risques face aux vagues spéculatives et aux fluctuations des taux de change. Le lourd fardeau de la dette de chaque palier de gouvernement au Canada (surpassé seulement par l'Italie, parmi les pays industrialisés) nous rend vulnérables. Les politiques visant à freiner l'alourdissement de ce fardeau par la réduction des déficits des budgets courants restent timides et s'appuient sur la prémisse – à notre avis illusoire – d'une croissance renouvelée. Le ratio dette/actif élevé des entreprises rend le Canada extrêmement sensible aux crises financières. La vulnérabilité des institutions financières dans le secteur immobilier les rend plus fragiles qu'elles ne le sont en apparence. La récession canadienne continue et peut s'accentuer avec un retournement de la conjoncture américaine.

Si la Nouvelle-Zélande a vécu récemment une crise financière, il serait naïf de croire que le Canada peut rester isolé ou qu'il en est protégé. La crise financière mexicaine de décembre 1994 et janvier 1995 s'est produite alors même que ce pays portait un fardeau de la dette moins élevé que celui de certaines provinces canadiennes. Jusqu'à présent, ont été évitées[53] tant les crises de paiements que les faillites en chaîne – quoique celles-ci soient maintenant plus sérieuses que dans le passé. La Banque du Canada n'a pas encore eu à sauver d'institutions importantes ni à injecter de liquidités pour soutenir les provinces les plus lourdement endettées[54]. Depuis quelques années déjà, les économistes redoutent les pressions que subit notre dollar encore surévalué. Comment se situe le Canada par rapport à ces tendances?

La position du Canada

L'économie canadienne se classe relativement bien sur le plan des connaissances, mais sa position concurrentielle n'est plus avantageuse en regard des coûts de transaction et de la flexibilité; enfin, le pays est géographiquement mal situé par rapport à l'Asie, centre émergent de l'économie mondiale. S'il est bien placé pour tirer parti de la mondialisation, le Canada est très vulnérable aux crises financières. La plupart des Canadiens bénéficient aujourd'hui d'une excellente qualité de vie, mais les perspectives sont moins radieuses concernant la croissance économique et les activités polluantes qui menacent cette qualité de vie. La plupart de nos forces et de nos contraintes actuelles s'inscrivent dans la trajectoire de notre développement passé.

Notre modèle de développement a évolué d'une économie basée sur des infrastructures de transport fournissant à des métropoles lointaines et riches des biens de valeur élevée, mais de poids et de volume faibles (tel que décrit par Harrold Innis), à une économie dont les avantages comparatifs découlent d'activités de fabrication énergivores et de l'exportation de ces produits[55]. Plus récemment, l'avantage comparatif du Canada en Amérique du Nord a semblé glisser vers les activités à coefficient élevé de savoir.

Le développement du Canada d'hier a toujours été largement tributaire des finances internationales et des emprunts gouvernementaux. Même si le système bancaire canadien a vu son autonomie et ses institutions transnationales évoluer vers le marché international, son degré élevé d'intégration au système financier mondial et la dette croissante du Canada rendent le pays particulièrement vulnérable à tout soubresaut financier ou économique provenant des États-Unis. Construite autour d'un État centralisé fort, d'organisations vouées à la transformation des ressources et d'institutions financières verticalement intégrées, l'économie canadienne a encore peu connu de désintégration verticale; la structure dont elle a hérité fait qu'elle supporte des coûts de transaction élevés. L'héritage d'une politique de mosaïque multiculturelle avantage ses relations avec certaines économies étrangères, tout en contribuant, par ailleurs, à hausser ses coûts de transaction interne.

Ces dix tendances doivent être acceptées et mises à profit et leurs effets négatifs, atténués. Nous pouvons résumer les perspectives qui s'offrent aux Canadiens en faisant une analogie avec la situation des Scandinaves au début du siècle. L'industrialisation de la Scandinavie s'est amorcée tardivement, bien après que l'Europe eut cessé d'être le principal centre de développement industriel. La Scandinavie a poursuivi son industrialisation en se tenant à l'écart des conflits européens et des guerres mondiales et, traçant discrètement une voie de développement originale, elle a inventé, dans les années 30, l'État-providence. Elle est vite devenue dépendante des marchés mondiaux et non uniquement des marchés européens. De même, l'industrialisation tardive du Canada a suivi la prééminence et l'hégémonie mondiales des États-Unis. Au prochain siècle, quand le foyer principal de l'économie mondiale aura quitté ce continent pour

l'Asie, les Canadiens pourront – et c'est là leur créneau – s'efforcer de devenir des fournisseurs mondiaux de techniques et de services à coefficient élevé de savoir et soutenables d'un point de vue environnemental. Mais cette voie suppose un virage radical pour prémunir le Canada contre les difficultés économiques et les crises financières des États-Unis, l'effritement de son hégémonie mondiale et l'affaiblissement du dollar américain comme principale monnaie internationale. Une telle vision et de tels biais stratégiques s'accompagnent d'incertitudes, dont nous traitons dans ce qui suit.

DES INCERTITUDES QUI BALISENT LES SCÉNARIOS D'AVENIR

DANS CETTE PARTIE, nous présentons un aperçu des incertitudes majeures dont les aboutissements ne peuvent être contrôlés par aucun acteur économique – ni les gouvernements, ni l'industrie, ni un seul pays. Nous construirons des scénarios autour des conséquences les plus extrêmes de différentes incertitudes[56]. Il est très probable que les issues véritables se situeront en deçà des bornes que nous décrivons ici. Mais il est utile d'étudier les scénarios les pires et les meilleurs pour préciser la direction à donner aux interventions. À la fin de chaque thème d'incertitude, nous préciserons les investissements en infrastructure qui pourraient contribuer à engendrer un meilleur contexte relatif pour le Canada.

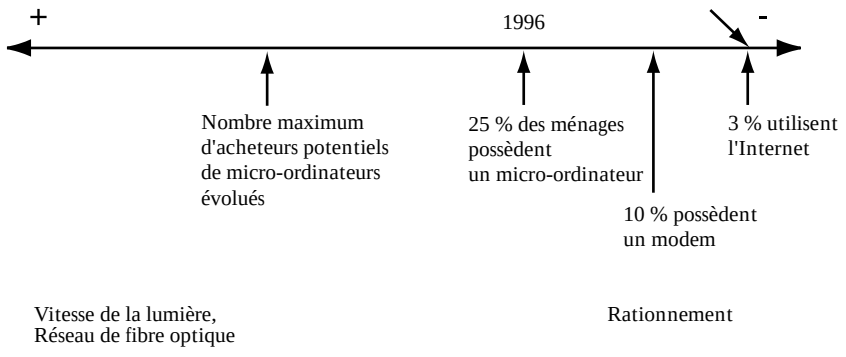
INCERTITUDE 1 : L'ACCÈS AU RÉSEAU MONDIAL DES COMMUNICATIONS

L'ARCHITECTURE ET LES NORMES FUTURES du réseau planétaire de communications du savoir sont encore inconnues. De même, les applications qui permettront d'améliorer les performances, d'abaisser les coûts et de créer de la valeur ajoutée grâce à Internet demeurent inconnues.

L'accès à Internet dépend, entre autres, de la capacité des serveurs et des tarifs exigés des usagers. Aujourd'hui, estimer la capacité totale de soutien des serveurs serait pour le moins prématuré. Plusieurs sociétés privées sont récemment entrées sur ce marché, dont plusieurs très grandes. Ce marché est évidemment payant et y entrer reste facile; c'est la raison pour laquelle il y en a encore beaucoup qui tirent profit gratuitement du système (le phénomène du « passager gratuit »). Si l'utilisation du système devenait payante, le nombre d'entrées diminuerait sans doute. Les nouvelles entrées contribueraient par

FIGURE 6

ACCÈS À L'INTERNET



contre à accroître la capacité. Quelle sera l'élasticité de l'offre de capacité des serveurs par rapport aux bénéfices et aux tarifs? Quelle sera l'élasticité de la demande par rapport aux tarifs d'utilisation des serveurs? Comment l'économie de l'offre et de l'utilisation d'Internet – de l'accès aux serveurs et aux services – influera-t-elle sur l'accès à Internet? Ces questions demeurent sans réponse. Les tarifs et les normes ne font pas encore l'objet d'une réglementation. Les parts des serveurs publics et privés et l'utilisation du réseau ne sont pas non plus réglementées. Il est possible que nous n'ayons pas à recourir à la réglementation; par contre, elle pourrait aussi devenir essentielle. La réponse dépend des principaux usages que les utilisateurs éventuels feront du réseau Internet.

En 1996, pratiquement seules les opérations de recherche et de téléchargement de ressources bibliographiques, ainsi que la collaboration scientifique internationale (par des forums sur Internet) trouvent un net avantage à l'utilisation du réseau, en raison de sa rapidité et de ses faibles coûts. La plupart des autres usages restent exploratoires, représentent une forme de snobisme ou de fétichisme technologique[57], ou sont imputables au fait que certains acteurs économiques peuvent utiliser le système gratuitement (les « passagers gratuits »). La plupart des applications accessibles sur Internet demeurent plus coûteuses que sur d'autres plate-formes (par exemple, il en coûte moins cher d'acheter un téléviseur pour voir des films que de munir un micro-ordinateur du matériel nécessaire à leur visionnement par le biais d'Internet). Les autres applications d'Internet dépendront du développement de techniques de support auxiliaires, notamment des logiciels, en particulier ceux capable de faire des recherches « intelligentes ». Cette incertitude soulève des enjeux concurrentiels importants entre les systèmes et les normes relatives à Internet.

L'issue de cette incertitude aura des répercussions directes sur la participation à l'économie de l'apprentissage. Ce système pourrait non seulement fournir l'accès à de nouvelles bibliothèques internationales, mais aussi permettre l'échange et le transfert de connaissances entre des groupes de recherche. La question cruciale est de savoir qui aura accès à ces possibilités. Pour le réseau Internet d'aujourd'hui, le schéma présenté ci-dessus illustre notre perception de la situation. Comme cette technologie reste relativement nouvelle, son univers de possibilités semble sans limite. Mais, jusqu'à présent, seul un nombre restreint de personnes peuvent se servir d'Internet : ces personnes sont diplômées – souvent des professionnels – habiles en informatique et généralement jeunes; elles possèdent à la maison un micro-ordinateur relativement évolué et doté d'un modem, elles ont accès à un serveur et possèdent des logiciels permettant l'accès à Internet. Parmi elles, seul un petit nombre dit effectivement utiliser Internet[58]. Les applications utiles sont encore peu nombreuses.

Au delà des fonctions de recherche, Internet pourrait devenir utile à l'économie de l'apprentissage si – et seulement si – son usage impliquait *activement* l'utilisateur et, de façon « *interactive* », un groupe de *personnes*. Il a été clairement démontré que l'apprentissage ne peut être passif. Or, le système que nous connaissons aujourd'hui demeure tout à fait passif : l'utilisateur est simplement

un *spectateur*, son interaction se limite à un dialogue algorithmique avec la machine.

Le citoyen moyen de 1996 ne trouve que peu d'usages pour Internet – moins que le Français n'en trouve pour le Minitel. Même dans leur exploration des capacités qu'offre Internet pour des *spectateur*s, les entreprises médiatiques n'ont pas encore trouvé d'applications qui ne peuvent être accessibles à meilleur coût sur d'autres supports.

Cette forme d'accès est limitée physiquement – au tout premier niveau – par le marché potentiel des micro-ordinateurs personnels évolués, par les connaissances en informatique, ainsi que par la capacité et les tarifs d'utilisation des serveurs. Les fournisseurs éventuels de services de raccordement à Internet, qui gèrent actuellement des installations de câblodiffusion, offrent encore peu de contenu, d'applications et de savoir-faire technique à une clientèle qui, pour tout dire, en est encore à ses premiers pas en informatique.

Néanmoins, Internet, comme plate-forme technologique, engendre sa propre synergie de recherche heuristique. Sans demande à combler et sans garantie quant à la demande éventuelle, les spécialistes en génie-logiciel et les fabricants de matériel électronique développent, comme options, des techniques auxiliaires sans en attendre de bénéfices économiques immédiats. Il est ainsi possible qu'Internet devienne un outil important de l'économie de l'apprentissage, en particulier pour l'accès aux connaissances étrangères.

Dans cette perspective, la part de la population qui a accès à l'économie de l'apprentissage risque de changer. Dans un rapport récent sur les stratégies d'emploi[59], l'OCDE insiste sur l'ambivalence : les nouvelles technologies en électronique, informatique et télécommunications peuvent devenir des facteurs de productivité accrue ou d'exclusion sociale.

Imaginons le scénario suivant : pour les prochaines décennies, Internet demeure accessible seulement à des professionnels scolarisés qui possèdent des connaissances en informatique et des micro-ordinateurs personnels évolués. Ce scénario donne lieu à l'apparition d'une importante classe de personnes – la majorité de la population – privées de la possibilité d'utiliser Internet comme outil d'apprentissage. Il en résulterait que la majorité du stock de capital humain deviendrait rapidement désuet. Si nous supposons que les entreprises de communications réussissent à développer des applications économiques sur support Internet, il faut alors prévoir que, pour une partie de la population, la vie par procuration à travers la lunette de l'informatique – comme c'est déjà le cas avec la télévision – deviendra une option de rechange à la programmation médiocre des réseaux télévisuels. Si le bassin du sous-emploi continue de s'étendre, nous nous retrouverons alors avec une population passant le plus clair de son temps à vivre par procuration, comme simple spectateur[60], sans grand progrès depuis l'avènement de la télévision. Nous reviendrons aux réactions des différents acteurs dans la prochaine partie.

INCERTITUDE 2 : L'INTERACTIVITÉ?

VOICI UNE QUESTION CLÉ : quelle part de l'activité sur Internet sera interactive, quelle part sera unidirectionnelle? Dans le développement de la télévision, les plans d'origine prévoyaient l'interactivité; or, ce système est devenu depuis l'exemple par excellence de la transmission unidirectionnelle. Internet, par contre, a déjà prouvé son potentiel interactif (jusqu'alors l'apanage exclusif du téléphone) : l' IRC (*Internet Relay Chat*) permet, si le réseau n'est pas congestionné, des conversations directes[61].

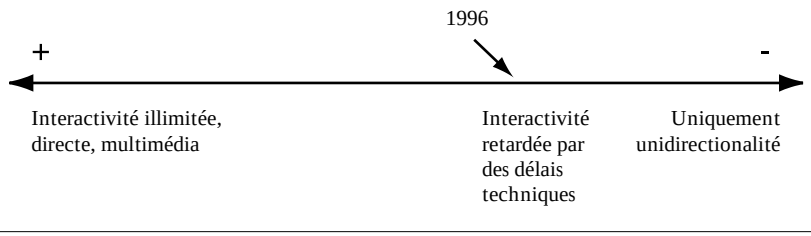
Cette caractéristique rappelle la métaphore du *Village global*. Un certain nombre de collectivités internationales se sont formées ou établies sur Internet[62]. Toutefois, la majorité des utilisations actuelles d'Internet demeurent unidirectionnelles : la *navigation* (« surfing ») et le *courrier électronique* (« e-mail ») ne sont rien d'autre que la lecture ou l'envoi, unidirectionnel, d'informations. Si, de cette manière, se créent des bibliothèques, des ressources de recherche et des répertoires globaux, il ne s'agit là, en fait, que de généraliser et d'étendre quantitativement les modes et les accès de recherche aux bases de données électroniques. Dans un contexte de coupures budgétaires dans tous les domaines, dont l'éducation (et les services de bibliothèques), de telles occasions sont bien accueillies. Mais il faut voir là une bien modeste contribution à l'économie de l'apprentissage, qui se limite à une circulation plus rapide de l'information internationale.

Quelle sera la part d'interactivité dans le système Internet? Selon l'issue des incertitudes relatives à l'interactivité, les effets d'Internet et sur celui-ci (de même que sur l'ensemble des systèmes globaux de communications) peuvent varier considérablement. Cet aboutissement demeure toutefois indéterminé.

Une multitude d'acteurs travaillent déjà à modeler l'architecture d'Internet et plusieurs autres se joindront à eux. S'il est tentant pour les économistes d'appliquer à cet exemple de système technologique la métaphore de la *main invisible* d'Adam Smith, il faut plutôt reconnaître qu'Internet sera modelé par une multitude de mains tout à fait visibles, certaines plus puissantes que d'autres.

FIGURE 7

L'INTERACTIVITÉ



Quels seront les rôles respectifs des compagnies de téléphone et de câblodiffusion et des médias? Quand l'étroite fenêtre d'opportunité s'ouvrira-t-elle pour un organisme de réglementation? Comment cette instance percevra-t-elle les besoins des utilisateurs d'Internet? Que peut-on – et doit-on – considérer comme critère « raisonnable » de réglementation publique[63]? Comme dans toute rivalité de systèmes, plusieurs mains visibles interviennent; quelques consortiums peuvent imposer, intentionnellement ou non, leurs normes : c'est un processus concurrentiel volatil, dont l'issue est indéterminée et sans garantie d'optimalité[64]. Les systèmes technologiques encore non stabilisés constituent ainsi une source d'incertitude majeure pour l'avenir.

Les deux incertitudes pertinentes au système global de communications – l'interactivité et l'accès aux serveurs – sont interdépendantes. La capacité d'interactivité humaine en temps réel est proportionnelle à la capacité totale des serveurs mais inversement proportionnelle au nombre de personnes qui les utilisent. Ces dimensions des systèmes de communications influent sur les agents économiques, leur bien-être et leur mieux-être de différentes manières.

Des investissements en infrastructure pour Internet sont-ils utiles et souhaitables à cette étape? Si c'est le cas, des deniers publics doivent-ils y être consacrés? Si des intérêts privés (groupes, clubs, etc.) trouvent à Internet des applications économiquement utiles, ils devraient également y trouver les incitations requises pour investir eux-mêmes dans l'accroissement de la capacité des serveurs et l'élaboration de logiciels et de techniques auxiliaires. D'ici là, les intérêts privés qui bénéficient de cette infrastructure, sans pour autant y investir (le problème des « passagers gratuits »), devraient défrayer l'usage qu'ils en font : leur utilisation contribue à saturer le système, écartant ainsi d'autres usagers et réduisant l'interactivité en direct et en temps réel, retardant la croissance même de l'interactivité. Nous estimons que des investissements publics dans l'infrastructure d'Internet ne devraient être envisagés que dans le cas des biens publics, pour lesquels, de toute manière, le secteur privé sous-investirait probablement. Au centre de la question des biens publics sur Internet se situent les préoccupations au sujet de la sécurité, de la vie privée et des autres questions qui touchent à l'arbitrage entre les libertés individuelles et les droits collectifs. L'éthique est encore une question d'intérêt public que les gouvernements préfèrent négliger. Les investissements publics devraient aussi servir à soutenir le mode interactif direct sur Internet, puisqu'il engendre un véritable espace public démocratique et accélère notre apprentissage et notre participation à la création des connaissances.

Concrètement, la fonction d'Internet comme réseau international de recherche doit être soutenue. S'il est déjà clair que des fonds publics servent à soutenir les bibliothèques, il serait indiqué de diriger une partie de ces fonds vers les installations qui relient les bibliothèques du monde entier entre elles, même si, dans ces conditions, la navigation et le téléchargement d'informations sont unidirectionnels.

De façon générale, il est encore trop tôt pour s'aventurer à prévoir comment les applications d'Internet pourraient servir l'intérêt public. À cet égard, la recherche, le développement expérimental de contenus et de logiciels ainsi que l'évaluation de l'ensemble sont des activités qu'il y aurait lieu de financer publiquement. Par conséquent, l'élargissement de l'horizon des connaissances des agents publics pourrait éventuellement les amener à développer des applications utiles. En particulier, il y aurait lieu de chercher (et d'expérimenter) des moyens par lesquels les collectivités pourraient profiter de l'espace public créé par Internet. De tels programmes de recherche devraient avoir un caractère expérimental[65].

Il faut émettre ici une mise en garde. Le gouvernement fédéral et les provinces viennent de réagir (pratiquement comme à un stimulus de réflexe) à la perspective d'un analphabétisme informatique parmi les Canadiens en cherchant une solution technologique rapide – l'installation de postes d'accès à Internet dans les écoles – à un problème fort complexe. Cette approche pourrait avoir, comme conséquence dangereuse, un effet pervers. L'introduction parfois maladroite des ordinateurs dans les écoles a eu pour effet de désenchanter un certain nombre de professeurs et d'étudiants, de les décourager d'utiliser l'ordinateur. L'installation de machines (« hardware ») pour accéder à Internet pourrait avoir l'effet semblable de décourager les gens d'utiliser le réseau. Toute implantation expérimentale d'Internet dans les écoles devrait être préparée en trois étapes : d'abord, le développement d'une activité d'apprentissage et d'un contenu dont il est reconnu qu'Internet est, pédagogiquement, le meilleur support; aussi, la formation des professeurs en vue de cette expérience; enfin, une expérience menée volontairement avec un groupe témoin utilisant un support différent pour permettre d'évaluer l'ensemble. Comme pour tout processus novateur, l'identification des applications, des utilisateurs et des problèmes rencontrés doit précéder l'adoption d'une solution technique.

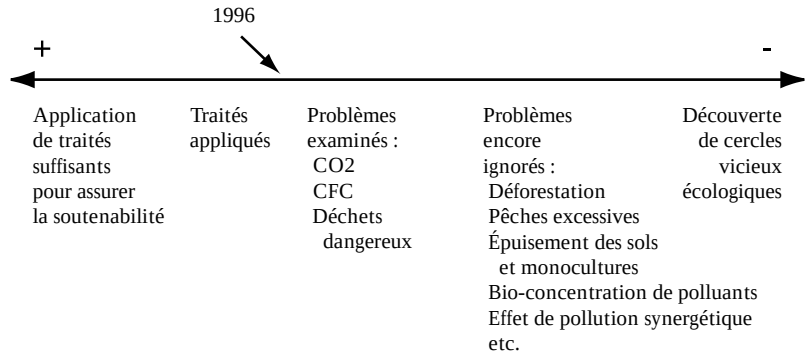
Ces initiatives, qui ne requièrent que des investissements modestes et qui ne peuvent faire de tort, pourraient contribuer à une évolution favorable d'Internet et constituer une formule d'investissement utile pour d'autres actions éventuellement nécessaires.

INCERTITUDE 3 : LA PORTÉE SPATIO-TEMPORELLE DE LA CRISE ENVIRONNEMENTALE

LA CRISE ENVIRONNEMENTALE CONSTITUE une source majeure d'incertitude. Non seulement n'y a-t-il aucun consensus quant aux causes de la disparition de la couche d'ozone et du réchauffement de la planète, mais les sciences environnementales commencent à peine à permettre de comprendre les interdépendances entre les systèmes écologiques. Les effets à long terme de différents produits actuellement utilisés – y compris les substituts aux fluorocarbures – demeurent méconnus.

FIGURE 8

LA PORTÉE DE LA CRISE ENVIRONNEMENTALE



Nous ignorons si les accords internationaux pourront effectivement garantir le développement durable. Quelques estimations récentes prédisent que le scénario de 1987 du rapport Bruntland (Commission mondiale sur l'environnement et le développement), intitulé *Notre avenir à tous*, ne pourrait se réaliser sans une aide étrangère massive, d'un niveau encore jamais vu. Même alors, rien ne garantit que ce scénario aboutirait au développement durable[66]. De plus, les exigences environnementales évoluent et soumettent à des pressions imprévisibles les systèmes de transport, plusieurs industries (production, distribution et utilisation de l'énergie) et les infrastructures urbaines (égouts, traitement des eaux usées, gestion des déchets et enfouissement sanitaire). Les incertitudes environnementales semblent les plus difficiles à estimer.

En termes d'investissement, six catégories d'exigences émanent du scénario précédent :

1. Comme pollueur mondial important (voir la première partie), nous devons faire face à notre responsabilité en ce qui a trait au nettoyage.
2. Nous devons modifier les processus de production que nous pouvons rendre sécuritaires pour l'environnement.
3. Nous devons remplacer et mettre au rancart les installations qui ne peuvent pas être rendues sécuritaires.
4. Nous devons relever un défi de taille, celui de développer des substituts propres et économiques. Ceux-ci peuvent nous permettre de créer des liens avec les pays nouvellement industrialisés par l'exportation ou par la collaboration au développement de ces substituts; l'ACDI et le CRDI pourraient y jouer un rôle. Ces projets nécessiteraient probablement des investissements dans de nouvelles pistes de recherche. Par

exemple, le projet de réactivation économique de l'est de Montréal – particulièrement, celui du district de Rosemont par la reconversion de l'ancienne cour de triage Angus du Canadien Pacifique – représente autant un défi qu'une possibilité à cet égard.

5. C'est après avoir apporté notre contribution que notre voix internationale en matière de réglementation et de développement deviendra plus crédible et que nous serons plus à même de jouer un rôle important dans la recherche d'un développement durable. Ce faisant, il est probable que de nouvelles institutions internationales verront le jour. À cet égard, le fait que Montréal abrite des agences internationales de l'ALENA et des Nations Unies présente non seulement un défi, mais aussi une opportunité incomparable.

6. Pour faire face à la crise environnementale, de nouvelles institutions devront être créées. Nos démocraties, héritières du Siècle des lumières, sont érigées sur le principe des droits individuels et, parfois, collectifs. Mais aucune provision ne traite des choix techniques[67]. Ces choix sont assumés au nom soit des compétences et des droits des propriétaires-investisseurs soit des citoyens-utilisateurs. Dans le cas des répercussions environnementales des techniques, ces deux visions s'opposent. Il est donc nécessaire d'instituer des tribunes publiques pour débattre de ces questions, de préférence à l'endroit même où ces techniques sont utilisées et où les problèmes environnementaux trouvent leur origine[68]. Des expériences d'audiences publiques se sont déroulées dans un certain nombre de localités et de villes. Si elles n'ont pas toujours abouti à un consensus, elles ont à tout le moins permis d'obtenir de larges majorités. De manière à assurer que ces décisions suivent un processus démocratique, un référendum sur les choix gouvernementaux devrait clore le débat. Cette mesure *concrétiserait la démocratie* et permettrait aux citoyens de façonner leur environnement immédiat, à défaut de quoi toute décision serait prise par des institutions technocratiques, véritables géants myopes (voire aveugles). Leurs décisions entraîneraient aussi bien une inefficacité technique et un gaspillage d'investissements qu'une vigoureuse opposition des citoyens des diverses localités concernées.

Les six points présentés ici peuvent constituer autant de pistes à suivre pour examiner la crise environnementale qui sévit. Cette question prend d'autant plus d'importance que la crise pourrait affecter l'actuel système multilatéral d'échanges et même provoquer un retour au protectionnisme des blocs commerciaux.

INCERTITUDE 4 : MODE DE RÉGULATION ET RÈGLES INTERNATIONALES

UNE SOURCE IMPORTANTE D'INCERTITUDE provient des régimes internationaux et des traités réglementant les comportements internationaux, les institutions internationales et ce que Kindleberger appelle les *biens publics internationaux*. C'est le cas de la pollution, de la propriété intellectuelle, des droits à la vie privée et du commerce international. Certaines de ces considérations sont nouvelles (la pollution et les droits à la vie privée, notamment) et les bases d'éventuels accords restent à définir, mais là n'est pas vraiment notre propos. D'autres considérations s'appuient déjà sur une longue tradition, porteuse de controverses (c'est le cas des droits de propriété intellectuelle) ou de consensus (par exemple, le droit commercial). Nous traiterons surtout de ce dernier point, notamment des règlements internationaux en matière de commerce international, car leur issue influera sur l'ampleur et l'incidence de la mondialisation des marchés.

Les conséquences des traités qui ont suivi la Seconde Guerre mondiale sont presque toutes épuisées. Par exemple, l'Accord général sur les tarifs douaniers et le commerce (GATT) de 1949 traite exclusivement du commerce des biens, alors que la majorité des échanges d'aujourd'hui (à l'exception des biens agricoles et des textiles) portent sur des investissements étrangers, des services, des transferts de savoir, des mouvements migratoires, etc. Les accords de Bretton Woods et la convertibilité-or de la devise internationale (le dollar) ont presque tous pris fin en 1972 avec les mesures unilatérales de l'administration Nixon (voir la tendance 10, dans la première partie, ainsi que l'incertitude 5, ci-après); depuis lors, nous voyons des marchés financiers volatils et une accélération des mouvements de spéculation financière, dont les profits demeurent non assujettis à l'imposition. De plus, aucune problématique n'est largement acceptée quant aux conditions propices à des gains mutuels et dynamiques d'une libéralisation des échanges (autres que les gains statiques associés à la libéralisation du commerce des biens) : il n'existe en la matière aucune véritable référence pour les relations internationales[69].

De nouvelles règles internationales doivent être élaborées pour l'économie de l'apprentissage. De nouveaux accords multilatéraux traitant des questions soulevées par l'économie du savoir sont nécessaires. L'Uruguay Round et l'Organisation du commerce mondial ont tenté de traiter partiellement de ces questions, mais leurs résultats sont confus et incohérents. Ainsi, l'accord sur les subventions issu de l'Uruguay Round semble conforme à l'approche générale du gain mutuel par la libéralisation des échanges. Il précise clairement que les subventions à la recherche et au développement (R-D) sont toujours permises. Cet accord a invalidé l'accord sur la fabrication de matériel aéronautique issu du Tokyo Round de 1986, conçu sous la pression des lobbies de Boeing, McDonnell-Douglas et Airbus, avec l'appui du Département du commerce des États-Unis et de la Commission européenne de Bruxelles. D'un autre côté,

l'Accord sur les droits de propriété intellectuelle (TRIP) est, selon plusieurs experts en politique et droit commercial, un précédent protectionniste dangereux; heureusement, ses fondements juridiques sont fragiles, ce qui rend son application presqu'impossible. Au lieu de suivre la tradition de la *réciprocité* bien établie en droit international (selon laquelle les pays se concèdent mutuellement ce qu'ils ont de commun et convergent éventuellement), l'accord sur les TRIP réfère à la tradition *internationaliste* (abandonnée depuis longtemps en droit international) par son intention claire d'imposer[70] aux pays signataires l'obligation d'adopter des lois en matière de brevets s'inspirant de principes généraux communs. Les fondements juridiques des droits de propriété intellectuelle sont eux-mêmes un peu fragiles.

Enfin, la restriction visant l'utilisation de connaissances techniques dans le cadre d'un accord de commerce multilatéral n'est justifiée par aucun argument au nom de la protection du bien-être mutuel[71]. Au contraire, l'expérience des quatre dernières décennies montre qu'une grande part de la croissance économique mondiale est due à la mise à niveau de l'Europe puis de l'Asie en ce qui a trait aux pratiques technologiques étrangères. Comme l'entreprise qui partage ses connaissances est celle qui apprend le plus durant un processus d'échange[72], dans un jeu à somme positive (voir la tendance 5, dans la première partie), le partage des connaissances devrait être libéralisé et encouragé. Même si un système de brevets contribue à disséminer l'information technique dans tous les pays, le droit des grandes entreprises (surtout les multinationales) et le pouvoir restrictif qui leur est conféré auront pour effet probable de ralentir l'adoption locale de technologies étrangères – à moins que l'on ne prévoit une clause de licences obligatoires.

L'échec relatif de l'Uruguay Round à établir des règles du jeu internationales pour l'économie de l'apprentissage indique qu'il y aurait lieu de repenser l'ensemble du multilatéralisme actuel.

Les incertitudes quant aux règles internationales sont attribuables au fait que, devenue multipolaire, l'économie mondiale n'est plus chapeautée par une puissance hégémonique. Les États-Unis refusent dorénavant de jouer entièrement leur rôle de chef de file; les nouveaux leaders économiques, le Japon et l'Allemagne (ou l'Europe) sont réticents à prendre cette place. De plus, la puissance hégémonique d'hier est devenue protectionniste, ce qui va à contresens du système qu'elle a contribué à mettre en place.

Le principal danger que court le libéralisme multilatéral institué en 1969 avec le GATT ne vient pas des pays nouvellement industrialisés[73] mais du gouvernement des États-Unis lui-même. La loi de 1988 adoptée par le Congrès, surnommée « Super 301 », prévoit un tarif punitif pouvant atteindre 100 p. 100 : il s'agit d'une tentative par les États-Unis, inspirée d'une vision à court terme, d'utiliser l'étendue de leur marché pour inciter les lobbies d'affaires intérieurs à « obtenir des autres des concessions commerciales unilatérales et sans contrepartie », illégalement et de manière discriminatoire, à l'encontre de la clause de la nation la plus favorisée (Articles I et II des fondements du GATT)[74]. Clara

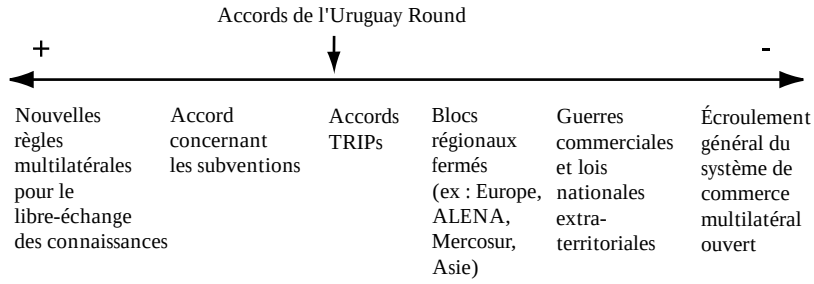
Hills, commissaire au commerce, avait assuré que cette loi, à la discrétion des États-Unis, ne serait jamais appliquée à l'encontre des règlements du GATT. L'unilatéralisme américain agressif a toutefois été ravivé récemment et s'est exprimé dans des législations extra-territoriales (Helms et d'Amato) contre les pays et les entreprises commerçant avec Cuba, la Libye et l'Iran[75]. Le danger lié à l'orientation de cette politique pour la stabilité des règles du jeu internationales se situe notamment dans le fait que c'est la première (encore) puissance économique – ainsi que le marché le plus important au monde – qui en prenne la tête : les États-Unis ont aussi été l'architecte, le promoteur et le policier de l'ouverture du système de commerce multilatéral.

Le policier non seulement ne les fait plus appliquer, mais il mine les lois qu'il a contribué à créer : les règlements du commerce international pourraient s'écrouler[76]. Une guerre commerciale qui débuterait aujourd'hui ne rencontrerait que de faibles défenses. Des blocs de commerce régional, dominés par des devises différentes (le dollar, le yen, l'ECU ou le mark allemand), pourraient se former si les avantages octroyés à l'interne aux membres de ces blocs n'étaient pas étendus à l'externe, à d'autres. À cet égard, certains aspects de l'ALENA sont de nature protectionniste, visant les concurrents asiatiques. Nous avons résumé à la figure 9 les scénarios extrêmes.

Le Canada, petit pays dépendant de ses importations et exportations, porte évidemment un intérêt particulier au maintien et à l'expansion d'un libre échange multilatéral. Sa marge de manoeuvre pour soutenir cet intérêt est par contre minime à cause de la taille de son marché interne. C'est notamment pour cette raison que le Canada doit collaborer avec des partenaires. À cet égard, il serait souhaitable qu'il cherche activement à construire et à articuler une large coalition pour défendre et étendre un système ouvert de commerce multilatéral.

FIGURE 9

LES INCERTITUDES QUANT AUX RÈGLES DU COMMERCE INTERNATIONAL



Cette idée s'est concrétisée au sein du groupe de Cairns pour la libéralisation agricole; le Canada aura peut-être à s'allier avec d'autres groupes et dans d'autres domaines. Par exemple, l'Union européenne a adopté une position plus libérale que celle des États-Unis concernant l'accord TRIP sur les licences obligatoires. Dans une industrie comme la fabrication d'avions civils, le Canada a plus d'intérêts communs avec l'Indonésie, le Brésil et la Chine qu'avec les États-Unis et l'Europe. Les alliances avec les puissances économiques mondiales montantes, lorsqu'elles sont prêtes à promouvoir un système ouvert d'échanges multilatéraux, s'avèrent les meilleurs investissements relationnels à long terme. Dans tous les cas, il serait sage de diversifier les alliances de manière à réduire notre dépendance à l'égard de notre voisin du Sud, porté aux accès de protectionnisme. Étant donné le faible poids du Canada dans la balance et sa proximité des États-Unis, nous ne voyons pas d'autres solutions que celle d'éviter des confrontations qui jouent au départ en notre défaveur, si nous voulons maintenir une position ferme sur certaines questions fondamentales qui déterminent notre existence distincte.

Dans cette perspective, des investissements relationnels stratégiques devront être faits avec l'Asie de l'est et du sud (Japon, Chine, Indonésie, Inde) et avec le Mexique et le Brésil. Les investissements déjà engagés aujourd'hui ne porteront évidemment pas de fruits immédiats. Nul ne peut même prédire s'ils porteront fruit un jour. Une autre préoccupation en matière d'investissement à trait à notre capacité de jouer un rôle plus actif au sein des organisations internationales vouées au commerce et à d'autres formes d'échanges, aux droits de propriété, aux normes de durabilité environnementale, aux lois sur le respect de la vie privée – des domaines de l'organisation internationale en évolution rapide.

L'incertitude décrite ici se trouve dangereusement liée aux marchés de change, dont nous traitons dans ce qui suit.

INCERTITUDE 5 : LES INCERTITUDES FINANCIÈRES

LA DIXIÈME TENDANCE RELEVÉE EST CELLE – de nature structurelle – de la volatilité plus grande des marchés de valeurs, des marchés de change et des taux d'intérêt. Nous examinons ci-après des scénarios extrêmes.

Une de ces situations extrêmes diffère peu de celle des années 30, quand la crise financière s'est transformée en dépression économique et à donné lieu à la formation de zones monétaires régionales à caractère protectionniste. À l'autre extrême, nous avons le scénario d'une baisse de notre vulnérabilité par une réduction massive de la dette nationale. Au milieu, le rang et l'ordre des différents types de changements (taux d'intérêt, valeurs des actifs, crise de liquidité, etc.) sont quelque peu arbitraires. Même quelques faillites de grandes organisations, aux États-Unis ou au Canada, nécessiteraient l'injection d'argent neuf par les banques centrales et raviveraient le spectre de l'inflation (presque inexistant au Canada), ce qui, éventuellement, pourrait entraîner la dévaluation du dollar. Si une crise des paiements survenait suite à quelques grandes

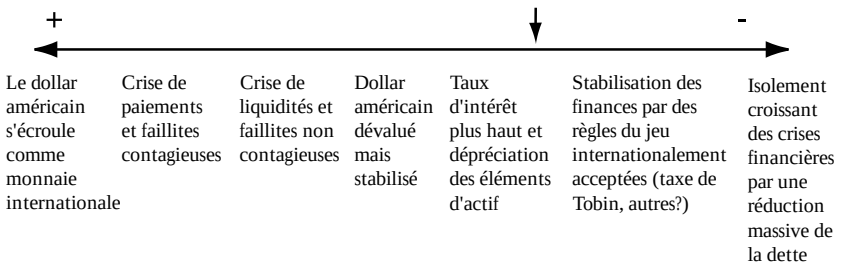
faillites risquant d'avoir un effet contagieux, une telle éventualité deviendrait d'autant plus probable que, depuis les années 30, les banques centrales ont été fort actives comme prêteurs de dernier recours.

Au début de la quatrième partie, nous verrons l'importance de relâcher la contrainte budgétaire par une réduction de la dette, de manière à permettre des investissements en infrastructure. Cette solution permettrait non seulement de tels investissements, mais surtout – et c'est là notre message dans cette partie – la réduction de la dette publique éloignerait sans doute le Canada de la plupart des scénarios négatifs. À cet égard, il est utile de voir le côté sombre et d'imaginer l'impensable. Dans la première partie, nous insistions sur la tendance croissante vers l'instabilité financière. C'est là l'opinion des experts en finance; c'est aussi le jugement informé d'un économiste de réputation internationale, de surcroît artisan de la reconstruction des institutions d'après-guerre, Charles Kindleberger; ainsi que du néo-keynésien Hyman Minsky[77] et d'un membre éminent (déjà cité) de l'actuelle administration Clinton, Lawrence Summers. La prise de conscience des différentes facettes de l'instabilité financière fait ressortir l'importance de réduire notre vulnérabilité. Depuis les crises financières de 1987 à Wall Street et de 1994-1995 au Mexique, très peu de mesures ont été prises pour faire en sorte qu'elles ne se reproduisent pas.

Même l'incidence d'une hausse rapide des taux d'intérêt mettrait en péril les caisses de retraite, réduisant immédiatement la valeur de leur actif. Parallèlement, le stress social augmenterait, la crédibilité du système financier diminuerait et la solidarité sociale s'effriterait. Une dévaluation rapide du dollar américain, même contrôlée, provoquerait – à moins que nous ne laissions le dollar canadien chuter parallèlement – un choc sur notre marché intérieur et sur nos exportations vers les États-Unis (qui demeure, de loin, notre plus important marché).

FIGURE 10

GRADATION DE SCÉNARIOS QUANT À LA CRISE FINANCIÈRE OU QUANT À LA STABILITÉ (1996)



Aucun de ces scénarios n'est souhaitable, mais ils sont éventuellement inévitables. Par contre leurs répercussions pourraient être limitées si nous réduisions notre vulnérabilité en remboursant notre lourde dette.

Nous ne connaissons aucun investissement en infrastructure requis par cette approche – nous ne sommes toutefois pas spécialistes des techniques financières. La plupart des mesures auxquelles nous pensons proviennent d'autres domaines politiques. Par exemple, l'équité dans les règles du jeu devrait être rétablie en taxant les transactions financières (volume ou capital en jeu) au même niveau que les activités industrielles[78]. Sans de telles mesures, une part de plus en plus grande des capitaux et des talents continuera d'être attirée loin des fonctions et des investissements créateurs d'emplois dans l'industrie et les services. Peut-être que certains investissements en infrastructure sont nécessaires pour assurer précisément une surveillance des marchés financiers électroniques. Parions toutefois que la Banque du Canada est suffisamment motivée et équipée pour le faire et qu'elle est tout à fait en mesure de financer ces investissements elle-même.

C'est une question d'opinion que de déterminer les scénarios les plus probables : l'optimisme et le pessimisme ne se commandent pas. De toute manière, un nombre tellement grand de mains visibles et invisibles, humaines ou institutionnelles, – en plus des événements naturels – influeront sur le cheminement de ces réalités, qu'il est illusoire de chercher à prévoir l'issue de chacun des scénarios que nous avons identifiés. L'examen des interdépendances systémiques entre les incertitudes dévoile quelques boucles de rétroaction évidentes. Par exemple, les guerres commerciales et le protectionnisme limiteraient l'application de traités environnementaux, rendant le contrôle de certains facteurs naturels presqu'impossible. Une crise monétaire, accompagnée de l'écroulement du dollar américain, pourrait entraîner notamment un protectionnisme régional. De tels cercles vicieux se renversent difficilement. Par contre, le pouvoir du système de communications en émergence pourrait être mobilisé pour contrecarrer la crise environnementale. Aussi, la nature et la direction de l'effet de certains sous-systèmes sur d'autres peuvent être modifiées : si la vitesse du système global de communications nourrit l'instabilité financière, il pourrait en être tout autrement grâce à l'instauration de moyens de contrôle et de taxation. La présence de quelques boucles de rétroaction positives, par exemple des processus autorégulateurs renforcés, pourrait suffire à augmenter ou à réduire la probabilité que se réalisent quelques scénarios négatifs.

LES RÉACTIONS PROBABLES DES AGENTS ÉCONOMIQUES ET SOCIAUX CONFRONTÉS À DIFFÉRENTS SCÉNARIOS

NOTRE PASSAGE DES TENDANCES AUX INCERTITUDES et à la réaction des acteurs fait ressortir de plus en plus de conjectures, basées sur notre jugement et nos impressions. Par rapport aux scénarios extrêmes de la deuxième partie, nous présentons ici ce que nous estimons être les réactions les plus probables des acteurs. Nous identifions les différents groupes d'acteurs que nous avons choisis pour ensuite examiner leurs réactions.

- Les réactions des *consommateurs, familles et personnes*, devraient se différencier selon leur accès à l'éducation, leur occupation et leur accès à Internet. Ils seront directement affectés par toutes les incertitudes.

Diverses activités industrielles seront touchées de plusieurs manières par les différentes incertitudes, ce qui influera sur différents niveaux d'infrastructure. Nous différencions les activités suivantes :

- Le *secteur des communications*, qui constitue un cas particulier parce qu'il fournit l'infrastructure pour le système global de communications, au coeur du nouveau système technique en émergence. Ce secteur sera touché par les incertitudes environnementales, les incertitudes quant aux régimes de réglementation internationale et les incertitudes financières.
- Les *industries de services*, qui fournissent les applications et le contenu pour mettre à profit les possibilités techniques que recèle le système. Elles seront aussi touchées par les incertitudes financières.
- L'*industrie environnementale* émergente, qui est en pleine croissance. Elle sera évidemment touchée par l'étendue de la crise environnementale, mais aussi par d'autres incertitudes.
- Les *industries fondées sur le savoir*, dont les besoins et les réactions sont très diversifiés; elles seront toutes touchées, à des degrés divers, par le contexte réglementaire et financier. Certaines subiront les contrecoups de la crise environnementale, tandis que d'autres seront plus sensibles aux difficultés du système global de communications.
- Toutes les industries *de produits à court cycle de vie* qui, à cause de l'importance de leurs coûts de transaction, nécessiteront beaucoup plus d'investissements en infrastructure de communications et de formation que les industries à *technologies standardisées* – et elles en profiteront aussi beaucoup plus. Les deux catégories d'industries seront sensibles à la situation financière et à la réglementation, mais la première sera plus fragile à l'évolution des communications et de la crise environnementale.

- Les *industries de ressources, de l'énergie et du transport*, qui subiront de plein fouet l'impact des incertitudes environnementales, mais à un moindre degré celui de la rivalité entre les systèmes de communications. Évidemment, elles seront aussi sensibles aux secousses des régimes financiers internationaux et de la réglementation du commerce international.

- Le *secteur de l'éducation*, qui devrait être fortement touché par l'issue de la rivalité entre les systèmes de communications dans son mode de fonctionnement; la crise environnementale le touchera plutôt dans ses objectifs et ses priorités. Il subit déjà l'influence du contexte financier.

- Les *services de santé*, qui pourraient être touchés par les technologies permettant d'abolir la distance (Internet, vidéophone, logiciels de reconnaissance de la voix, etc.); ils essuient déjà les ravages de la crise financière et la pression de la crise environnementale s'y fait déjà sentir par l'incidence accrue des maladies liées à la pollution. Les autres incertitudes n'influeront sans doute pas sur les services de santé.

- Dans la première partie, nous disions attendre l'émergence d'un *nouveau type d'acteurs et de secteurs* en réponse aux nécessités environnementales et à la concurrence au niveau des coûts de transaction. Nous prévoyons de nouvelles formes d'organisations plus aptes à réduire les coûts de transaction. Nous prévoyons un regain de vitalité des *collectivités*. Par « collectivité » nous entendons tout groupe formé autour de similitudes et d'interactions voisines. La similarité peut être fondée sur la confiance, la culture, la langue, les intérêts, les valeurs et les croyances, les activités, les objectifs – tout facteur qui réduit les coûts de transaction au sein de la collectivité par rapport aux coûts de transaction à l'extérieur de celle-ci. Les collectivités peuvent être d'envergure internationale ou encore locale (comme c'est le cas de Silicon Valley, d'Emilia Romagna et d'autres districts industriels). Les nouveaux acteurs communautaires conçoivent de nouvelles règles de jeu : ils s'auto-organisent, s'auto-réglementent, ne tolérant ni ne nécessitant aucune intervention externe. Ces collectivités peuvent être fermées, exclusives – voire même discriminatoires – tout comme elles peuvent être ouvertes et en interaction avec d'autres; leurs membres peuvent même faire partie de plusieurs collectivités à la fois. Les collectivités devraient être touchées par les cinq incertitudes.

- Les différents *paliers de gouvernement* (municipal, provincial, fédéral, international), qui seront fondamentalement touchés par le contexte financier et la réglementation. Ils devront aussi traiter des questions environnementales mais seront relativement isolés ou du moins peu touchés par l'issue – qu'ils ne pourront pratiquement pas contrôler – de la rivalité entre les systèmes de communications.

Les conséquences – ou l'absence de conséquence – que peuvent avoir pour les différents groupes d'acteurs les cinq scénarios élaborés autour des incertitudes décrites dans la deuxième partie sont résumées dans le tableau 3.

Envisageons maintenant diverses conjectures au sujet des impacts et des réactions aux scénarios les plus extrêmes, par rapport aux cinq incertitudes décrites dans la deuxième partie, pour les acteurs choisis. Comme la crise ou la stabilité financière touche tous les acteurs, nous commencerons par celles-ci et suivrons l'ordre inverse du tableau. Nous commencerons donc par considérer ... l'impensable.

UNE CRISE FINANCIÈRE INCONTRÔLÉE

APRÈS PLUS D'UN DEMI-SIÈCLE DE QUIÉTUDE ÉCONOMIQUE relative (depuis les années 30), le spectre de la récession, qui hantait la génération qui a grandi dans l'aisance des années de l'après-guerre, s'est estompé. Il est utile de penser aux conséquences de l'effondrement du dollar américain et du retour des zones monétaires, et même au scénario moins extrême de faillites en série accompagnées de crises de paiements : dans une telle situation, un système ouvert de commerce multilatéral serait insoutenable. Nous devrions alors retourner aux zones commerciales. Comme une grande part (beaucoup plus importante aujourd'hui que dans les années 30) de tous les échanges se fait entre les zones commerciales, les récessions se transformeraient en dépressions. Les règles de comportement économique ne pourraient être appliquées qu'à l'intérieur de ces zones restreintes. En bout de ligne et selon toute probabilité, seule la zone la plus touchée par les dommages écologiques mondiaux (ainsi que les pays industrialisés avancés) s'attaqueront aux problèmes environnementaux, dans les limites toutefois de budgets de dépression. Le système de communications mondial, quelle que soit l'issue de la rivalité actuelle entre les systèmes, verrait son niveau d'utilisation et son volume limités, mais permettrait des contacts internationaux clés dans un contexte où l'isolationnisme prévaudrait probablement.

Certains gouvernements provinciaux se retrouveraient probablement en faillite et la Banque du Canada devrait alors intervenir comme prêteur de dernier recours. Si la Banque du Canada ne jouait pas ce rôle de prêteur de dernier recours pour une province, la fédération canadienne serait probablement compromise de façon irrémédiable (et ne pourrait même plus se payer le luxe de débats constitutionnels). La dette serait monétisée, dévaluant le dollar canadien; cette situation encouragerait un peu les exportations internationales, mais créerait de toute manière des pressions inflationnistes, puisque le Canada demeurera toujours tributaire de ses importations, quel que soit le degré de protectionnisme international. Comme résultat d'une assiette fiscale plus restreinte, l'éducation, les services de santé, les services sociaux et les retraites devraient être dramatiquement réduits. Le nombre de faillites – déjà multiplié depuis le début des années 90 – augmenterait et provoquerait l'écroulement de

TABLEAU 3
LES IMPACTS POSSIBLES DES ISSUES DE DIVERSES INCERTITUDES SUR LES DIFFÉRENTS TYPES D'ACTEURS

	Incertitudes				
Acteurs	Accès à Internet	Interactivité sur Internet	Crise écologique	Règles internationales	Finances
Consommateurs	Peu	Peu	Oui	Indirect	Oui
Communications	Oui	Oui	Indirect	Oui	Oui
Services	Oui	Oui	Indirect	Oui	Oui
Base de connaissances	Peu	Oui	Pour certains	Oui	Oui
Production standardisée	Non	Non	Oui	Oui	Oui
Produits à court cycle de vie	Peu	Non	Pour certains	Oui	Oui
Base d'énergie	Non	Non	Oui	Oui	Oui
Éducation	Oui	Oui	Oui	Peu	Oui
Santé	Peu	Oui	Peu	Peu	Oui
Nouveaux agents	Oui	Oui	Oui	Peu	Oui
Gouvernements	Peu	Peu	Oui	Oui	Oui

quelques grandes sociétés. Dans cet univers, plusieurs secteurs à ratio dette-avoir élevé seraient fortement touchés, par exemple l'immobilier, l'éducation et le matériel de transport[79]. Toutes les industries et tous les services souffriraient du protectionnisme et de la récession même si les industries de ressources traditionnelles, qui jouissent de pouvoirs de monopole, seraient moins touchées : elles pourraient peut-être même desservir des créneaux jusque-là satisfaits par des importations en provenance d'autres zones[80].

Les consommateurs seraient divisés en deux groupes : les uns s'assureraient de garder un certain nombre d'éléments d'actif viables et un revenu de base, les autres (plus nombreux, comprenant les retraités sans pension) seraient ruinés. Une crise sociale serait alors inévitable : le système politique serait remis en question. Dans un tel contexte, plusieurs trouveraient refuge dans une économie parallèle, au noir, par des arrangements communautaires. Mais dans un contexte où les ouvertures sur le monde extérieur seraient limitées, ces collectivités auraient tendance à se refermer sur elles-mêmes, à afficher leur antagonisme envers les autres.

Dans de telles situations, tout investissement d'avenir devrait être fait par l'ensemble des collectivités, dans des programmes permettant de verser des salaires de subsistance – comme durant la dépression ou même comme dans les goulags russes. Les gouvernements seraient appelés à intervenir plus souvent mais avec moins de moyens : la tentation de l'autoritarisme serait alors réelle.

En voilà assez de ce triste scénario, voyons maintenant un avenir plus ensoleillé.

La stabilité relative par la réduction de notre dette et de notre vulnérabilité aux crises financières

Supposons que nous trouvions la volonté politique d'éliminer ou de réduire considérablement notre dette (un certain nombre de solutions ont été proposées, nous y reviendrons dans la quatrième partie). Cela nous protégerait d'une crise financière éventuelle. Supposons que des mécanismes de stabilisation financière aient été trouvés et institués au niveau international, éliminant la possibilité de crises financières incontrôlées comme celles d'octobre 1987 ou de 1994-1995 au Mexique. Une réduction significative de la dette, accompagnée d'un allégement de la charge fiscale des contribuables proportionnellement à la diminution du coût du service de la dette, faciliterait la reprise économique et favoriserait la croissance, en mobilisant la majorité de la population active et en libérant des fonds pour des investissements en infrastructure. Ce faisant, il deviendrait possible de traiter des problèmes environnementaux et de nous équiper pour l'économie de l'apprentissage.

Les gouvernements auraient alors pris en main leurs finances et gagné en crédibilité, mais ils seraient sans doute étroitement surveillés afin d'éviter toute reprise du processus d'emprunts incontrôlés, étant donné qu'ils disposeraient d'une capacité accrue d'intervention, même si le besoin s'en faisait moins sentir.

Les paiements au titre des pensions, des services sociaux et de la santé seraient honorés, dans des conditions de pression moindre. La confiance envers la société et les institutions serait élevée, ce qui faciliterait le collaboration et la résolution des problèmes. Les industries axées sur le savoir, particulièrement les services, les communications et la protection de l'environnement connaîtraient une forte croissance. Comme les zones innovatrices en forte croissance engendrent des coûts de transaction élevés, les collectivités seraient florissantes. Étant donné le niveau élevé de confiance, si les collectivités restaient ouvertes et favorables aux interactions entre elles, leur activité serait stimulée par les contacts avec l'extérieur, sans que ces contacts ne présentent de danger. Dans un tel contexte, il serait possible et pertinent de faire des investissements en infrastructure, même unilatéralement, pour le nettoyage environnemental et la reconversion écologique, ainsi que dans le domaine de l'éducation. Dans ce dernier cas, l'initiative pourrait être axée sur la promotion de l'interactivité non seulement entre chercheurs, mais entre les étudiants et le personnel enseignant.

Les issues envisagées pour les scénarios de départ restreignent celles des scénarios subséquents. Ainsi, prenons le cas du système commercial multilatéral et ouvert. Il serait impossible à maintenir face à une crise incontrôlée des devises. Un effondrement du système d'échange multilatéral ouvert pourrait par contre se produire sans crise financière incontrôlée, mais le protectionnisme pourrait alors plus facilement être renversé. Dans ce cas, la dépression devrait s'avérer moins sévère, le niveau de chômage moins élevé, les coupures aux programmes sociaux moins profondes, etc. Un autre cas extrême serait un retour vers le protectionnisme à l'échelle mondiale, dans le contexte où le Canada et les provinces se seraient prémunis en éliminant leurs dettes. Dans de telles circonstances, des investissements en infrastructure seraient possibles mais s'orienteraient, inefficacement, vers les activités traditionnelles, non-concurrentielles, énergivores ou axées sur les ressources. Nous l'avons vu, une crise financière et monétaire incontrôlée rendrait très probable l'effondrement d'un système ouvert de commerce multilatéral (sans que l'inverse ne soit nécessairement probable). Ne restons pas sur un scénario aussi pessimiste. Voyons plutôt l'issue la plus positive en ce qui a trait à la réglementation du commerce international (évidemment, une telle issue n'est aucunement garantie, même avec un climat stable sur les marchés financiers internationaux).

L'EXTENSION DU SYSTÈME OUVERT DE COMMERCE MULTILATÉRAL À L'ÉCONOMIE DE L'APPRENTISSAGE

SUPPOSONS QUE LA LIBÉRALISATION DES ÉCHANGES puisse être étendue aux services (notamment aux services à fort coefficient de savoir), mais aussi plus généralement à l'échange de connaissances : la collaboration internationale serait alors facilitée pour solutionner les problèmes environnementaux. En particulier, le partage libéralisé des connaissances des pays industrialisés avancés avec les pays en voie de développement devrait permettre à ces derniers de

réduire leurs investissements en les orientant vers des techniques durables sur le plan environnemental. En outre, cette collaboration pourrait s'étendre au développement et à l'expérimentation de techniques nouvelles et permettre de réduire tant les coûts fixes que les coûts d'exploitation de ces techniques alternatives. La collaboration internationale occasionnerait une demande pour un système de communications internationales plus interactif, plus efficace et moins coûteux. Dans ce cas, la capacité, la convivialité, les applications et les contenus de ce système de communications seraient améliorés, de manière à rejoindre et à servir un plus grand nombre d'utilisateurs[81].

Même en évitant une crise financière et monétaire incontrôlée et la fin du système ouvert de commerce multilatéral, les perspectives d'application des accords internationaux en matière d'environnement restent incertaines. Le système écologique global (biosphère, hydrosphère, lithosphère, atmosphère) reste, dans une large part, indépendant de nos actions – même s'il en est profondément touché. Le pire scénario écologique pourrait se produire, même si les issues des incertitudes financières et commerciales s'avéraient positives.

L'émergence d'une nouvelle crise environnementale

La découverte de cercles vicieux écologiques est, par nature, imprévisible. Ceux-ci pourraient probablement faire augmenter les tensions entre les pays industrialisés avancés, les pays nouvellement industrialisés et les pays en voie de développement en intensifiant les pressions exercées par ces derniers sur les premiers sur le plan de l'aide internationale, et des premiers sur les derniers en ce qui a trait à l'utilisation de technologies propres (presque toujours nouvelles). Ces pressions auraient des répercussions (surmontables) sur le système de commerce international et sur le système financier. La recherche et la collaboration internationales seraient immédiatement sollicitées, ce qui favoriserait une plus grande prise de conscience de la réalité que *nous sommes tous dans le même … rafiot*. Les pressions qui s'exerceraient pour que l'on entreprenne des recherches internationales coopératives rendraient essentiel un système de communications internationales plus efficace, entièrement interactif et possédant une capacité de soutien accrue.

Les consommateurs de certaines régions seraient plus touchés que d'autres. Il est probable que le réchauffement planétaire toucherait plus durement les villes côtières que les villes continentales tropicales; les pluies acides frapperaient plus fortement les régions nordiques; etc. Comme cela s'est produit dans le cas de Love Canal, il faut s'attendre à voir des catastrophes environnementales balayer les actifs d'une localité et causer une émigration importante. Des collectivités entières seraient frappées; incapables de subvenir à leurs besoins, elles dépendraient de l'aide extérieure. Les ressources publiques seraient nécessairement mises à contribution. Tout comme lors de désastres naturels – comme c'était le cas récemment au Saguenay – la solidarité humaine ne permet pas de s'en tenir à des contraintes financières préétablies : des fonds

sont requis et doivent être trouvés, d'autres dépenses seront remises à plus tard ou les dépenses consacrées à l'aide seront monétisées. De telles circonstances (à la manière des épidémies) exercent des pressions sur le système de santé et sur les secteurs industriels qui sont mobilisés pour solutionner le problème.

Dans le cas de la découverte de nouveaux cercles vicieux écologiques menaçant la survie de l'humanité, l'ampleur et le moment d'occurrence du problème ont une importance cruciale. Quel est le délai nécessaire pour contrôler ou renverser le cycle, en supposant que cela puisse se faire? Quelle sera la portée des effets des initiatives prises pour renverser la situation? Chaque problème exige ses réponses propres. Pour cette raison, des investissements de base dans des infrastructures multidisciplinaires de recherche en écologie, de surveillance environnementale, d'éducation et de réglementation sont nécessaires.

LA DURABILITÉ DE L'ENVIRONNEMENT PAR L'APPLICATION DE TRAITÉS INTERNATIONAUX

DANS LA PARTIE QUI PRÉCÈDE, nous avons fait état des résultats de simulations montrant que les objectifs du rapport Bruntland sur le développement durable ne seraient probablement pas atteints vu le rythme actuel des changements et les efforts actuellement consacrés à cette fin. Mais par un acte de foi, supposons que ces objectifs soient atteints. Une telle situation laisserait à leur niveau actuel les pressions sur le système commercial en limitant la demande relative à la recherche, au système de santé, aux fonds publics, ainsi qu'aux industries et aux services appelés à traiter de cette question; les consommateurs seraient rassurés. Dans l'ensemble, ce scénario nous apprend peu : même s'il est difficilement concevable, il ne nous ramènerait qu'au statu quo.

L'issue favorable – et plus probable – qui nous en apprend le plus est la suivante : les correctifs dans les pratiques environnementales qui font aujourd'hui consensus seront insuffisants pour assurer une croissance économique durable; nous devons nous attendre à des mutations industrielles profondes, en particulier dans les industries énergivores (extraction de ressources naturelles, transformation, transports). Le remplacement des carburants fossiles et nucléaires par des carburants de sources renouvelables devra sans doute s'accélérer. En particulier, il faudrait s'attendre au remplacement des transports interurbains aériens courts, polluants (tant pour l'air que pour le bruit) et congestionnés par un système de transport ferroviaire électrique rapide. Les niveaux de pollution dans les régions métropolitaines rendront probablement nécessaire (comme c'est déjà le cas en Californie avec le *Clean Air Act*) la conversion d'une partie du parc de véhicules à l'électricité. Au moins trois raisons nous poussent à croire que le temps est venu pour cette conversion : d'abord, la complexité presque baroque des moteurs à combustion interne des automobiles est telle que chaque dollar investi en R-D pour améliorer l'efficacité du rendement du carburant voit sa valeur diminuer. Ensuite, le goulot d'étranglement du concept de la voiture électrique se situe au niveau de sa batterie : un certain

nombre de solutions nouvelles s'avèrent praticables. Enfin, l'urbanisation rapide (et le phénomène des banlieues) a fait que 90 p. 100 des transports s'effectuent en moins d'une heure : l'autonomie du véhicule électrique (par rapport à la distance qu'il parcourt) n'est plus un obstacle à sa compétitivité.

Toutes les considérations précédentes obligent à des investissements considérables en infrastructure. Les trains rapides nécessiteront de nouvelles voies ferrées. Les véhicules électriques exigeront un système nouveau de soutien et de services. La plupart de ces coûts seront assumés par les industries et les consommateurs. Le Canada possède les capacités technologiques requises pour effectuer ce changement dès maintenant, mais a-t-il la volonté politique d'amorcer une transformation technologique de l'Amérique du Nord dans cette direction?

Nous abordons maintenant les incertitudes que soulève le système global de communications en général et Internet en particulier (qui, d'une certaine façon, en est encore au stade expérimental). Si nous envisageons ici l'accès et la capacité séparément de l'interactivité, rappelons qu'une faible capacité de soutien ne permettrait pas une interactivité fluide. Nous traiterons ici seulement d'un scénario négatif et d'un scénario positif.

TEMPS D'ACCÈS RATIONNÉ ET COÛTS D'ACCÈS ÉLEVÉS : VERS UN SYSTÈME POUR SPECTATEUR PASSIF

LE RÉSEAU INTERNET EST DÉJÀ CONGESTIONNÉ. Il en résulte que les fonctions de navigation et d'interactivité fonctionnent avec des délais de réponse, ce qui augmente la pression qui s'exerce au niveau de la capacité des serveurs. Comme les fonds publics se font plus rares, le secteur privé devra veiller à accroître la capacité des serveurs. Mais, à l'heure actuelle, l'industrie offre surtout des services unidirectionnels où le spectateur reste passif. Nous ne pouvons pas encore prédire quelles applications seront économiquement viables (après l'élimination de l'effet du « passager gratuit »). Comme le nombre d'utilisateurs double chaque année, il n'est pas impossible d'imaginer que le temps de chaque utilisateur soit éventuellement rationné, ou encore que le tarif demandé soit si élevé qu'il décourage l'utilisation intensive et limite l'accès de certains usagers.

Une telle issue restreindrait l'utilisation du système pour la recherche, affectant ainsi, entre autres, les recherches en écologie et dans d'autres domaines touchant aux questions de régie internationale. La rapidité croissante des transactions financières internationales plafonnerait, bien que les transactions aient déjà été pratiquement instantanées avant l'apparition d'Internet et avant que les sociétés de services n'investissent dans les systèmes de communications. La saturation du réseau Internet freinerait la création et le transfert de connaissances, restreindrait la dynamique d'un jeu à somme positive et augmenterait les coûts de transaction dans l'économie de l'apprentissage.

En outre, le rôle de « téléspectateur » qui revient au consommateur s'en trouverait renforcé. Un taux de chômage élevé (selon l'un des scénarios négatifs

présenté plus haut) augmenterait le temps passé à vivre passivement par procuration, devant l'écran, dans une réalité virtuelle. Les industries axées sur la connaissance, les services, l'éducation et la formation croîtraient moins vite. Par contre, les médias trouveraient un marché lucratif dans lequel ils pourraient imposer une tarification. Les collectivités n'auraient que peu de possibilités de créer des forums publics pour interagir entre elles. Les gouvernements joueraient alors un rôle régulateur dans un contexte monopolistique. Ce nouveau système pourrait être utilisé comme moyen de contrôle social d'une population fragmentée de spectateurs passifs, confinés au foyer : la tentation de l'autoritarisme brillerait tant pour les gouvernements que pour les sociétés.

PLUS DE POSSIBILITÉS D'INTERACTION HUMAINE, INTERNATIONALE ET DIRECTE : VERS LES VILLAGES GLOBAUX

CETTE UTOPIE OCCUPE L'IMAGINAIRE DE PLUSIEURS. De telles visions ont toujours soutenu l'imaginaire technique pour orienter la configuration et la conception de nouveaux systèmes techniques et organisationnels. Malheureusement, de telles visions – celles des ingénieurs et des technologues notamment – sont parfois presbytes : elles voient des possibilités loin dans l'avenir sans préciser les étapes et les sentiers pour y arriver. Ces visions contrecarrent les préoccupations myopes des acteurs financiers qui ne voient que les pratiques techniques actuelles, sans considérer les effets possibles d'investissements en connaissances techniques qui ne peuvent être rentabilisées immédiatement par le marché. Ces deux visions réunies permettront de distinguer quelques conditions préalables aux changements qui pourraient survenir.

Toute extension de l'interactivité humaine internationale d'un médium porteur de voix (le téléphone) à un autre médium, porteur de texte, d'images, puis de multimédia, serait souhaitable pour la démocratie et l'économie de l'apprentissage, par essence interactives. L'interactivité nécessiterait un accroissement important de la capacité des serveurs, vu le doublement annuel du nombre d'utilisateurs d'Internet. Simplement pour conserver le degré d'interactivité actuel, il faudra augmenter la capacité du système. Pour ménager plus d'espace à l'interaction humaine, il faudra veiller à ce que la publicité sous toutes ses formes n'engorge pas ce type d'échanges.

Supposons qu'au moins quelques villages globaux réussissent à grandir et à se maintenir. Avec l'interactivité directe en temps réel, la vitesse d'interaction dans les projets de recherche augmenterait, facilitant notamment les projets multidisciplinaires orientés vers la résolution de problèmes. Les domaines de la santé et de l'écologie, entre autres, bénéficieraient de ces progrès. Sur le plan de la diffusion des résultats de la recherche, l'impact se limiterait à un accès unidirectionnel aux revues scientifiques diffusées sur Internet. La raison de cet impact minime est que toute communication des résultats de la recherche se fait au sein d'une structure relativement fermée et arbitrée[82].

L'impact serait beaucoup plus important si le système de communication interactif incluait une dimension visuelle (comme le visiophone, les vidéoconférences ou le multimédia). La dimension visuelle dans l'interactivité humaine à distance faciliterait l'apprentissage actif à tous les paliers du système d'éducation, de même qu'elle permettrait de repousser l'horizon des possibilités dans le système de santé.

Avec l'aide d'un instructeur, d'un médiateur ou d'un tuteur, les étudiants d'une localité pourraient participer à des conférences et intervenir au cours d'une période de questions avec des professeurs éminents de l'étranger[83]. Les cycles d'études primaires et secondaires seraient alors appelés à assurer un meilleur niveau de formation de base en informatique. Par ailleurs, les médecins pourraient constater les symptômes des patients au moment où ceux-ci les ressentent. Le délai écoulé entre le moment où le symptôme est ressenti et le moment où le traitement est prescrit serait singulièrement abrégé. Les coûts de santé, surtout ceux liés aux soins hospitaliers, pourraient ainsi être réduits. Les relations fournisseur-utilisateur dans les industries offrant des produits à court cycle de vie seraient soutenues et facilitées pour les opérations de conception, de design et d'expérimentation des produits, ainsi que pour la production adaptée aux besoins particuliers des clients[84]. La plupart des industries axées sur le savoir en profiteraient éventuellement.

Les collectivités profiteraient beaucoup d'un tel système, notamment lorsque leurs membres sont géographiquement dispersés. Si ces derniers préfèrent se réunir dans un même lieu physique, le médium interactif pourrait servir à créer un forum public pour ceux qui ne peuvent, en raison de l'éloignement, organiser ces rencontres : le système permettrait une sorte d'agora virtuelle. L'interaction entre les collectivités serait aussi facilitée. Par contre, de telles interactions ne seraient possibles qu'en conservant à tout moment, grâce à une forme d'intermédiation (interne à la collectivité, pour la protéger des intrusions non désirées)[85], un nombre relativement restreint de participants au forum. Ceci suppose que ces nouvelles formes de régie privilégieraient les petites unités. Les lourdes organisations bureaucratiques, fortement hiérarchisées (particulièrement celles des gouvernements), joueraient alors des rôles réduits. Si le principe de la subsidiarité venait à s'appliquer, plusieurs fonctions seraient efficacement dévolues à l'auto-organisation et à l'autoréglementation des groupes. Ainsi, plusieurs paliers de gouvernement pourraient voir leur rôle réduit à une coordination de l'interface entre différentes collectivités, de manière à permettre la formation de consensus ou de larges majorités sur des sujets touchant au bien-être général.

Évidemment, tous les scénarios positifs présentés ci-dessus laissent entrevoir des mondes meilleurs. Les scénarios négatifs évoquent des réalités plus ternes. La réalité se situera quelque part entre ces balises. Où? Se rapprochera-t-elle du meilleur des mondes ... ou d'une modeste utopie? S'éloignera-t-elle des scénarios de grisaille? Tant de questions ne tolèrent pas l'indifférence. Jusqu'à un certain point, nous pouvons façonner – de manière limitée – la réalité de

demain, notamment par des investissements en infrastructure. C'est ce dont nous traitons dans la prochaine partie.

DES VARIABLES CONTRÔLABLES QUE DEVRAIENT ENCADRER DES POLITIQUES

NOUS NE TRAITERONS ICI QUE DES VARIABLES qui peuvent être contrôlées au Canada par les différents paliers de gouvernement. Les investissements en infrastructure ne peuvent être considérés isolément, sans tenir compte des autres instruments d'intervention. Ceux-ci, en particulier les incitations fiscales et la réglementation peuvent se substituer aux investissements en infrastructure et permettre d'atteindre les mêmes résultats à moindre coût. Un cadre d'action politique sera donc proposé (voir le schéma ci-dessous), dans lequel l'infrastructure devient à la fois instrument politique de demande et d'offre, affectant l'activité économique, la croissance, le bien-être et le mieux-être.

Ce cadre politique s'appuie sur la prémisse suivante : la création de nouvelles richesses et de nouvelles connaissances se fait par des réseaux d'agents travaillant de concert vers un objectif commun, dans le cadre de projets concrets. Dans une économie où les coûts de transaction sont importants, les collaborateurs, selon la nature des projets, s'appuient sur la confiance établie et les bonnes communications au sein de collectivités (régions métropolitaines, complexes industriels) ou encore établissent de nouveaux réseaux, notamment en combinant des éléments de plusieurs réseaux existants. Les gouvernements peuvent agir de différentes manières pour faciliter ces activités : ils peuvent assurer un climat stable, financer – s'ils ne sont pas trop endettés – ou faire financer l'offre de biens publics (dont les infrastructures), agir sur la demande (en particulier par les commandes d'infrastructure), faciliter l'interface entre les agents en cas de défaillance des marchés (notamment par la mise en place de projets conjoints d'infrastructure). Comme tout choix économique doit se fonder sur le coût d'opportunité des projets, tous les instruments d'intervention doivent être considérés dans le cadre d'une évaluation de l'ensemble des solutions de rechange[86].

Quelle est la place de l'infrastructure dans cette stratégie politique? L'état de l'infrastructure influe sur les conditions des transactions économiques et le climat ambiant. Les projets d'infrastructure influent sur la demande. Éventuellement, ils facilitent l'offre des facteurs. Mais le moyen essentiel – nous y reviendrons à la fin – que possèdent les pouvoirs publics pour susciter les investissements d'infrastructure est la politique d'interface, de mise en relation, de création de ponts entre nouveaux collaborateurs. Les services publics devraient contribuer à promouvoir la coopération.

Un avertissement au lecteur. Comme celui-ci peut appuyer l'une ou l'autre de nos suggestions quant aux investissements en infrastructure sans pour autant appuyer notre justificatif, nous proposons les projets d'infrastructure en retrait du texte et en caractères gras. Nous justifions ceux-ci par rapport à quatre objectifs pour le XXIe siècle : une participation accrue à l'économie de l'apprentissage de manière à garantir la poursuite de la création de richesses, le renforcement de la confiance de manière à réduire les coûts de transaction, le

FIGURE 11

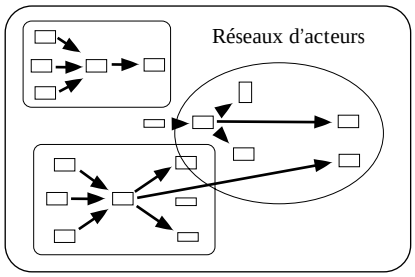
CADRE DE POLITIQUE POUR UNE ÉCONOMIE CORRESPONDANT À UN JEU À SOMME POSITIVE, INTENSE EN TRANSACTIONS

Instruments de climat

- Prévisibilité et stabilité des règles du jeu (droits de propriété, taux d'intérêt, taux de change et d'imposition)
- Niveaux de confiance entre le système financier et les communautés

Instruments d'offre

- Éducation
- Formation
- Recherche
- Incubateurs
- Infrastructure



Instruments de demande

- Achat de biens publics
- Régulation
- Normes et standards

Instruments d'interface

- Création de l'information sur les actifs techniques
- Réduction des asymétries d'information
- Encouragement des collaborations pour les nouvelles techniques et les biens publics
- Contribution aux coûts irrécupérables potentiels de collaboration initiale qui pourraient entraver la coopération

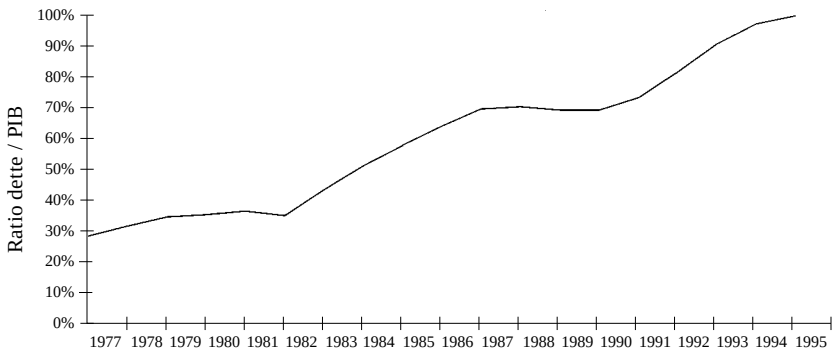
Légende

- Zone de confiance, multimentionnelle et établie, basée sure la communauté
- Zone de confiance gardée, construite par des engagements mutuels
- Agents économiques
- Transactions entre agents

maintien et l'augmentation de la qualité de vie des Canadiens, le repositionnement du Canada sur le plan international en fonction du déplacement du centre de gravité économique et des priorités mondiales[87]. Nous terminons en proposant des principes généraux susceptibles de fournir des balises quant à quatre questions : Qui devrait financer les investissements en infrastructure? Comment les gouvernements devraient-ils s'impliquer (au besoin)? À quel rythme et selon quel volume ces investissements devraient-ils procéder?

FIGURE 12

ÉVOLUTION DU RATIO DE LA DETTE NETTE DES ADMINISTRATIONS FÉDÉRALE, PROVINCIALES ET LOCALES AU PIB AU COÛT DES FACTEURS, 1977 À 1995



D'abord, nous traitons d'une condition préalable. Jusqu'ici, au moins en termes absolus, nos investissements en infrastructure ont crû (voir la figure 1A). Cela n'implique pas forcément que les infrastructures se sont développées, car les investissements ont été plus ou moins efficaces. Sommes-nous suffisamment riches pour envisager de tels investissements collectifs? Si ce n'est pas le cas, toute cette discussion est inutile et il faut trouver d'autres sources d'investissement et d'autres moyens de rendre les infrastructures plus efficientes. L'évolution du ratio entre la dette nette et le produit intérieur brut (voir la figure 12) indique que nous ne pouvons plus continuer à vivre au-dessus de nos moyens; sinon, financer de nouvelles infrastructures augmente les risques de catastrophe financière.

LA CONDITION PRÉALABLE : RÉDUIRE NOTRE CONTRAINTE BUDGÉTAIRE

DANS TOUTE DÉCISION, le calcul économique débute par cette question comptable. Aujourd'hui, au Canada, le manque de fonds constitue une contrainte majeure.

Les prêteurs sont généralement favorables aux investissements en infrastructure puisqu'ils augmentent leur actif éventuel. Les fonds sont surabondants sur les marchés financiers. Le Canada est un emprunteur présentant un moindre risque que le Rwanda ou la Bosnie, peut-être même que l'Italie, en termes de fardeau d'endettement. Mais l'Italie a récemment stabilisé démocratiquement sa crise politique et s'est engagée dans une réforme constitutionnelle, ce

que le Canada semble encore incapable de faire. À moins que les débats constitutionnels ne puissent se résoudre pacifiquement et engendrent des confrontations, le Canada devrait demeurer un bon emprunteur prospectif.

Une telle approche, consistant à financer les investissements en infrastructure par de nouveaux emprunts, conduit à mener une politique de l'autruche. Des emprunts additionnels pour financer les infrastructures augmenteraient notre vulnérabilité aux crises financières, rendraient plus incertain le climat économique et remettraient en question les engagements passés pris envers les citoyens et les immigrants quant aux droits à la santé (l'universalité des soins de santé), à un revenu minimum (retraites, assurance-chômage ou assistance), à l'éducation et à la culture. Si ces engagements passés sont remis en question, tous les paliers de gouvernement considèrent aujourd'hui très réel le risque d'un effritement de la cohésion sociale[88] et, par voie de conséquence, une hausse des coûts de transaction. Emprunter davantage pour financer les investissements en infrastructure revient à ignorer les problèmes présents, à s'enfoncer la tête dans le sable et à enfoncer le pays dans l'impasse.

Si nous avons besoin d'investissements en infrastructure pour préparer les générations futures, nous ne devrions pas emprunter pour y arriver. Nous devons trouver l'essentiel des fonds à l'interne, en assainissant nos finances publiques. C'est un des rares points de consensus chez les Canadiens : la question de la dette doit être traitée en priorité. Mais les solutions avancées jusqu'ici, trop timides, ne visent que les déficits courants, c'est-à-dire l'augmentation de la dette. Le seul effort concret réalisé jusqu'à maintenant est de réduire les déficits courants. Le fardeau accumulé de la dette, lui, augmente toujours. Selon nos estimations, la dette publique cumulée est déjà un multiple de tous les actifs au Canada.

Les stratégies les plus audacieuses consistent à *maintenir constant le déficit nominal ou à réduire graduellement le déficit*. Les deux cas supposent que le Canada s'en sortira alors grâce à une croissance significative et soutenue – ce qui reste très hypothétique. Aucune de ces stratégies ne s'attaque vraiment à la dette accumulée. Toutes prennent pour acquis le retour de périodes de croissance créatrices d'emplois (donc de croissance autre qu'uniquement financière) qui seraient plus importantes que les périodes de récession. En regard de l'incapacité du Canada à retrouver son rythme de croissance, même lorsque l'économie américaine croît, de telles hypothèses semblent irréalistes. Comme sa dette externe s'accroît plus rapidement que son PIB, ces solutions supposent que le Canada peut produire, dans l'avenir, des surplus commerciaux beaucoup plus élevés que ceux d'aujourd'hui[89].

Nous nous trouvons, depuis les années 70 (sauf en Asie), dans une période de récession de longue durée, même si de courts épisodes de croissance dans quelques pays industrialisés avancés et des périodes de croissance plus soutenue dans les pays nouvellement industrialisés sont venus interrompre cette tendance. Les pays au coeur de la dernière longue période de croissance économique ne possèdent dorénavant plus les dynamiques structurelles internes

capables de générer un haut degré de croissance soutenue. Si les politiciens et les économistes n'acceptent pas ce diagnostic – qui a au moins le mérite d'expliquer le comportement de nos économies au cours des vingt dernières années – ils seront tout de même d'accord pour que nous ne mettions pas « tous nos oeufs dans le même panier » en pariant exclusivement sur une croissance économique rapide, soutenue et créatrice d'emplois dans l'avenir. Une élimination radicale de la dette accumulée constituerait une meilleure assurance à cet égard.

Les stratégies fondées sur la croissance, même si le déficit était réduit à zéro et la dette accumulée stabilisée au niveau actuel, laissent les retraités devant la perspective d'une dévaluation importante de leur actif dans l'éventualité d'une crise financière. Le système de santé – pierre angulaire de l'identité distincte des Canadiens que ceux-ci tiennent à protéger à tout prix – et les autres services sociaux seraient réduits dramatiquement et aucun investissement en infrastructure ne serait possible.

Nous nous tournons donc vers des solutions radicales pour réduire ou éliminer les dettes accumulées du gouvernement fédéral, des provinces et des municipalités du Canada, de manière à libérer des fonds pour de nouvelles infrastructures. Voyons d'abord quels fonds seraient disponibles selon diverses propositions mises de l'avant.

1. Dans un cahier de recherche, MM. Raymond Théorêt et Gilles St-Amant[90] proposent de transférer directement la dette fédérale aux Canadiens, qui supporteraient alors pleinement les coûts de la dette publique et qui feraient montre de plus de responsabilité. Cette méthode présente également l'avantage de libérer les provinces de la dette fédérale. Il reviendrait aux créanciers actuels du gouvernement fédéral de financer les emprunts accrus des particuliers. Après la mise en oeuvre d'une telle stratégie, la détérioration prévue des finances de l'État au cours des prochaines années serait stoppée, voire renversée. Qui plus est, des surplus budgétaires apparaîtraient dans les comptes publics canadiens. Les impôts pourraient alors être abaissés, ce qui contribuerait à la relance de l'économie. Chacun contribuerait selon sa capacité de payer. Cette contribution, sous forme de paiement mensuel, serait assimilable à une prime d'assurance pour maintenir les services publics (par exemple, l'assurance-maladie universelle). Progressivement, la capacité d'emprunt du gouvernement fédéral pour financer les investissements en infrastructure augmenterait.

2. Au sommet économique de la province de Québec de mars 1996, une proposition visant à réduire la dette du Québec a été présentée par M. Norbert Rodrigue, président du Conseil de la santé et du bien-être, et deux de ses collaborateurs, MM. Jean-Pierre Bélanger et Paul Fecteau[91]. Cette proposition, inspirée d'une initiative du Manitoba, porte sur la création d'un « Fonds du patrimoine québécois » et vise le

remboursement de la dette du gouvernement du Québec. Selon eux, l'objectif serait d'y accumuler un montant de quelque 60 milliards de dollars en une trentaine d'années, permettant de rembourser la dette au terme de cette période. Le fonds, créé par voie législative, serait alimenté par des contributions de type fiscal spécialement destinées au fonds et gérées par la Caisse de dépôt et placement du Québec. Cette méthode de remboursement de la dette provinciale tiendrait compte de la capacité de payer des contribuables et pourrait, selon le ministère des Finances, améliorer la cote de crédit du Québec. Après trente ans, la capacité d'emprunt en vue de financer de nouvelles infrastructures et la capacité d'autofinancement, par le Québec, de ces investissements auraient augmenté aux dépens du contribuable[92].

3. Dans un article intitulé « Privatisation rétroactive des RÉER : une solution aux problèmes de nos gouvernements », paru dans le numéro de décembre 1995 de la *Revue Gestion*, M. Luc Vallée[93] proposait de prélever un septième de la dette fédérale à même les exonérations d'impôt promises aux détenteurs de RÉER. L'auteur propose de rendre la mesure rétroactive et de récupérer ainsi la somme des déductions et des intérêts accumulés dans les RÉER depuis leur création (plusieurs objections à cette proposition ont été publiées dans la *Revue Gestion* de mars 1996 dans un texte de M. Jean Lanctôt[94]). La réduction immédiate de la dette de 100 milliards laisserait cependant le gouvernement fédéral avec un ratio d'endettement au PIB encore largement supérieur à ce que la Communauté économique européenne exige de ses membres[95], améliorant néanmoins sa capacité d'emprunt pour des investissements en infrastructure.

Il ne serait pas pertinent d'envisager des investissements publics en infrastructure pour l'avenir si, d'une manière ou d'une autre, de tels fonds étaient libérés et devenaient disponibles. Les trois solutions mentionnées – les seules qui, à notre connaissance, s'attaquent au problème de la dette accumulée – seraient peut-être insuffisantes. Une thérapie de choc, pour reprendre une expression à la mode au Fonds monétaire international et à la Banque mondiale, serait peut-être nécessaire[96].

Indépendamment du problème de la dette dont nous avons hérité, il serait bon de se poser des questions sur le cadre institutionnel – les règles du jeu – qui ont permis, voire incité, à si lourdement hypothéquer notre avenir. Il faut envisager diverses possibilités, y compris une réforme financière et la modification de la *Loi des banques*. Notamment, celle-ci ne favorise pas la création et le développement de banques d'affaires, c'est-à-dire de banques d'investissement capables de s'engager dans des projets à long terme d'investissements en infrastructure. Ayant examiné cette condition préalable, nous en venons à nos propositions concrètes d'investissements en infrastructure, en fonction des quatre objectifs retenus.

TABLEAU 4

	Dette fédérale ou provinciale?	Qui paiera la dette?	De quelle façon?	Principe de la méthode	Principaux avantages	Principaux désavantages?	Capacité de financement de nouvelles infrastructures
Théorêt St-Amant	Fédérale	L'ensemble des citoyens canadiens.	Paiement mensuel assimilable à une prime d'assurance pour préserver les services publics.	Différents scénarios de pourcentage de remboursement de la dette et de taux d'intérêt sont utilisés pour obtenir un paiement mensuel sur 25 ans.	• Dette publique mieux gérée. • Paiement mensuel assimilable à une prime d'assu-rance. • Réduction ultérieure des impôts des particuliers. • Responsabilisation des Canadiens. • Devrait favoriser la croissance économique. • Engagement de l'État à ne plus s'endetter et à diminuer ses dépenses.	• Dette additionnelle importante pour les ménages. • Consensus social difficile à obtenir.	• Progressive pour le public et, éventuellement, pour les ménages.

TABLEAU 4 (SUITE)

	Dette fédérale ou provinciale?	Qui paiera la dette?	De quelle façon?	Principe de la méthode	Principaux avantages	Principaux désavantages?	Capacité de financement de nouvelles infrastructures
Rodrigue Bélanger Fecteau	Provinciale	L'ensemble des citoyens du Québec.	Contribution fiscale annuelle.	Trois scénarios de contribution annuelle et de croissance de la contribution sont utilisés pour obtenir divers ratios dette totale/PIB sur un horizon de 30 ans.	• Relativement à la méthode de diminution directe des emprunts et de la dette (utilisée par l'Alberta et la Colombie-Britannique), cette proposition permet de placer dans des titres à rendement élevé. • Un fonds géré par la CDPQ serait très visible et son évolution serait évidente. • Ce fonds étant géré par un mandant différent du gouvernement, les citoyens devraient avoir davantage confiance. • Il serait plus facile pour eux de contrôler la diminution de la dette. • Cette méthode du fonds pourrait améliorer la cote de crédit du gouvernement du Québec de plus de quatre échelons et produire une réduction des coûts de financement d'un maximum de 35 points centésimaux.	• La méthode de diminution directe des emprunts et de la dette, contrairement au fonds, permet de diminuer immédiatement et rapidement le dette en circulation, ce qui produit des gains en terme de réduction des emprunts. • Cette méthode engendre des économies de frais de gestion et d'opération alors qu'un fonds entraîne des coûts supplémentaires et nécessite une adhésion à l'effort fiscal plus importante. • Un désavantage non négligeable du fonds réside dans l'incertitude relative aux rendements provenant des placements dans des titres principalement internationaux, ainsi que de l'incompatibilité du rôle du gouvernement avec cette mesure foncièrement spéculative.	• Amélioration immédiate des capacités d'autofinancement des investissements publics. • Après 30 ans, amélioration des capacités d'emprunt. • Réduction des capacités d'investissement des contribuables.

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	Dette fédérale ou provinciale?	Qui paiera la dette?	De quelle façon?	Principe de la méthode	Principaux avantages	Principaux désavantages?	Capacité de financement de nouvelles infrastructures
Luc Vallée	Fédérale	Ceux qui cotisent à un REER.	Exonération d'impôt des revenus générés à partir de paiements non déductibles.	Diminution de la dette fédérale de 100 milliards et diminution annuelle du déficit de 7,5 milliards.	Selon M. Luc Vallée : • Réduirait les déductions fiscales des contribuables. • Représenterait une mesure équitable, contrairement à l'abolition des REER et aux exonérations pour gains de capital qui sont injustes pour ceux qui n'ont pas pu en profiter. • Réduirait les dettes et éliminerait les déficits des provinces. • Améliorerait la cote de crédit du Canada et des provinces. • Limiterait les craintes des investisseurs quant à la reprise de l'inflation. • Permettrait aux taux d'intérêt à long terme de baisser davantage. • Diminuerait le déficit du compte courant, réduisant ainsi notre dépendance envers le capital étranger et rassurerait les investisseurs.	Selon M. Jean Lanctôt : • Manque de synchronisation avec les régimes de pension agréés des employeurs. • Taux d'imposition moins élevés à la retraite qu'au moment de prendre la déduction. • Ne tient pas compte de la planification fiscale des gens en vue de leur retraite. • La proposition va à l'encontre de l'objectif de voir la population prendre en main la planification de sa retraite. • La privatisation pourrait avoir une incidence imprévisible et négative sur les revenus de retraite. • La rétroactivité de la mesure est injuste. • Les marchés financiers seraient déstabilisés. • Danger de voir les gouvernements dépenser l'argent « frais » au lieu de réduire les dépenses.	• Augmentation immédiate des capacités d'emprunt du gouvernement fédéral. • Ensuite, amélioration progressive par réduction des emprunts nécessaires.

OBJECTIF 1 : ACCROÎTRE NOTRE PARTICIPATION À L'ÉCONOMIE DE L'APPRENTISSAGE

NOTRE CAPACITÉ D'APPRENDRE ET D'ASSIMILER ces nouvelles connaissances dépend essentiellement de notre scolarisation et de notre formation. Les économistes désignent par capital humain le stock de connaissances accumulé; ils ont trouvé que la croissance soutenue et le développement dépendent largement d'un stock abondant et croissant de connaissances.

Une large part des connaissances humaines dépend, selon les psychologues du développement, des cinq premières années de la vie. Nous ne disposons toutefois d'aucun système d'éducation préscolaire. Les garderies emploient du personnel sous-rémunéré, qualifié pour assurer des services de garderie (quand il est effectivement qualifié) et trop peu souvent des services d'éducation. Il arrive trop souvent que les enfants soient laissés à eux-mêmes pour développer leurs capacités. L'expérience d'au moins deux pays, la France et la Chine, devrait être prise en considération : les enfants peuvent apprendre à lire, à compter et à développer un ensemble de compétences (motrices, manipulatrices, musicales, spatiales, sociales et introspectives) avant l'âge de l'entrée à l'école.

- Un réseau d'éducation préscolaire pour les jeunes enfants (de 2-3 ans à la maternelle).
- Des instituts provinciaux pour former des éducateurs pour le niveau préscolaire.

Les deux projets proposés ci-dessus sont interdépendants. Le succès et l'utilité relative du premier dépend du second. Les effets seraient multiples : les enfants qui apprendraient à lire en pré-maternelle et en première année pourraient apprendre plus vite; le système scolaire primaire et les enseignants qui y évoluent pourraient alors réviser à la hausse la teneur des programmes; de nouveaux emplois spécialisés d'éducateurs seraient créés; au moins une nouvelle institution par province serait créée[97], tous les enfants de deux ou trois ans bénéficieraient des mêmes conditions, peu importe le revenu, le niveau de scolarisation et la culture de leur famille. (Nous verrons plus tard qu'un tel projet d'infrastructure d'éducation doit se faire en coordination avec des investissements de rénovation urbaine. Les centres d'éducation préscolaire doivent être situés dans les quartiers de résidence, près des familles (mono- ou biparentales) de sorte que les deux milieux de vie renforcent l'incitation au développement humain.

Le second maillon faible de notre système d'éducation et de formation se situe au niveau secondaire. Il ne s'agit pas ici d'une question d'infrastructure : les bâtiments y sont (souvent sous-utilisés), le corps professoral aussi. Mais l'école secondaire n'est pas un environnement complet de vie et d'apprentissage, offrant des activités intégrées qui favorise le développement multidimensionnel

des adolescents. Le problème se situe sans doute au niveau du programme, de la pédagogie et de la conception des cycles du secondaire, du faible statut social et du manque d'autorité des enseignants dans la collectivité. Pour traiter de cette question, des programmes d'excellence doivent être mis en oeuvre, d'abord sur une base expérimentale, puis institutionnalisés, après une évaluation des rajustements et des choix sociaux.

- Mettre à l'essai puis institutionnaliser des programmes visant à rehausser la qualité et l'utilité de la scolarité acquise au niveau secondaire en vue de réduire le taux de décrochage et d'éliminer l'analphabétisme fonctionnel.
- Mettre à l'essai puis institutionnaliser des programmes d'excellence en vue de rehausser les compétences et les connaissances de base des enseignants au niveau secondaire, ainsi que leur statut social.

Ici encore, ces deux projets d'investissement sont indissociables. Les bénéfices seraient de créer partout quelques exemples réussis d'amélioration de l'enseignement secondaire et de pouvoir faire état de réussites dans le développement des adolescents et des enseignants.

Le troisième maillon faible de notre système d'éducation – en qualité de professeur et étudiante, respectivement, nous tenons à souligner ce point – reste le manque de formation pédagogique – et, à plus forte raison, andragogique – des professeurs des niveaux collégial et universitaire. Ici, c'est le néant. Les professeurs d'université sont censés être automatiquement doués en pédagogie : cela revient à envoyer sur scène un mélomane qui a écouté de l'opéra toute sa vie en lui demandant de chanter lui-même un opéra complet! Nous ne traiterons pas de la perversité du système d'incitations dans les universités ni des améliorations possibles à la qualité de l'enseignement supérieur[98]. Les gouvernements provinciaux pourraient octroyer des subventions conditionnelles liées au changement de ces incitations et de ces pratiques de recrutement. Les universités ont été amenées à diversifier de plus en plus leurs fonctions (formation, transmission de connaissances, recherche de pointe, solution de problèmes sociaux)[99]. Mais il n'est pas sûr qu'une même institution puisse accomplir simultanément toutes ces tâches. Le temps est peut-être venu de revoir leur conception. Les investissements en infrastructure ne sont sans doute pas, ici, les meilleurs instruments – certainement pas avant qu'un tel bilan ait été fait.

De manière à accéder à la connaissance et à nous repositionner sur l'échiquier international pour prendre notre place sur les nouveaux marchés asiatiques, nous devons former la prochaine génération au multilinguisme, notamment aux langues asiatiques (d'abord le mandarin, langue de base de l'Asie, puis le japonais, le coréen et le malais), mais aussi à l'espagnol et au portugais.

- Mettre sur pied des instituts de formation en langues contemporaines.
- Mettre sur pied deux instituts de formation de professeurs de langues.

Les écoles privées de langues ne satisfont que de façon superficielle et partielle les besoins de formation multilinguistique. Leurs tarifs sont si élevés et la formation offerte est de si courte durée que la maîtrise d'une langue étrangère reste hors d'atteinte pour un grand nombre de jeunes. Les universités devraient toutes posséder des écoles de langues afin de faciliter le contact avec d'autres cultures et permettre de poursuivre des recherches et des études dans d'autres pays, bref pour développer les connaissances indispensables à l'interaction avec les autres pays. Les universités ne devraient pas abandonner ce secteur (somme toute, lucratif) au secteur privé. Selon nous, la raison pour laquelle c'est ce qui se produit aujourd'hui est une question de structure d'incitations dans les universités (nous avançons cette hypothèse en tant qu'étudiant en langues). Prenons un exemple : si la publication d'articles sur la Chine procure plus de reconnaissance académique que l'enseignement du mandarin, une langue difficile, celui-ci sera négligé au profit des tous les autres aspects de la question chinoise. Il serait sans doute plus sage de créer des instituts distincts pour l'enseignement des langues, comme pour les écoles professionnelles. Simultanément, au moins deux instituts de formation de professeurs de langues, mettant l'accent sur la pédagogie du langage, devraient voir le jour : un pour les anglophones et l'autre pour les francophones. Les instituts d'enseignement des langues et de formation des professeurs de langues peuvent être mis sur pied en collaboration avec des institutions semblables dans d'autres pays : il serait alors possible d'envisager des expériences d'immersion à l'étranger, des échanges de professeurs, etc. L'Agence canadienne de développement international (ACDI) pourrait assumer une part de la responsabilité et des coûts de ce projet.

Les trois niveaux d'éducation ne dispensent pas les habiletés de base en informatique. Nous estimons aussi que le financement de l'installation à grande échelle d'ordinateurs dans les écoles ne serait pas productif. Il vaudrait mieux développer les accès et les applications pédagogiques et andragogiques liées aux ordinateurs et à Internet. On peut atteindre ces objectifs, au même coût, par des investissements en infrastructure axés sur la recherche, le développement, l'expérimentation et l'évaluation visant à montrer aux étudiants comment les ordinateurs peuvent les servir mieux que toute autre méthode.

- Investir dans la recherche, le développement expérimental et l'évaluation andragogique et pédagogique de logiciels et d'Internet, en visant des applications utiles.

Nous estimons que ce sont, d'une part, le manque de contenu et d'applications et, d'autre part, le manque d'habiletés élémentaires en informatique qui

limitent l'usage d'Internet. À ce stade, il ne serait pas utile d'expérimenter davantage : les compétences existent sans doute déjà au Canada. Mais le fait que différents paliers de gouvernement versent d'importantes sommes pour l'achat d'ordinateurs montre qu'il y a lieu de revoir les priorités d'investissement en infrastructure.

Les connaissances s'accroissent avec l'ouverture sur le monde et la recherche scientifique requiert des interactions internationales. Le financement spécial de programmes internationaux impliquant des consortiums internationaux est maintenant arrêté au Conseil de recherches en sciences naturelles et en génie (CRSNG). Les autres programmes permettent cependant de poursuivre pareilles activités, si le chercheur le désire. En d'autres termes, aucun support particulier n'a été jugé nécessaire pour promouvoir le caractère international de la recherche. Mais il faut s'assurer qu'une partie d'Internet puisse servir de support, grâce à l'interaction en temps réel, à de tels réseaux internationaux. Il s'agit là, à notre avis, plus d'une question de réglementation[100] que d'investissement en infrastructure. Les investissements publics ne devraient pas servir à assurer des espaces d'interactivité tant qu'on n'aura pas épuisé la voie réglementaire. Il est toutefois nécessaire de développer des logiciels plus performants. Il en va de l'intérêt public que l'on puisse avoir accès à des ordinateurs et à des logiciels compatibles de manière à rendre possibles les communications entre les personnes. Tout développement d'appareils et de logiciels plus performants doit prévoir l'établissement de passerelles permettant de relier les installations existantes et nouvelles, pour éviter que les investissements passés ne deviennent irrécupérables.

- Développement expérimental d'outils « intelligents » et performants de recherche, de dissémination et d'interaction humaine sur Internet, pour faciliter la participation d'étudiants, de professeurs et de chercheurs à des réseaux internationaux de recherche.

L'instrument politique le plus approprié ici est la réglementation. Une grande part des coûts peut être assumée par l'industrie du développement de logiciels, avec les organismes publics, les établissements scientifiques et les universités comme clients. Peut-être, dans ce cas particulier, les fonds publics pourraient-ils être employés pour la mise au point et le décollage du processus; par la suite, l'expansion commerciale retournera au secteur privé.

De la même manière, dans le domaine de la technologie, les bases de données permettant de suivre l'évolution technologique ne manquent pas (sur Internet ou ailleurs). Les lacunes existent plutôt du côté des logiciels (qui demeurent d'utilisation complexe, non conviviaux et d'efficacité moyenne) servant à consulter ces banques de données. Si les grandes firmes possèdent les ressources nécessaires pour se doter de tels outils performants, les petites entreprises et les aspirants-entrepreneurs en sont privés. Une grande part de cette information circule déjà au sein de réseaux d'experts. Ces communautés

d'experts pourraient s'organiser en groupes de consultation technique autofinancés, auprès desquels les petites entreprises pourraient bénéficier de tarifs préférentiels partiellement financés par les administrations publiques. Les investissements initiaux, ici encore, seraient à finalité expérimentale et viseraient un nombre restreint d'utilisateurs-clients, de façon à développer les outils nécessaires et à réduire les coûts irrécupérables des organisations chargées de fournir ces services. Le Canada, faut-il le noter, assure moins bien cette fonction que le Japon, le Brésil ou la France... ce qui pourrait contribuer à un éventuel retard technologique du Canada.

- Mettre au point, de concert avec les associations industrielles, des systèmes « intelligents » de veille technologique conçus pour et par les utilisateurs, de manière à permettre aux petites et moyennes entreprises et aux particuliers, entrepreneurs éventuels, de demeurer informés des derniers développements technologiques et de disséminer leurs propres réalisations.

Nous avons vu que c'est le manque d'applications utiles qui limite l'usage d'Internet. Si suffisamment de technologies d'application sont développées pour rendre Internet utile, un problème d'accès peut alors se poser et il pourrait être trop tard pour parler de garantie d'accès au système. S'il existe des applications pour l'ensemble des segments de la population, l'accès peut alors faire la différence entre participer à l'économie de l'apprentissage ou en être exclu. L'accès éventuel peut être amélioré en imposant des normes de rendement pour les ordinateurs, mais surtout, des normes de compatibilité. Les pourvoyeurs de nouveaux systèmes (comme les logiciels) ne devraient pas détruire la valeur de base installée préalablement, mais plutôt prévoir des passerelles pour relier les bases d'hier aux systèmes de demain.

La réglementation permet d'atteindre ce résultat : c'est dans l'intérêt d'un fournisseur de nouveaux systèmes de bénéficier de la plupart des externalités qu'offrent ces passerelles. Le CRTC joue un rôle crucial à ce titre et doit tenir compte de ces considérations en même temps que celles liées aux investissements en infrastructure pour garantir à la fois l'accès physique, l'accès informatique fonctionnel, l'accès linguistique et l'interactivité. Grâce à la réglementation, l'élaboration de normes de compatibilité devient un moyen de maintenir la flexibilité et d'ouvrir des options sur l'avenir. Les normes de compatibilité entre les systèmes visent aussi à assurer et à préserver les externalités de réseau et les investissements préalables faits par les agents, en vue de profiter éventuellement de ces externalités. Ces considérations s'avèrent particulièrement importantes dans le cas de l'incertitude qui entoure actuellement le système global de communications : deux groupes oligopolistiques (les compagnies de téléphone et les câblodistributeurs) rivalisent pour établir les normes. Aucun gouvernement n'est en position d'évaluer quel système serait préférable; par ailleurs, l'intérêt public et les externalités de réseau militent en faveur de la compatibilité

des systèmes et, donc, de l'établissement de passerelles entre eux. Mais selon nous, les investissements publics en infrastructure restent inutiles à cet égard et ne pourraient supporter le poids de la rivalité des systèmes : contre des consortiums tels que British Telecom-MCA-Nippon Electric, toute initiative canadienne serait futile.

Un investissement en infrastructure axé sur Internet, bien modeste, aurait toutefois une importance cruciale. Dans le contexte de la rivalité des systèmes, les institutions publiques n'ont qu'une fenêtre d'opportunité étroite, tant pour agir que pour s'informer. De plus, ces deux fenêtres pourraient bien ne pas coïncider dans le temps. Il faut donc suivre de près l'évolution de cette rivalité systémique.

- Financer la recherche sur l'évolution de la configuration des systèmes; gérer les questions d'accès, de performance, d'applications, de respect de la vie privée, de droit et d'éthique posées par Internet et le système global de communications, de manière à accroître les ouvertures pour l'information et les possibilités d'intervention efficace des institutions publiques.

Un tel investissement peut être vu comme une forme particulière de veille technologique, mais il vise ici spécifiquement l'intérêt public. Une grande part de cette veille technologique peut être assurée par les divers utilisateurs, mais une partie de cet effort doit supporter les politiques publiques et la réglementation.

Soulignons qu'un tel investissement en infrastructure lie la participation à l'économie de l'apprentissage à l'établissement de la confiance nécessaire pour réduire les coûts de transaction. L'interactivité est particulièrement prometteuse pour ce qui est de réduire les coûts de transaction, non seulement pour les réseaux internationaux, mais aussi pour les collectivités dont les membres sont physiquement éloignés les uns des autres. Certaines de ces collectivités (industrielles, professionnelles, toutes les organisations lucratives, etc.) ont les moyens de financer leurs propres outils, d'autres (organismes à but non lucratif, etc.) ne le peuvent pas. Certaines devraient être en mesure d'assumer les coûts d'exploitation et les améliorations à apporter aux systèmes en place; mais la plupart ne possèdent pas les capacités pour expérimenter et développer ces outils. Il est d'intérêt public que ces collectivités puissent acquérir de tels moyens, pour au moins deux raisons : accélérer l'apprentissage et établir un climat de confiance.

- Développer, sur une base expérimentale, des logiciels « intelligents » d'échanges interactifs dans le but d'établir des espaces publics, d'encadrer les collectivités et de permettre le dialogue entre les membres de ces collectivités.

OBJECTIF 2 : INSTAURER ET PRÉSERVER UN CLIMAT DE CONFIANCE

L'ÉTABLISSEMENT D'UN CLIMAT DE CONFIANCE vise à réduire les coûts de transaction, à maintenir un cadre institutionnel stable, à accroître les possibilités d'apprentissage interactif et de coopération pour faciliter la création conjointe de nouveaux produits, de nouveaux processus et de connaissances techniques nouvelles.

Rappelons l'importance de maintenir un climat de confiance dans les institutions actuelles de manière à garantir le respect des engagements passés. Ainsi, le droit à la santé, c'est-à-dire l'accès universel aux soins de santé, montre bien la distinction qui existe entre les valeurs canadiennes et américaines. Des sondages récents révèlent l'importance qu'accordent les Canadiens à ces valeurs : elles sont prioritaires même par rapport à la réduction du déficit. Il s'agit là d'éléments clés partagés par toute la population canadienne, y compris les indépendantistes du Québec, les nations autochtones et les partisans du fédéralisme le plus centralisateur – et bien sûr, ceux et celles qui sont en faveur d'aménagements constitutionnels moins extrêmes. Si cet engagement passé venait à être renié, les Canadiens perdraient confiance en leurs institutions politiques et une partie de la cohésion sociale serait dissoute. Ce qui constitue le caractère distinctif du Canada en Amérique du Nord disparaîtrait. Le climat de méfiance subséquent provoquerait une hausse vertigineuse des coûts de transaction. À notre avis, les gouvernements « jouent avec le feu » en modifiant – consciemment ou non – le principe de l'universalité. Aucun des efforts déployés pour construire un climat de confiance n'aura de suite si ne sont pas garantis l'universalité des droits en matière de santé, les droits acquis aux pensions de retraite, à l'assurance-chômage, à l'éducation, etc.

Nous avons mentionné, à la fin du dernier objectif, l'importance de promouvoir et de renforcer la discipline démocratique intra-communautaire tout autant que les interactions entre collectivités. La mise en place de passerelles et des investissements modestes destinés à faciliter l'utilisation d'Internet visent ces objectifs. Il s'agit là d'investissements relationnels. Dans notre cadre politique, le rôle croissant de *l'infrastructure* s'accompagne d'une expansion *des interfaces*. Mis à part les investissements axés sur une éducation et une formation renouvelées et réorientées, une part importante des investissements sont des *investissements institutionnels et relationnels*, car l'avantage des collectivités sur le plan des coûts de transaction pourrait aussi se traduire par une intensification de l'esprit de clocher. Il est nécessaire de mettre en place des institutions de liaison permettant aux acteurs de différentes collectivités d'interagir : il s'agit de construire des lieux d'interface. Ces investissements relationnels pourraient bien représenter des coûts irrécupérables : un financement public s'impose donc pour éviter que cela ne mène à un sous-investissement relationnel, source de frictions potentielles entre les collectivités existantes et entre celles-ci et de nouveaux groupes. Dès que les relations s'établissent, la coopération peut se poursuivre sans ou avec très peu de coûts irrécupérables.

Cette approche ne suppose pas seulement une désintégration verticale des fonctions gouvernementales (vestiges du « Big Brother », de plus en plus critiqués par les citoyens) mais bien aussi l'acceptation du *principe de subsidiarité*, selon lequel la fonction de gouvernement doit être exercée au palier le plus bas, par l'unité la plus rapprochée de la base et selon ses propres processus d'autogestion[101]. La rhétorique préélectorale actuelle fait un peu écho à *la subsidiarité* – dans une version diluée – depuis peu. Selon Gordon Gibson :

> *Il n'est donc pas exact de voir la subsidiarité exclusivement comme un principe qui s'applique aux gouvernements. De fait, le premier critère de toute initiative gouvernementale proposée est de se demander si le gouvernement devrait être présent dans ce domaine d'activité particulier*[102].

Dans leur sens originel, les questions de régie englobent les *affaires* et les *affaires publiques*. Plusieurs collectivités souhaitent s'autogérer et en sont capables. Ainsi, de manière à réduire la taille des administrations au Canada (« downsizing »), il faut, partout où cela est possible, une dévolution générale des fonctions. Faute de quoi s'envolera la crédibilité des tous les efforts faits par les divers paliers de gouvernement pour faire éclore des projets entre les collectivités ou entre les gouvernements, de manière à établir un climat de confiance.

Si les propositions énoncées ici sont retenues, un certain nombre de projets conjoints pourraient contribuer à bâtir – voire à rebâtir – un climat de confiance. Avant de les aborder, considérons un autre investissement institutionnel et relationnel important, nécessaire dans un monde de changement technologique où les impacts de certains artefacts peuvent être négatifs.

- Établir dans les quartiers et dans les villes des forums d'évaluation technique où les différents choix techniques peuvent être examinés par les citoyens qui seront touchés par ces choix.

Une grande part de la méfiance et de l'indifférence des citoyens envers les processus politiques vient du fait qu'ils ne participent pas à la plupart des décisions qui touchent quotidiennement leur vie matérielle. Le processus démocratique ne leur semble pas concret. Par exemple, la décision de construire un incinérateur, une centrale nucléaire, un site d'enfouissement sanitaire, etc., ne fait pas systématiquement partie des campagnes électorales. Dès que ces projets sont ébruités dans la presse, les citoyens sentent que les décisions sont déjà prises. Ces décisions touchent directement leur vie. De manière à pousser plus loin leur réaction initiale du « *pas dans ma cour* », les citoyens doivent être amenés à examiner tous les choix possibles et à participer à la prise de décision.

Précisons. Il ne s'agit pas seulement de donner aux collectivités des droits de blocage de projets mais d'inviter les citoyens au démarrage et à la conception de tels projets, d'en préciser les besoins, de contribuer à définir les priorités, de telle manière que le projet gagne l'assentiment de toute la collectivité.

L'approche classique des instances de réglementation, dont les audiences publiques sont fondées sur le principe de l'adversité, doit être remplacée par des institutions qui permettent la consultation et la coopération *ex ante*.

Les échecs de nos gouvernements viennent du fait que dans nos démocraties, héritières du Siècle des lumières, les droits afférents aux choix techniques ne sont pas clairement définis. Ce sont des droits *résiduels*. Parallèlement, nous faisons face à une guerre juridique au niveau des droits et prérogatives opposant les utilisateurs, les clients, les acteurs locaux (notamment les citoyens), les promoteurs et les différents paliers de gouvernement. Au sein de toutes les institutions gouvernementales, à tous les niveaux et au prix de coûts de transaction élevés, des commissions spéciales sont mandatées pour trouver des compromis. Nous suggérons que cette crise institutionnelle fournisse l'occasion de concrétiser la démocratie, d'intégrer les citoyens à l'évaluation et au processus décisionnel entourant les projets d'infrastructure technologique, notamment pour les projets concernant la qualité de la vie en général et celle de l'environnement en particulier.

Comme le suggère Mark Roseland, de telles questions doivent être traitées localement[103]. Les commissions d'enquête fédérales ou provinciales – comme la Commission Berger – sont trop lentes à réagir et trop éloignées des préoccupations des citoyens. Un certain nombre d'expériences récentes doivent à cet égard être retenues : par exemple, le Bureau des audiences publiques en environnement (BAPE), à Montréal, coordonnait une soirée télévisée et une audience sur le recyclage des déchets au cours d'une fin de semaine. Ce type de forum public devrait être institutionnalisé, de manière permanente, au niveau municipal; un mécanisme de pétition devrait s'y ajouter pour permettre à un certain pourcentage de citoyens d'imposer une évaluation sociale des options techniques avant qu'une décision se prenne. Éventuellement, les citoyens pourraient avoir les moyens d'exiger le recours au référendum sur une décision.

L'avantage de telles institutions serait d'intégrer les citoyens aux étapes de la conception et du design, du choix et de la mise en oeuvre du choix de la majorité. La construction de passerelles entre les collectivités entraîne des coûts de transaction importants. Entre les collectivités, les coûts de transaction sont toujours élevés. Aucune infrastructure technologique n'implique aujourd'hui qu'une seule collectivité. Comme instrument de liaison, le forum public permet d'établir un climat de compréhension et de confiance entre les collectivités. De telles institutions peuvent se pencher sur des questions locales ou des projets plus larges.

Voyons maintenant quelques projets collectifs qui favorisent un climat de confiance. Nous nous limiterons à des projets existants impliquant diverses municipalités ou paliers de gouvernement.

OBJECTIF 3 : AMÉLIORER LA QUALITÉ DE VIE ET L'ENVIRONNEMENT

PARMI LES GRANDS PROJETS D'INFRASTRUCTURE, les plus importants restent sans contredit ceux qui permettent le maintien et l'amélioration de la qualité de la vie tout en traitant des problèmes environnementaux qui se posent au Canada.

- Mettre en place l'infrastructure requise pour le remplacement progressif du transport urbain à carburant fossile par un transport électrique.
- Construire un système de transport interurbain par rail électrique pour remplacer le système aérien bruyant, à carburant polluant, qui assure la liaison entre des villes assez rapprochées.
- Généraliser le recyclage urbain et la réutilisation des matériaux.
- Restaurer les multiples usages des ressources d'eau (lacs et rivières).

Les projets d'infrastructure ci-dessus ne sont que des exemples : d'autres projets seraient aussi valables. Ils devraient être évalués selon leurs coûts. Leur niveau de priorité varierait d'une collectivité à l'autre. Dans chaque cas sont combinés un type d'activité, une fonction et un problème précis quant au développement durable sur le plan écologique.

Chaque projet serait nécessairement conjoint. Le nombre d'actionnaires, de niveaux de gouvernement, d'entreprises industrielles, d'institutions financières et de groupes communautaires serait variable. L'expérience d'engagements mutuels tenus et celle d'atteindre – même partiellement – les objectifs visés permettraient d'amasser un capital et d'établir un climat de confiance entre des personnes de différentes organisations ou collectivités qui pourraient ensuite se mobiliser pour des projets futurs. Certains de ces projets pourraient

TABLEAU 5

Activités	Problèmes	Fonctions
Recherche	Pollution des eaux	Nettoyage
Veille et suivi	CO_2	Recyclage
Développement	Dioxydes (d'azote, etc.)	Réutilisation
Expérimentation	Déchets dangereux	Réparation
Essai	Déforestation	Récupération
Démonstration	Désertification	Conversion
Évaluation	Appauvrissement des sols	Remplacement
Discussion	etc.	etc.
Choix		
Investissement		
Exploitation		
Formation		
Éducation		

permettre d'intégrer de nouvelles personnes[104] au marché du travail. La gestion des nouveaux projets pourrait progressivement être confiée, là où aucune institution n'existe déjà, à une nouvelle institution qui prendrait éventuellement la responsabilité de gérer l'infrastructure, après sa mise en place et une fois acquise son autosuffisance.

Pour préciser les projets énumérés plus haut, rappelons que nous les avons justifiés dans les deux premières parties. Ce sont tous des projets qui nettoieraient notre environnement, qui convertiraient les anciennes technologies polluantes en technologies durables sur le plan écologique ou qui amélioreraient notre qualité de vie (l'objectif 3). Nous trouverions tous notre compte à les voir se réaliser.

Les avantages des projets d'infrastructure environnementale sont multiples. L'industrie de l'environnement est l'une des rares, avec la télématique, qui enregistre une croissance soutenue. Il s'agit donc d'une nouvelle industrie à forte croissance où le Canada doit se positionner rapidement. Par ailleurs, l'industrie de l'environnement a un grand avantage sur les quelques autres industries à forte croissance : elle comprend des secteurs à haute intensité de savoir (instruments de contrôle, enfouissement des déchets nucléaires, recherche de substituts aux fluorocarbures, etc.), mais aussi des activités à fort coefficient de main-d'oeuvre (nettoyage, recyclage, réparation, etc.). Ce secteur est créateur d'emplois. Sa croissance permet de remédier au dualisme entre un secteur intense en R-D à forte croissance et un secteur stagnant, marginalisé, engendrant la pauvreté.

Toutefois, améliorer notre qualité de vie ne se résume pas à éliminer les polluants. La plupart des Canadiens vivent dans les villes ou dans de grandes agglomérations urbaines. Celles-ci sont vulnérables au dangereux syndrome du « trou de beigne » : le centre-ville se détériore, la pauvreté et la criminalité se polarisent dans celui-ci et dès qu'elles occupent ce coeur, elles se répandent et gagnent éventuellement les banlieues. Ce symptôme n'est pas aussi important au Canada qu'aux États-Unis, où les centres-villes ressemblent aux villes européennes bombardées de l'après-guerre.

Certains font valoir que c'est la désintégration de la famille qui est à l'origine de cette détérioration sociale. Mais il s'agit là autant d'un symptôme que d'une cause. La famille nucléaire moderne n'a plus de filet de sauvetage ni dans des familles étendues, ni dans des collectivités locales. Ce sont les collectivités locales et les quartiers urbains qu'il faut reconstruire en y localisant des centres d'éducation préscolaire, d'aide sociale et de retraite, de manière concertée. Des exemples comme celui de la ville de Verdun montre comment des initiatives communautaires peuvent enrayer les effets de la pauvreté. Encore faudrait-il que les administrations municipales, provinciales et fédérale permettent, faute de les favoriser, l'implantation des infrastructures de quartier qui facilitent le développement économique communautaire.

Nous maintenons au Canada un avantage relatif par rapport à l'ensemble de l'Amérique du Nord sur le plan de la qualité de vie dans les villes : nous

devons concentrer nos efforts pour maintenir et améliorer la viabilité des centres – les coeurs – urbains. Un certain nombre de politiques ne nécessitent pas d'infrastructures additionnelles : ainsi, les banlieusards qui utilisent les infrastructures des centres urbains devraient contribuer à leur entretien et à leur renouvellement. Par exemple, et c'est le cas des conteneurs de train depuis au moins dix ans, les automobiles qui se déplacent quotidiennement de la banlieue à la ville pourraient être systématiquement enregistrées et taxées en conséquence, sans péage.

Le changement dans la structure de la population s'accompagne de nouveaux besoins de logement. D'abord, l'augmentation de la proportion des retraités, combinée à la possibilité de prodiguer à distance des soins de santé et des services sociaux, militent en faveur de l'idée de laisser les retraités dans leur milieu et de décentraliser les procédures de prestation de soins. Ensuite, la proportion croissante de familles monoparentales transforme les besoins de logement. Enfin, une part de plus en plus grande de couples indépendants qui travaillent requièrent l'intégration de leurs espaces de logement et de travail. Contre la gangrène des métropoles immenses, le renouveau des petits quartiers, avec leurs espaces publics, devient un moyen clé d'établir ou de rétablir un climat de confiance.

Des infrastructures urbaines de centre-ville :
Expérimenter avec

- de nouvelles formes d'habitation;
- la reconstruction orientée vers des préoccupations écologiques;
- la décentralisation dans les quartiers d'origine des maisons de retraite, des services de santé et des services sociaux;
- des espaces publics de quartier.

Ces actions contribueraient à attirer des investissements externes des entreprises à coefficient élevé de savoir. Ce pouvoir d'attraction est de moins en moins lié à la dotation en facteurs de production existants, mais plutôt à la qualité de la vie urbaine et aux commodités pour les employés, ainsi qu'aux infrastructures de transport, de sciences et technologie, et d'éducation. À cet égard, plusieurs villes canadiennes présentent des avantages manifestes en Amérique du Nord.

Un autre avertissement doit être émis à ce stade. La qualité de la vie ne peut être améliorée sans réduction de l'anomie sociale, qui s'accompagne dans notre pays de taux élevés de suicide, de chômage et de dépendance à long terme (aide sociale), de quasi-fixation sur l'écran de télévision, d'abus de drogues et de criminalité, dont la violence familiale. Le problème du chômage à long terme engendre l'inactivité intellectuelle, émotive et physique, créant une sous-classe de personnes marginalisées et exclues. Nous devons donc nous tourner vers les problèmes liés à la création d'emplois stimulants, à l'éducation et aux ressources financières de nos institutions publiques.

OBJECTIF 4 : REPOSITIONNER LE CANADA

NOUS AVONS INSISTÉ SUR L'IMPORTANCE de créer des institutions de formation en langues contemporaines pour bénéficier de la manne de croissance économique provenant des pays nouvellement industrialisés d'Asie et d'Amérique latine. Le repositionnement nécessaire du Canada dans un monde en mutation n'est pas seulement géographique, mais bien plus substantiel.

Quand les États-Unis étaient les principaux promoteurs d'un système commercial ouvert et multilatéral, nous profitions largement de leurs efforts. C'est de moins en moins le cas. Même d'un point de vue intellectuel, la plupart des penseurs américains – sauf peut-être l'économiste Paul Krugman – qui évaluent négativement le nouveau protectionnisme véhiculé par le Département du Commerce des États-Unis sont des étrangers qui résident aux États-Unis (pensons à J. Bhagwati et à A. Dixit). Si le Canada veut assumer un rôle plus indépendant en défendant et en étendant la portée d'un système commercial multilatéral ouvert, il lui faudra investir lui-même, engager les cerveaux capables d'articuler le raisonnement qui sous-tend une telle politique à l'échelon international. Parallèlement, de nouvelles avenues émergent quant aux relations internationales portant sur l'échange de connaissances, l'écologie, le secteur privé, les droits culturels et les politiques associées à l'identité, ainsi que sur l'équilibre militaire sans puissance hégémonique, le glissement du centre de l'économie mondiale d'un continent vers l'autre, etc. Ces avenues doivent être explorées de manière à trouver des fondements solides à l'existence (ou à l'absence) de gains mutuels et de bien-être global sur lesquels ériger des politiques d'envergure internationale. Pour être en mesure de jouer un rôle indépendant dans le monde, le Canada requiert des centres d'excellence transdisciplinaires suffisamment intéressants pour attirer les meilleurs chercheurs au monde ainsi que les jeunes cerveaux les plus brillants, de manière à engendrer les ferments intellectuels nécessaires pour réfléchir à l'avenir des relations internationales.

- Mettre sur pied des centres d'excellence transdisciplinaires rattachés aux universités, dont le mandat serait d'examiner les problèmes de relations internationales.

Le Centre sur les droits humains de Montréal, institué par le précédent gouvernement fédéral et mis sur pied par Ed Broadbent, démontre l'utilité d'un groupe de recherche indépendant et transdisciplinaire, dont les recherches sont axées sur la résolution de problèmes, de manière à soutenir la politique étrangère.

Les points précédents supposent quelques investissements importants en infrastructure, qu'il nous apparaît pertinent de faire. Il ne s'agit pas d'une liste exhaustive, ni d'un classement prioritaire. Ces suggestions ne sont pas non plus évaluées selon leurs coûts. Nous cherchons simplement, tel que demandé, à provoquer une discussion et une réflexion sur les perspectives à long terme.

Considérons enfin quelques autres points : Qui devrait assumer les coûts? Comment les gouvernements devraient-ils s'engager dans les investissements publics en infrastructure? Quelle est l'urgence de ces investissements?

QUI ASSUME QUELS COÛTS?

QUI DEVRAIT FINANCER ET ADMINISTRER quelles infrastructures à venir? À notre avis, les investissements en infrastructure devraient être faits par les groupes, publics ou privés, qui en bénéficient. Leur gestion devrait être assurée, selon le principe de la subsidiarité, par l'instance la plus rapprochée de l'utilisateur. Si un groupe d'utilisateurs potentiels (une association industrielle, un groupe de municipalités, etc.) a des besoins précis d'infrastructure, il lui revient de lever les fonds et d'effectuer l'investissement lui-même sans grever les finances publiques. Si tous les membres de la société ont accès aux infrastructures – et qu'aucun segment n'en est exclu, d'aucune manière – des fonds publics pourraient être investis. Si les infrastructures mises en place par un groupe d'acteurs profitent à toute la société mais que le groupe promoteur ne peut pas en monnayer les avantages, il n'en tiendra pas compte dans ses décisions d'investissement et sous-investira; l'intervention des pouvoirs publics est alors de mise. Le niveau de gouvernement le plus rapproché des citoyens concernés devrait gérer le dossier. Cela signifie que le palier de gouvernement le plus bas aurait les pouvoirs de taxation sociale nécessaires à la réalisation des projets nécessitant des fonds publics, tout comme il s'occuperait de vérifier l'assentiment de la population par des audiences publiques sur les projets et l'évaluation sociale des technologies en cause.

Il arrive que le gouvernement ne puisse ou ne veuille investir dans des projets d'infrastructure : le secteur privé doit alors s'en charger. Au XIX^{e} siècle et au début du XX^{e} siècle, la plupart des projets d'infrastructure ont été le fait de partenariats entre les secteurs public et privé. Ce n'est que dans le dernier demi-siècle que l'État s'est chargé de l'essentiel des projets et des investissements d'infrastructure.

Mais il y a des exceptions. Par exemple, au sud-est du Nigéria, dans le florissant district industriel de Nnewy, les généraux au pouvoir détournent presque tous les fonds publics : les industries sont laissées à elles-mêmes pour construire les routes et les égouts dont elles ont besoin. Si un pays en voie de développement est capable de se doter d'infrastructures privées, on peut penser que ce sera encore plus facile dans les pays industriels avancés.

Vu le processus actuel de dévolution vers la base des fonctions gouvernementales, plusieurs d'entre elles pourraient être prises en charge par des intérêts privés (c'est ce que suggère Gordon Gibson). Par exemple, la formation professionnelle (comptabilité, gestion spécialisée, ingénierie, etc.) qui ne sert qu'une profession ou un groupe d'industries devrait être financée par des associations professionnelles ou industrielles. Seule la part de l'éducation qui a une incidence sur l'ensemble de la société devrait être financée à même les fonds

publics; ceux-ci ne seraient versés que pour la scolarisation de base, la recherche, les sciences fondamentales et les principes généraux du génie. Ainsi, il est clair que les fondements généraux du génie chimique et l'ensemble de la recherche fondamentale dans ce domaine doivent être le fait du secteur public. Par contre, l'industrie chimique est tout à fait compétente et capable de financer la formation pointue dans des domaines appliqués de la recherche, tant à l'université que dans les entreprises[105]. Même si nos gouvernements arrivaient, par quelque miracle, à éliminer toutes leurs dettes et étaient en mesure de financer ces activités, il ne serait ni justifié ni efficace qu'ils mobilisent des fonds publics à ces fins. Tout au plus, les deniers publics devraient favoriser le démarrage de ces programmes de formation spécialisée, comme ce fut le cas pour le Centre de calcul appliqué à Montréal.

La sphère publique ne se réduit pas aux pouvoirs publics et aux gouvernements. Les coalitions, les associations, les alliances peuvent, avec l'appui des pouvoirs publics, faire beaucoup de ce que les gouvernements faisaient jadis, mais qu'ils ne peuvent plus faire aujourd'hui. Est-ce à dire que les pouvoirs publics n'ont pas de rôle à jouer? Au contraire, ils doivent susciter les collaborations sur des projets d'infrastructure, catalyser les coalitions, les alliances et les consortiums, s'employer à réduire les coûts de transaction entre de nouveaux partenaires etc.; ils doivent affecter des fonctionnaires à ces tâches et investir le capital relationnel de confiance qui permet cette collaboration entre agents. Il s'agit là d'un investissement d'infrastructure relationnel en termes de capital humain, de capital de confiance, sans lesquels les projets ne peuvent pas se réaliser.

- Permettre et encourager des investissements relationnels en vue de réduire les coûts de transaction initiaux d'éventuelles collaborations.
- Constituer un capital relationnel pour établir un climat de confiance en vue de l'élaboration de projets conjoints.

De tels investissements institutionnels devraient s'appuyer sur les ressources qui sont déjà disponibles dans nos services publics. Cette démarche ne devrait ainsi rien coûter, mais optimiser l'efficacité des ressources existantes. Une telle interface – un tel pont – pourrait être construit par les gouvernements, à la demande des entreprises privées ou à l'instar d'une politique de protection d'un bien public.

Cette approche remet en question la politique actuelle des gouvernements au Canada. Ces derniers se positionnent à l'extérieur du processus de création de richesses : ils se placent comme arbitre du bien public. Les services publics devraient plutôt jouer un rôle de premier plan comme catalyseurs ou rassembleurs, capables de créer de nouvelles solutions à des problèmes communs à plusieurs acteurs.

Signalons que, si nous restons dans un climat institutionnel de confrontation et d'État-arbitre (où nous nous trouvons en ce moment), nous

devrons subir les conséquences d'un sous-investissement et d'une déperdition d'énergie. Il est étonnant de voir que, par exemple, alors que le Canada possède une capacité et une avance technologiques certaines en Amérique du Nord dans le domaine des trains à grande vitesse, nous soyons incapables – largement en raison de rivalités intergouvernementales – de réaliser un projet de liaison ferroviaire rapide entre les deux principales métropoles.

QUELLE DEVRAIT ÊTRE LA CONTRIBUTION DU SECTEUR PUBLIC?

DANS LE PASSÉ, LA PRESQUE TOTALITÉ DES INVESTISSEMENTS en infrastructure étaient indivisibles et de très grande taille; c'était le cas du rail, des aéroports, des barrages, etc. À l'ère de la miniaturisation et des produits axés sur le savoir, il faut revoir cette notion. Des investissements efficaces en infrastructure viennent par vagues. Les fonds publics pourraient n'être nécessaires qu'au début, pour la première vague en quelque sorte. Des investisseurs privés pourraient ensuite prendre le relais. Le rôle des fonds publics serait alors double : amorcer la pompe et servir de catalyseur.

De tels programmes d'investissement devraient être réalisés en un court laps de temps. Ils devraient être largement expérimentaux, tant dans leur planification que dans leur exécution. Après quelques années, ces investissements devraient être évalués conjointement avec les principaux utilisateurs et les bénéficiaires potentiels. Si ces derniers refusent de s'engager financièrement dans les investissements nécessaires pour compléter ces infrastructures, le programme devrait alors être abandonné. Comme de tels investissements en infrastructure représentent des choix à long terme pour des activités rentables, la probabilité que les utilisateurs décident d'abandonner leur mise de fonds initiale est faible[106]. Les coûts sur l'ensemble du cycle de vie des infrastructures, y compris leur mise au rancart, peuvent conduire, en raison des évaluations périodiques, à l'abandon des projets qui comportent des externalités négatives. Dans un monde de changement technologique rapide où la flexibilité est devenue l'essence même du processus, des fonds publics ne peuvent plus être engagés des décennies à l'avance. Le secteur public doit pouvoir réévaluer ses choix ... et changer d'avis.

À QUEL RYTHME CES INVESTISSEMENTS DEVRAIENT-ILS ÊTRE FAITS?

NOUS INSISTONS SUR LE FAIT que le plus urgent n'est pas de s'engager dans des investissements d'infrastructure mais plutôt de mettre de l'ordre dans les finances publiques. Cette priorité acceptée, il est clair que certains projets sont plus urgents que d'autres. Quelques-uns sont urgents parce qu'un système se dégrade rapidement et que, plus les correctifs se font attendre, plus difficiles et coûteux ils seront. À notre avis, il y a trois dossiers urgents :

1. Nous estimons que les investissements en infrastructure les plus urgents concernent le réseau préscolaire ainsi que l'amélioration de la qualité de l'éducation et de la formation au niveau secondaire.
2. Vu leur rapide dégradation, il est urgent de se pencher sur la question des centres urbains et de s'attaquer aux problèmes environnementaux (comme la pollution des eaux).
3. Un investissement en infrastructure qui devrait être fait immédiatement, quitte à l'abandonner selon l'évolution des normes internationales, a trait à la recherche portant sur la configuration et les normes pouvant s'appliquer à Internet et à l'ensemble du système mondial de communications. Une fois la norme établie, il deviendra inutile d'investir en ce sens.

Un certain nombre d'investissements seraient utiles aujourd'hui et toujours pertinents demain, par exemple la création d'instituts de formation linguistique. Plusieurs autres investissements, que les contraintes budgétaires nous empêchent de réaliser aujourd'hui, demeureront toujours pertinents, même s'il est préférable de les entreprendre maintenant.

Nous espérons que ce texte suscitera vos réactions et alimentera vos discussions.

NOTES

1 Ce texte a été rédigé à l'été de 1996.

2 Pour un résumé des débats récents sur la question, voir John F. Helliwell, « Infrastructure and the Economy: Evidence and Implications », dans *Infrastructure and Competitiveness*, John Deutsch Institute for the Study of Economic Policy, Kingston, 1993, p. 451-483.

3 Robert Heilbroner, « Seize the Day », *The New York Review of Books*, vol. XXXVIII, no 2, 15 février 1990, p. 30-31.

4 Un politicien responsable d'investissements en infrastructure n'est souvent plus en lice pour les élections au moment où les effets de ces investissements apparaissent; les politiciens désireux de laisser leur trace trouveront plus simple de faire ériger un monument portant leur nom.

5 Nikolai Kondratieff, « The World Economy and Its Cycles During and After the War » (en russe); *The Long Wave Cycle*, Richard and Snyder, New York, 1984 (1922c); voir aussi Christopher Freeman, *Long Wave Theory*, Edward Elgar, 1996.

6 Comme l'orientation de nos investissements en infrastructure passe des transports et des communications à l'éducation et aux institutions, cette proposition doit être nuancée. Les effets demeurent à long terme.

7 Chris DeBresson, « Technological Innovation and Long Wave Theory: Two Pieces of the Puzzle », *Journal of Evolutionary Economics*, vol. 1, p. 241-272; paru aussi dans Christopher Freeman, *Long Wave Theory*, Edward Elgar, 1996.

8 Peter Wylie, « Infrastructure and Economic Performance: Comment », paru dans *Infrastructure and Competitiveness*, John Deutsch Institute for the Study of Economic Policy, Kingston, 1993, p. 205-210.

9 Christian DeBresson, *Economic Interdependence and Innovative Activity*, Edward Elgar, juillet 1996, ch. 1, p. 3-15.

10 À notre sens, l'expression « économie de l'apprentissage » reflète mieux que « économie de la connaissance » la dynamique cumulative intrinsèque du phénomène que nous cernons ici.

11 *Science, Technology, Industry: The Knowledge-Based Economy*, OCDE, Paris, 1996.

12 Banque mondiale, *World Development Report, Infrastructure for Development*, Oxford University Press, New York, 1994; Gregory Tassey, *Technology Infrastructure and Competitive Position*, Kluwer Academic Publishers, Dordrecht, 1992.

13 Nous distinguons « bien-être » et « mieux-être » à la manière dont Armatya Sen, économiste du choix social et du développement, distingue « wellfare » de « well-being » dans *The Standard of Living*, Cambridge University Press, Cambridge, 1987. Par exemple, un paysan latino-américain sans terre et sans revenu bénéficie d'un moindre bien-être qu'un jeune noir du ghetto d'une grande ville américaine; par contre, ce paysan bénéficie d'un mieux-être supérieur à celui du jeune noir en regard de l'espérance de vie, du taux de suicide, des probabilités de mort violente, des dangers face au crime, à la toxicomanie, aux risques d'emprisonnement et de chômage.

14 Programme des Nations Unies pour le développement (PNUD), *Rapport mondial sur le développement humain 1995*, Economica, Paris, 1996.

15 PNUD, *Rapport mondial sur le développement humain 1995*, Economica, Paris, 1996.

16 A. K. Sen, P*overty and Famines: an Essay on Entitlement and Deprivation*, Oxford University Press, New York, 1981.

17 Nous convenons qu'une telle perspective ne s'accorde guère avec les discours politiques d'aujourd'hui : il faudrait réclamer - et promettre - non plus de nouveaux emplois, mais bien de meilleurs emplois pour une meilleure qualité de vie pour tous.

18 Un facteur pourrait, par contre, soutenir une forte croissance : l'immigration massive au Canada. Ceci supposerait, cependant, une réorientation radicale des politiques et des attitudes des Canadiens.

19 Il a fallu plus d'un siècle à la glorieuse Albion pour admettre la fin de son hégémonie économique et les politiciens britanniques gâchèrent d'immenses efforts et beaucoup de ressources en refusant d'accepter l'inévitable.

20 Les universités anglaises ont longtemps conservé leur position internationale après le déclin économique du Royaume-Uni.

21 La structure des avantages économiques et le statut symbolique sont tels que le droit et les professions de la finance sont devenues plus attrayante que le génie, qui ne permet plus, comme autrefois, de « gravir l'échelle sociale ».

22 Robert Heilbroner, « Seize the Day », *The New York Review of Books*, vol. XXXVIII, no 2, 15 février 1990, p. 30-31.

23 Déjà au sein de l'ALENA, le Canada détient un avantage du fait que de grandes zones des États-Unis sont devenues ni plus ni moins que des bassins bon marché de travailleurs sous-scolarisés, alors que le Canada se situe relativement plus haut sur l'échelle des salaires, avec un meilleur niveau de scolarisation.

24 C'est en expliquant que « l'expression *développement durable* est une traduction assez peu satisfaisante de l'expression anglaise *sustainable development* » que Jean-Guy Vaillancourt adopte le terme *soutenabilité* comme équivalent à *sustainability*, dans son article « Penser et concrétiser le développement durable », *Écodécision*, vol. 15, hiver 1995, p. 24-29.

25 En 1991, le Canada a émis 118,1 millions de tonnes de CO2 par des sources mobiles, 148,6 par la production d'énergie et 97,3 par l'industrie : le pays se classe ainsi, dans chacun des cas, au 6e, 5e et 5e rang des plus importants émetteurs au monde (PNUD, *Rapport mondial sur le développement humain 1995*, Economica, Paris, 1996, p. 231).

26 Le Canada a émis 5 milliards de tonnes de NO2 et de SO2 (PNUD, « Rapport mondial sur le développement humain 1995 », *Economica*, Paris, 1996, p. 231).

27 PNUD, « Rapport mondial sur le développement humain 1995 », *Economica*, Paris, 1996, p. 231.

28 Le Canada a produit, en 1991, 1,3 million de tonnes de déchets nucléaires et 6,08 millions de tonnes d'autres déchets dangereux (PNUD, « Rapport mondial sur le développement humain 1995 », *Economica*, Paris, 1996, p. 231).

29 Au troisième rang derrière l'Islande et la Nouvelle-Zélande, le Canada bénéficie des plus grandes réserves d'eau renouvelable, par habitant, au monde : 106 milliers de mètres cubes par année (PNUD, « Rapport mondial sur le développement humain 1995 », *Economica*, Paris, 1996, p. 231).

30 Le Canada ne recycle que 20 p. 100 du papier et du carton et 12 p. 100 du verre qu'il consomme : sa performance est l'une des pires parmi la vingtaine de pays industrialisés qui consignent ces informations (PNUD, « Rapport mondial sur le développement humain 1995 », *Economica*, Paris, 1996, p. 231).

31 PNUD, « Rapport mondial sur le développement humain 1995 », *Economica*, Paris, 1996, p. 21.

32 Jagdish Baghwati dans *The World Trading Systems at Risk* et Paul Krugman dans *Pop Internationalism* ont récemment indiqué que de voir la concurrence sous le seul angle

d'un jeu à somme nulle reste superficiel et mercantiliste. Par une coopération mutuelle pour libéraliser les échanges de biens, les pays augmentent leur bien-être collectif. Le système économique libéral est essentiellement coopératif, basé sur la reconnaissance des différences et des avantages relatifs de chacun. Ainsi, une quantité plus grande de biens peut être produite et consommée : c'est un résultat positif de coopération selon les règles de l'échange.

33 L'interaction entre les gens est centrale à l'économie de l'apprentissage. Cette considération a d'importantes conséquences pour la politique publique concernant Internet. Toutefois, ce que nous entendons par « interaction humaine » ne doit pas être confondu avec « interaction avec un programme informatique ».

34 Le jeu à somme positive le plus connu, en raison de son intérêt mathématique, est celui du dilemme du prisonnier : deux complices, prisonniers et isolés l'un de l'autre, doivent-ils ou non collaborer avec la police et se dénoncer l'un l'autre? Par contre, dans un contexte d'apprentissage et de création de connaissances, le modèle de « stag game » du tableau 2 s'applique mieux. Ces deux jeux à somme positive se différencient seulement par l'ordre de classement des bénéfices de l'acteur le moins favorisé. Dans le dernier cas, par la répétition des « parties », les acteurs apprennent à maximiser leurs bénéfices et convergent rapidement vers un modèle de coopération (plus fréquemment même que dans le modèle du dilemme du prisonnier).

35 DeBresson, C., « Les entrepreneurs n'innovent pas (seuls); seuls des réseaux d'entrepreneurs peuvent innover », *Association canadienne-française pour l'avancement des sciences*, Université McGill, Montréal, mai 1996.

36 Lundvall, B-Å, *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning*, Pinter, London, 1992.

37 Tassey, Gregory, *Technology Infrastructure and Competitive Position*, Kluwer Academic Publishers, Dordrecht, 1992.

38 Adapté de DeBresson et Amesse, « Networks of Innovators: An Introduction to the Issue », *Research Policy*, 1991.

39 Douglas C. North, « Transaction Costs, Institutions and Economic Performance », International Center for Economic Growth, San Francisco, mai 1992; et J. Wallis et D. North, « Measuring the Transaction Sector in the American Economy, 1870-1970 », dans *Long Term Factors in American Economic Growth*, ouvrage produit sous la direction de S. Engerman et R. Gallman, University of Chicago Press, Chicago, 1986.

40 Francis Fukuyama, *Trust: The Social Virtues and the Creation of Prosperity*, Penguin Books, 1995.

41 Remarquons, de ce point de vue, que la tendance récente (suite au rapatriement de la Constitution en 1981) donnant plus de poids au pouvoir judiciaire et, partant, plus d'influence aux avocats, contribue à favoriser les litiges aux dépens de la conciliation. Cela hausse les coûts de transaction au Canada.

42 Précisons que l'objectif économique de réduction des coûts de transaction risque d'engendrer des oeillères communautaires ou d'amener des collectivités à se replier sur elles-mêmes. Nous envisageons cette possibilité plus loin, à titre de difficulté éventuelle.

43 Anna-Lee Saxenian, *Regional Advantage: Culture and Competition in Silicon Valley and Route 128*, Harvard University Press, Cambridge, 1994.

44 C. DeBresson et J. Lampel, « Bombardier's Mass Production of the Snowmobile: The Canadian Exception? », *Scientia Canadensis*, vol. 29, 1985, p. 133-149.

45 Derek J. de Solla Price, *Little Science, Big Science*, Columbia University Press, New York, 1963. Même si cette tendance n'a pas été systématiquement vérifiée depuis la publication de cet ouvrage, personne ne doute qu'elle se poursuit telle que décrite.

46 François Chesnais, *La mondialisation du capital*, Syros, Paris, 1994.

47 C. P. Kindleberger, *Manias, Panics and Crashes: A History of Financial Crisis*, Basic Books, New York, 1978, édition révisée, 1989. La crise financière se définit ainsi : « A sharp, brief, ultra-cyclical deterioration of all or most of a group of financial indicators – short term interest rates, asset prices (stocks, real estate, land) prices, commercial insolvencies and failures of financial institutions », R. Goldsmith, « Comment on Minsky », dans *Financial Crisis: Theory, History and Policy*, ouvrage produit sous la direction de C. P. Kindleberger et J.-P. Laffargue, Cambridge University Press, New York, 1982. Voir également François Chesnais, *La mondialisation financière : Genèse, Coûts et enjeux*, ouvrage collectif, Syros, Paris, 1996.

48 Ce texte a été rédigé à l'été de 1996, un an avant la crise financière de la fin d'octobre 1997.

49 R. Koo, *Testimony before the Joint Economic Committee*, cité par Lawrence Summers, « Planning for the Next Financial Crisis », dans *The Risk of Economic Crisis*, ouvrage produit sous la direction de M. Feldstein à la suite d'une conférence du National Bureau of Economic Research, University of Chicago Press, Chicago, 1991, p. 159.

50 L. H. Summers, « Planning for the Next Financial Crisis », *dans The Risk of Economic Crisis*, ouvrage produit sous la direction de M. Feldstein à la suite d'une conférence du National Bureau of Economic Research, University of Chicago Press, Chicago, 1991.

51 En 1991, Lawrence Summers estimait que « the payments system has probably become more fragile than before », octobre 1987, *op. cit.*, p. 157.

52 Summers, *op. cit.*, p. 155.

53 John Chant et Stephen Easton, « Corporate Debt and Its Macroeconomic Consequences », dans *Deficits and Debts in the Canadian Economy*, ouvrage produit sous la direction de Richard Harris, John Deutsch Institute for the Study of Economic Policy, Kingston, 1993, p. 145-176.

54 Robin Richardson, parlant au nom de la Fédération des contribuables canadiens, remarquait qu'en appliquant à notre cas les critères de la Banque mondiale qui définissent les pays lourdement endettés (« *severely indebted countries* »), chacune de nos dix provinces se classent à cette enseigne. Richard Harris, *Deficits and Debts in the Canadian Economy*, ouvrage collectif, John Deutsch Institute for the Study of Economic Policy, Kingston, 1993, p. 95.

55 H. V. Nelles, *The Politics of Development: Forest, Mines & Hydro-electric Power in Ontario, 1849-1941*, Macmillan Canada, 1974; K. Hamilton, « Canadian Industrial Energy Consumption and External Trade », dans *Technology and National Competitiveness: Oligopoly, Technological Innovation, and International Competition*, ouvrage produit sous la direction de Jorge Niosi, McGill-Queen's University Press, Montréal et Kingston, 1991.

56 Comme ces incertitudes sont toutes reliées à des situations sans précédent, il serait illusoire et tout à fait subjectif de leur attribuer un coefficient de risque et des probabilités de réalisation.

57 Sur le snobisme et le fétichisme technologique, voir Christian DeBresson, *Comprendre le changement technique*, Presses des universités d'Ottawa et de Bruxelles, 1993, ch. 5, p. 95-108; et *Understanding Technological Change*, Black Rose Books, Montréal, 1987, ch. 11, p. 133-139.

58 Un document récent publié par Statistique Canada indique que seulement une famille sur quatre possède un micro-ordinateur à la maison. De celles-ci, seulement le tiers possède un modem, et de ce bassin restreint, seulement un cinquième utilise Internet. Voir Jeffrey Frank, « Preparing for the Information Highway: Information Technology in Canadian Households », *Tendances sociales canadiennes*, Statistique Canada, 1994-1995, http://www.statcan.ca/Documents/english/SocTrends/infotech.htm.
Un sondage de Andersen Consulting montre des résultats plus optimistes : un consommateur sur trois utilise Internet à la maison ou au travail, et le nombre d'utilisateurs double à chaque année. Par contre, les deux tiers des utilisateurs ne naviguent que quelques heures par mois sur Internet (étude rapportée par le journal *MatInternet*, juillet 1996, http://www.matin.qc.ca).

59 OCDE, *Stratégie de l'OCDE pour l'emploi : Technologie, productivité et création d'emploi, Volume 1: Synthèse et conclusions; Volume 2: Rapport analytique*, Paris, juillet 1996.

60 L'expansion de ce style de vie par procuration, réduite à un spectacle, rappelle comment Lewis Mumford, historien des technologies et de l'urbanisme, a décrit les habitudes de vie des Romains décadents : 100 jours de congé annuel étaient passés au Colisée, pour vivre des sensations fortes, s'inoculer du germe de la violence et perdre tout sens de la solidarité sociale. Voir *The City in History*, Harcourt Brace, New York, 1961, p. 222-235.

61 Si le réseau devient congestionné, l'interaction n'est possible qu'avec un délai : c'est le courrier électronique. Évidemment, diminuent alors l'utilité et la performance du service offert par Internet.

62 De manière à conserver leur efficacité et à éviter la surcharge d'information, ces collectivités doivent bénéficier de médiation. Les *villages globaux* peuvent créer des places publiques et forger leurs propres instruments de régie. Mais tous les sujets et les activités ne se prêtent pas à un tel forum d'interaction.

63 Voir l'argumentation de Paul David dans « Blind Giants, Narrow Windows and Angry Orphans » sur le dilemme des institutions publiques aux prises avec une rivalité de systèmes. Nous pensons que des recherches – soutenues par les deniers publics – sur les usages possibles d'Internet ainsi que sur les questions d'éthique et de politique entourant ces usages devraient être entreprises pour élargir la fenêtre des possibilités, là où les agents publics pourraient exercer une influence utile.

64 Paul David, « The Economics of QWERTY », *American Economic Review*, vol. 75, n° 2, 1985, p. 332-337.

65 Quelques-unes des contributions des politiques technologiques les plus utiles sont le fruit d'un Experimental Technology Incentives Programme (ETIP) entrepris par le Département du Commerce au National Institute of Standards and Technology (NITS). Voir G. Bell, J.-E. Aubert, C. DeBresson et P. Dubarle, *Policies to Stimulate Industrial Innovation*, OCDE, Paris, 1978. Une partie des leçons et de la sagesse acquise lors de ces expériences se retrouve dans l'ouvrage publié par la personne qui dirigeait la division de la recherche sur les politiques : Gregory Tassey, *Technology Infrastructure and Competitive Position*, Kluwer Academic Publishers, Boston, 1992. Le Conseil canadien des normes, qui est autofinancé et qui bénéficie d'une excellente réputation internationale, pourrait être appelé à jouer un rôle dans de telles expériences et projets d'évaluation.

66 Faye Duchin et Glen-Marie Lange, *The Future of the Environment. Ecological Economics and Technological Change*, Oxford University Press, New York, 1994.

67 Voir Thornstein Veblen, « The Vested Interests and The Common Man », Capricorn Books, New York, 1969, et Christian DeBresson, *op. cit.*, 1987, ch. 15, et 1993, ch. 20.

68 Mark Roseland, directeur de la recherche à la School of Resource and Environmental Management de l' Université Simon Fraser, estime que : « Dans une très vaste mesure, la crise environnementale est une crise de créativité. La seule manière de relever avec succès les innombrables défis que comporte le développement durable des collectivités consiste à encourager l'innovation sociale et l'initiative locale [...] Les initiatives en amont exigent un leadership en aval ». Voir Mark Roseland, « Initiative en amont, leadership en aval », *La Revue de la Table ronde nationale sur l'environnement et l'économie*, printemps 1994, p. 3 et 10.

69 Par exemple, le Related Intellectual Property Rights Agreement de l'Uruguay Round est biaisé : au lieu d'être conçu en fonction des gains mutuels et dynamiques du partage de connaissances (voir la tendance 5, dans la première partie), il a été conçu en fonction des gains statiques d'une réduction des prix qui, cela est bien connu, ne représentent pas plus de 1 p. 100.

70 L'application de l'accord TRIP et des droits de brevets est à ce point problématique qu'il semble heureusement peu probable qu'elle ait quelque conséquence que ce soit.

71 Si les droits de brevets étrangers avaient été compensés par, au moins, une clause de licence obligatoire après quelques années, tel que proposé au départ par la Commission européenne, les aspects restrictifs de cet accord sur le flux de connaissances techniques auraient été mitigés. Voir J. Baghwati, *Protectionism*, MIT Press, Cambridge, 1989.

72 W. J. Baumol, *Entrepreneurship, Management and the Structure of Payoffs*, MIT Press, Cambridge, 1993.

73 Le GATT a prévu des provisions généreuses pour la protection temporaire d'industries naissantes et pour les rajustements sociaux requis dans les pays nouvellement industrialisés qui libéralisent leurs échanges commerciaux.

74 Jagdish Bhagwati, The *World Trading System at Risk*, Princeton University Press, Princeton, 1991, en particulier le chapitre 4.

75 La commission juridique de l'Organisation des États américains a récemment, à l'unanimité (y compris le représentant des États-Unis), jugé cette loi contraire au droit international.

76 Le shérif précédent, le Royaume-Uni, avait l'avantage de ne pas posséder un grand marché intérieur comme outil de représailles potentielles. Malgré cette faiblesse, la fin unilatérale de la convertibilité de la livre sterling, en 1931, a été suffisante pour propager le protectionnisme et plonger le monde dans une récession généralisée (Hilgert; Svennilson).

77 Hyman Minsky, *Can « It » Happen Again: Essays on Instability and Finance*, M. E. Sharpe, New York, 1982.

78 L'establishment financier pourrait certainement vivre et prospérer avec la taxe Tobin : seul un seuil minimal d'imposition lui serait appliqué. Par contre, cette taxe ne réduirait par son avantage de rentabilité par rapport à l'industrie et aux services.

79 Pour un exposé sur la vulnérabilité financière du monde des entreprises, voir John F. Chant et Stephen T. Easton, « Corporate Debt and its Macroeconomic Consequences », dans *Deficits and Debt in the Canadian Economy*, ouvrage produit sous la direction de Richard G. Harris, John Deutsch Institute for the Study of Economic Policy, Kingston, 1993, p. 145-176.

80 La demande pour des ressources nouvellement protégées ne ferait qu'augmenter si le niveau de demande pour ces produits dans la zone restait supérieur au niveau de la production intérieure d'avant la dépression : cela voudrait dire que la demande était, avant la dépression, presque totalement satisfaite par les importations provenant de l'extérieur du bloc commercial. C'était le cas du caoutchouc après l'invasion de l'Indochine et de la Malaisie par les Japonais : cette situation a donné lieu à l'innovation de substitution – le caoutchouc synthétique – qui nous a permis de développer une industrie florissante au Canada.

81 La manière d'atteindre ces objectifs, que ce soit par des incitations économiques, par une réglementation, par une stratégie politique, etc., sera examinée dans la prochaine partie.

82 William D. Garvey, *Communication: The Essence of Science*, Pergamon Press, New York, 1979.

83 Tous les sujets ne se prêtent pas à ce type d'apprentissage. Les sujets doivent être suffisamment ouverts pour bénéficier d'interactions sur de telles distances. Il serait difficile d'enseigner la résolution d'un problème technique ou mathématique complexe à distance par ce médium, sauf peut-être à des étudiants particulièrement doués.

84 L'industrie manufacturière aéronautique vit de telles interactions lors des collaborations internationales, mais elle ne bénéficie pas encore de la dimension visuelle en direct lors de ces interactions.

85 Dans le cas des réseaux I.R.C., l'intermédiation est assurée par des utilisateurs de premier niveau appelés « opérateurs » (pour « operators »), nommés par au moins deux opérateurs déjà en poste. Ces opérateurs possèdent les moyens techniques de couper l'accès au forum à ceux dont ils jugent les propos irrecevables.

86 Le premier auteur a élaboré ce cadre d'analyse des politiques et ce schéma en travaillant à la direction scientifique de l'OCDE au milieu des années 70. Voir G. Bell, J.-E. Aubert, C. DeBresson et P. Dubarle, *Policies to Stimulate Industrial Innovation*, OCDE, Paris, 1978, trois volumes. Ce modèle s'accorde avec le schéma en *diamant* de Michael Porter dans *The Competitive Advantage of Nations*, 1991.

87 Les entrepreneurs investissent dans des innovations quand ils perçoivent une occasion, mais le choix de la nature des projets innovateurs dépend de leur vision préalable de ce qui serait possible et meilleur. Le choix d'un investissement collectif dans une infrastructure publique dépend de la vision qu'entretient l'instance décisionnelle pour sa collectivité. Des facteurs objectifs peuvent imposer des contraintes à notre degré de liberté, mais les choix entre les options restantes dépendent de préférences subjectives liées aux valeurs de chaque citoyen. Nous avons rendu explicites notre vision et les choix stratégiques qu'elle implique, ainsi que des propositions d'investissements à long terme, de manière à provoquer le débat quant à l'avenir.

88 L'expression de Douglas North, « the meltdown of the social glue », traduit avec exactitude l'image que nous cherchons à communiquer ici.

89 Michael B. Devereux, « Provincial Budget Deficits and the Debt Crisis of Canada », dans *Deficits and Debts in the Canadian Economy*, ouvrage produit par Richard G. Harris, John Deutsch Institute for the Study of Economic Policy, Kingston, 1993, p. 82.

90 Raymond Théorêt et Gilles St-Amant, « Une solution radicale pour régler le problème de la dette publique au Canada : la transférer aux Canadiens! », mars 1994; et, en collaboration avec Jean Canonne, « La meilleure méthode pour libérer les provinces de la dette fédérale : la transférer de façon équitable à l'ensemble des

Canadiens », Centre de recherche en gestion, Université du Québec à Montréal, février 1995.

91 Ministère des Finances du Québec, « Le Fonds de remboursement de la dette », document nº 22, série Fiscalité et financement des services publics, Les publications du Québec, Québec, 1996.

92 Le tableau 4 compare les trois propositions. Les investissements en infrastructure sont principalement du ressort provincial; seule la proposition de Rodrigue, Bélanger et Fecteau en fait état, mais cette dernière n'augmente pas avant trente ans la capacité d'emprunt pour de nouvelles infrastructures. Toutes supposent un niveau d'imposition supplémentaire mais toutes renforcent les capacités qui grèvent plus ou moins, aujourd'hui, la capacité d'investissement des contribuables.

93 Luc Vallée, « Privatisation rétroactive des REER : une solution aux problèmes de nos gouvernements », *Revue Gestion*, vol. 20, no 4, décembre 1995, p. 10-11. Voir également *Revue Gestion*, vol. 21, no 1, mars 1996, p. 12-13 et no 2, juin 1996, p. 12-13.

94 Jean Lanctôt est président du Centre de perfectionnement de l'École des Hautes Études Commerciales.

95 Dans l'article de Rodrigue Tremblay paru en page A7 du *Devoir*, le 27 août 1996, il est écrit : « Rappelons que pour faire partie de la future Union monétaire européenne, un pays ne doit pas avoir une dette publique totale qui dépasse 60 p. 100 de son produit intérieur brut, et un maximum de 3 p. 100 du PIB pour les déficits budgétaires ».

96 L'approche de Joseph Schumpeter, envisagée pour éliminer la dette de l'Autriche après la Première Guerre mondiale, suggérait une taxe sur les actifs, une seule fois; cela n'est pas applicable au Canada car les pouvoirs publics ont accumulé une dette qui est un multiple de tous les actifs publics et privés du Canada.

97 Nous estimons qu'il est préférable d'innover à l'extérieur des structures actuelles – dans ce cas, à l'extérieur des programmes d'éducation actuels (formation des maîtres) des collèges et des universités, pour ne pas imposer à ces nouvelles institutions l'inertie bureaucratique et les règlements des grandes et complexes organisations antérieures.

98 Les professeurs de collège et d'université sont recrutés pour une tâche précise (transmettre des connaissances et enseigner les techniques les plus récentes) mais évalués sur la base de son complément nécessaire (la recherche de pointe); ils sont ensuite récompensés pour leur performance en recherche par l'allégement de la tâche pour laquelle ils avaient été recrutés (dégrèvement de cours).

99 Michael Gibbons, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott et Martin Trow, *The New Production of Knowledge - The Dynamics of Science and Research in Contemporary Societies*, Sage Publications, London, 1994.

100 Présentement, l'interaction humaine en temps réel diminue au profit de l'interaction différée à cause de la congestion des serveurs. Il est de l'intérêt public de réserver la capacité du réseau pour cette interaction en temps réel qui fait d'Internet l'équivalent écrit – et bientôt, l'équivalent visuel – du téléphone. L'interaction différée, toutefois, n'apporte rien de mieux que le télécopieur (qui peut être exploité par Internet, d'ailleurs). Comment diminuer la congestion et garantir aux chercheurs et à l'ensemble des collectivités un tel outil? Les instruments de politiques sont divers : faire payer les utilisateurs pour contrer le phénomène du « passager gratuit », faire payer les industries lucratives, inviter le secteur privé à assumer financièrement tous ses besoins reliés aux serveurs, réserver (si possible) une part de la capacité des serveurs exclusivement pour l'interaction en temps réel, etc.

101 Dans toute confédération basée sur la subsidiarité, si une collectivité n'est pas autosuffisante, alors une aide extérieure doit lui être transférée afin de lui permettre de redevenir autosuffisante.

102 Gordon Gibson, « A Sensible Solution for Saving Canada », *Fraser Forum*, juin 1996, p. 12.

103 Mark Roseland, « Initiative en amont, leadership en aval », *La Revue de la Table ronde nationale sur l'environnement et l'économie*, printemps 1994, p. 3 et 10.

104 L'expérience récente de mobilisation des chômeurs pour aider les sinistrés du Saguenay est intéressante. À la lumière des récentes réformes de l'assurance-chômage et de l'assistance sociale, il faudrait que les sans-emploi aient le choix entre différentes solutions : service communautaire, projets d'infrastructure et formation.

105 L'approche économique traditionnelle qui suppose que les entreprises sont en concurrence atomistique sans intérêts de groupe, conclut, à notre avis trop rapidement, que les entreprises vont sous-investir pour leurs propres besoins de formation spécialisée parce que celle-ci pourrait être exploitée par leurs concurrents. À ce compte, les deniers publics devraient financer la formation spécialisée. Cette vision, à notre avis, sous-estime l'intelligence des dirigeants d'entreprises qui savent pertinemment que leur propre dynamisme dépend en partie de celui de toute leur industrie. Dans notre approche, nous considérons que ce sont des réseaux d'entreprises, non des entreprises isolées, qui sont en concurrence, et que les bénéfices de l'innovation et de la création de nouvelles connaissances techniques sont liés – ou ne peuvent pas voir le jour (voir note 35).

106 En finance, il a été observé – contre toute attente – un phénomène relatif aux coûts irrécupérables : les investisseurs hésitent, voire refusent, d'abandonner leurs décisions d'investissement initial, quitte à « y mêler du bon et du (selon leur perception) mauvais argent ».

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PRÉFACE

À L'APPROCHE DU NOUVEAU MILLÉNAIRE, les Canadiens assistent à une transformation radicale des paramètres de l'économie. La tendance à la mondialisation des marchés et à l'intégration de plus en plus poussée de l'activité économique entre les nations s'accentue. Les progrès spectaculaires de l'informatique et des communications facilitent ce mouvement de mondialisation et changent fondamentalement le milieu de travail et le mode de vie des Canadiens. Du même coup, et comme conséquence première de la révolution de l'information, les activités axées sur le savoir occupent une place sans cesse plus grande dans notre économie et celle des autres pays industrialisés.

Cette mutation fondamentale de l'économie nous incite à faire une comparaison avec la révolution industrielle du 19e siècle. Comme à cette époque, les grands changements structurels engendrent des incertitudes. Les entreprises et les travailleurs luttent pour se tailler une place dans ce nouvel ordre économique. Les Canadiens se demandent si les ressources matérielles, humaines et institutionnelles de leur pays constituent une assise suffisamment solide pour garantir leur prospérité future. Beaucoup estiment que les perspectives qui s'offrent au Canada sont beaucoup moins sûres qu'à l'époque où les richesses naturelles jouaient un rôle clé dans l'édification de l'économie du pays.

Afin d'explorer plus à fond les possibilités et les défis que laissent entrevoir ces développements à moyen et à long terme, la Direction de l'analyse de la politique micro-économique d'Industrie Canada a invité un groupe de spécialistes à présenter leur « vision » du Canada au 21e siècle dans un certain nombre de domaines importants. Chaque auteur devait s'attaquer à deux tâches redoutables : d'abord dégager les grandes tendances historiques en vue d'élaborer des scénarios illustrant comment les choses évolueront vraisemblablement au cours des dix à quinze prochaines années dans le domaine qui lui avait été assigné, puis examiner les conséquences à moyen terme de cette évolution pour l'économie canadienne.

Les essais qui découlent de cet exercice sont en voie de publication sous le thème général « Le Canada au 21e siècle ». La collection englobe onze essais traitant des perspectives qui s'offrent au Canada à moyen terme dans différents domaines. Ces documents sont répartis en trois volets. Le premier, *Mise en situation*, est consacré aux tendances fondamentales qui façonneront le contexte économique à moyen terme au Canada. Le second volet, *Ressources et technologie*, traite de l'évolution de certains facteurs importants sur le plan de la création de la richesse au Canada, ainsi que des mesures requises pour leur donner un solide fondement en vue d'assurer la prospérité du pays. Le troisième et dernier volet, *Relever le défi*, scrute les réactions des particuliers, des entreprises et des gouvernements aux défis qui se poseront à moyen terme et propose certains éléments de solution en vue d'orienter le pays sur la bonne voie.

Dans son étude, qui s'inscrit dans le volet *Mise en situation*, le professeur Randy Wigle, de l'Université Wilfrid Laurier, explore la façon dont la politique commerciale du Canada pourrait le mieux servir à relever les défis que posent, sur le plan des politiques, les changements radicaux que nous observons dans l'économie mondiale. L'auteur affirme qu'en raison de la libéralisation des politiques et de l'apparition des nouvelles technologies de l'information, le commerce international prend une dimension de plus en plus planétaire et engendre un besoin correspondant de solutions d'envergure mondiale dans plusieurs domaines. Le Canada a tout intérêt à voir supprimer les obstacles au commerce international en raison de la petite taille de son marché intérieur et de ses besoins en technologies et en investissement étranger. Le professeur Wigle affirme qu'une libéralisation encore plus poussée est maintenant nécessaire – assortie de l'application du traitement national à de nouveaux secteurs du commerce international – et que le Canada devrait oeuvrer dans cette voie tant par des discussions multilatérales au sein de l'Organisation mondiale du commerce (OMC) et de l'OCDE, que par des initiatives régionales comme le Forum de coopération économique Asie-Pacifique (APEC), l'Accord de libre-échange nord-américain (ALENA) et le projet de Zone de libre-échange pour les Amériques (ZLEA).

SOMMAIRE – LE DÉFI

AU COURS DES DIX À QUINZE PROCHAINES ANNÉES, l'économie mondiale subira de profonds changements. Alors qu'elle deviendra de plus en plus dépendante de l'information et que les mesures commerciales à la frontière disparaîtront, nous assisteront à une mondialisation croissante des échanges.

Le mouvement vers la société de l'information signifie beaucoup de choses pour beaucoup de gens mais, les conséquences les plus fondamentales des nouvelles technologies sont les suivantes :

- Une capacité accrue d'intégrer des activités productives géographiquement éloignées,
- une amélioration spectaculaire de la capacité technologique d'échanger certains services à l'échelle internationale,
- une part croissante des nouvelles activités commerciales tributaire de l'innovation et
- une complémentarité croissante entre le commerce international, l'investissement direct et les flux de technologie dans le secteur des affaires.

Cette évolution se traduira par l'émergence d'entreprises dont les opérations et la propriété seront difficiles à décrire en termes de nationalité. Une conséquence connexe sera l'interdépendance croissante d'un certain nombre de domaines de politique intérieure et internationale. La politique de concurrence et la politique en matière d'innovation étaient autrefois considérées de portée essentiellement nationale, mais cette affirmation est de moins en moins exacte. En deux mots, le commerce international prend une envergure et une orientation de plus en plus mondiales.

Alors que les échanges prennent cette dimension mondiale, la réforme de la réglementation dans de nombreux domaines doit aussi adopter une orientation planétaire. Les gouvernements ne pourront atteindre leurs objectifs de politique intérieure que s'ils tiennent compte adéquatement du contexte mondial. À long terme, à mesure que le mouvement vers la mondialisation englobera de nouvelles parties du monde où l'intégration n'a pas encore progressé beaucoup, le forum multilatéral deviendra le cadre idéal pour résoudre les questions que soulèvent les échanges internationaux. Pour toute une foule de raisons pratiques, cependant, les premiers pas vers l'adoption de ces solutions seront souvent faits dans le contexte d'ententes ou de négociations régionales.

LES ÉCHANGES DU CANADA

MALGRÉ LA PROLIFÉRATION DES TECHNOLOGIES DE L'INFORMATION et l'abaissement des barrières commerciales, la géographie joue encore un rôle important pour une grande partie des échanges commerciaux. Cela est particulièrement vrai pour le Canada, où la géographie ainsi que des éléments historiques et cul-

turels communs ont favorisé une intégration poussée des économies canadienne et américaine. Cette intégration ne découle pas seulement des initiatives récentes sur le plan des politiques, mais aussi des avantages inhérents au niveau des coûts qui découlent de la proximité et de l'existence de vastes réseaux reliant les deux nations.

Les taux de croissance plus élevés que l'on observe dans d'autres régions du globe, de même que les réformes plus fondamentales aux niveaux structurel et politique signifient vraisemblablement que les marchés qui se développeront le plus rapidement (en pourcentage) au cours des dix à quinze prochaines années sont situés hors de l'Amérique du Nord. À titre d'exemple, le commerce total en Asie du Sud et de l'Est devrait, selon les prévisions, croître de près de 10 p. 100 annuellement au cours des dix prochaines années. Les changements technologiques déjà mentionnés ont réduit l'importance des facteurs géographiques dans de nombreux secteurs, mais non dans tous les cas. En conséquence, le volume des échanges commerciaux et des investissements entre le Canada et les États-Unis dominera encore vraisemblablement le commerce international du Canada dans l'avenir immédiat.

ORIENTATIONS GÉNÉRALES

DANS CE DOCUMENT, NOUS FAISONS VALOIR que la politique commerciale du Canada au cours des prochaines années devrait appuyer la libéralisation dans un contexte régional et substantif le plus étendu possible. L'accent devrait être mis sur l'identification et la mise au point de solutions aux problèmes fondamentaux qui se posent, plutôt qu'à la gestion de symptômes préoccupants au niveau des parts de marché ou de la balance commerciale.

LIBÉRALISATION OU RETRAIT ?

EN RÉALITÉ, LE CANADA A PEU D'AUTRE CHOIX que de chercher à étendre l'accès aux marchés étrangers par des négociations multilatérales aussi bien que bilatérales. Certains facteurs qui jouent en ce sens sont assez simples :

- Le marché intérieur canadien est de petite taille.
- L'accès à la technologie est essentiel à la croissance économique du Canada.
- L'accès à l'investissement étranger revêt une importance capitale pour le Canada.

Le Canada doit donc continuer à rechercher une libéralisation progressive dans l'avenir immédiat. Cette orientation doit être interprétée à la lumière des nouvelles réalités du commerce international, notamment en raison du fait que le mouvement de libéralisation signifie maintenant davantage que la simple réduction des tarifs douaniers.

L'amélioration de l'accès aux marchés ou de la présence commerciale des entreprises voudra dire, dans bien des cas, qu'il faudra accorder le traitement national à l'ensemble des entreprises, des produits et des services dans un nombre sans cesse croissant de secteurs du commerce. Tout le comme le Canada a été à l'avant-garde de la libéralisation des mesures à la frontière, il doit jouer un rôle de premier plan dans les efforts visant à conclure de nouveaux accords internationaux dans des domaines tels que l'investissement, la politique de concurrence et les normes de produits et, également, dans l'examen des recours actuels (par exemple les droits anti-dumping et les droits compensatoires) à la lumière de ces cadres de discipline internationale reformulés.

QUEL OBJECTIF POURSUIVRE ?

POUR DE NOMBREUSES RAISONS, la négociation de nouveaux codes de conduite dans des domaines tels que la politique de concurrence, l'investissement et la réglementation nationale se poursuivra vraisemblablement au sein de diverses instances. Cela comprend les discussions multilatérales à l'OMC et à l'OCDE, les discussions qui ont cours dans les forums régionaux comme l'APEC et l'ALENA, ainsi que les discussions plus générales sur la libéralisation plus poussée des échanges dans l'hémisphère américain.

L'émergence des États-Unis comme seule superpuissance politique et la position dominante occupée de ce pays présenteront probablement aux décideurs canadiens un défi aussi redoutable qu'en tout autre temps de l'histoire de notre pays et l'on peut s'attendre à ce qu'il en demeure ainsi. Pour cette raison, le Canada devrait accorder une priorité adéquate aux négociations multilatérales comme contrepoids naturel à la prépondérance économique des États-Unis sur le Canada.

En outre, les gains que l'on peut attendre de négociations supplémentaires dans l'hémisphère américain sont modestes en comparaison de ceux que l'on pourrait obtenir dans un contexte multilatéral en partie à cause de l'importance des progrès réalisés dans le cadre de l'ALENA et des résultats décevants de l'Uruguay Round.

Si les discussions régionales et multilatérales consacrées aux dimensions nouvelles et classiques de l'accès aux marchés sont importantes, la priorité devrait être accordée aux discussions au sein de l'OMC, structurées de préférence dans une nouvelle ronde de négociations multilatérales. Des pressions s'exercent déjà pour que l'on amorce une nouvelle ronde multilatérale, ce qui devrait se faire le plus rapidement possible. La stratégie globale de négociation du Canada devrait être centrée sur les disciplines multilatérales qui pourraient devenir un objectif à long terme.

RETOUR À L'ESSENTIEL

DE FAÇON GÉNÉRALE, en cherchant des solutions aux nouveaux défis ou en tentant de réduire les mesures de protection classique à la frontière, le Canada devrait, dans tous les cas où cela est possible, commencer par identifier la cause fondamentale (en termes d'externalité non internalisée ou de distorsion) d'un problème pour ensuite procéder à la recherche d'une solution. Dans le domaine de la politique de concurrence, par exemple, le Canada devrait chercher à supprimer les mesures anti-dumping telles qu'elles sont utilisées à l'heure actuelle. Il devrait aussi s'opposer aux propositions qui ciblent certains symptômes (par exemple la balance commerciale ou la part de marché) indépendamment de toute analyse économique sous-jacente. Le Canada devrait s'opposer à toute proposition de ce genre sauf à titre de mesure transitoire.

ENVIRONNEMENT ET DROITS DE LA PERSONNE

AU COURS DES DIX À QUINZE PROCHAINES ANNÉES, la communauté internationale déterminera si et de quelle manière le commerce international devrait être lié à l'environnement et aux droits de la personne. Le Canada devrait clairement promouvoir les initiatives internationales visant à améliorer l'environnement planétaire et à faire progresser le respect des droits de la personne dans les principaux forums où ces questions doivent être débattues[1]. Simultanément, le Canada devrait s'engager à harmoniser le plus possible les aspects commerciaux de tous les accords internationaux avec les principes fondamentaux du système commercial et il devrait aussi appuyer des solutions qui permettent de s'attaquer réellement aux problèmes fondamentaux que soulève la protection de l'environnement et les droits de la personne.

CONCLUSION

LA POLITIQUE COMMERCIALE DU CANADA au cours des dix à quinze prochaines années devrait être s'articuler autour de deux engagements majeurs :

1. L'engagement envers la libéralisation la plus étendue possible des échanges internationaux. Cela devrait comprendre un engagement renouvelé à l'égard de l'expansion du système multilatéral tout en poursuivant les discussions au sein d'autres instances.

2. L'engagement à atteindre les objectifs fondamentaux de la politique commerciale de manière à engendrer le moins possible de distorsions commerciales.

Les défis les plus redoutables que devront relever les décideurs canadiens au cours des dix à quinze prochaines années seront vraisemblablement de réduire l'endettement public et d'améliorer la capacité du marché du travail de

créer des emplois et d'offrir les compétences requises. Si une politique commerciale prudente représente un allié important dans cette tâche, elle ne saurait remplacer de saines politiques sur le plan intérieur. Simultanément, il est assez évident qu'une mauvaise politique commerciale (en particulier une politique qui fait du commerce un bouc émissaire) gênerait certainement l'atteinte des objectifs de la politique intérieure.

INTRODUCTION

DANS CE DOCUMENT, NOUS ANALYSONS LES ENJEUX et les possibilités associés à la politique commerciale pour le Canada sur un horizon de dix à quinze ans. Cette période sera marquée par des changements spectaculaires dont certains aspects sont plus faciles à anticiper que d'autres. Si plusieurs des défis les plus redoutables auxquels devront faire face les négociateurs canadiens touchent à de nouveaux aspects d'une intégration de plus en plus profonde[2], ils englobent aussi la nécessité de poursuivre le processus d'intégration au premier niveau.

Le Canada s'est engagé depuis longtemps à rechercher la libéralisation la plus étendue possible des échanges commerciaux et cette politique semble bien justifiée, notamment dans le contexte d'une économie mondiale sans cesse plus intégrée. La mondialisation semble toucher non seulement l'économie planétaire, mais aussi le milieu de la diplomatie commerciale internationale. Pour l'avenir prévisible, le Canada doit maintenir son engagement à participer aux discussions qui se déroulent dans toute une série de forums, dont l'Organisation mondiale du commerce (OMC) et l'Organisation de coopération et de développement économiques (OCDE), ainsi que dans la sphère commerciale des Amériques et le Forum de coopération économique de l'Asie-Pacifique (APEC). Dans ce document, nous abordons la question de l'équilibre et de l'harmonie à réaliser entre ces diverses instances. La recommandation la plus évidente qui en ressort est que le Canada doit entreprendre les travaux préparatoires à l'amorce d'une nouvelle ronde de négociations multilatérales à la première occasion.

La motivation essentielle de la plupart des accords commerciaux internationaux découle du constat que certaines initiatives des gouvernements ou des agents du secteur privé dans un pays ne tiennent pas compte des externalités qui contribuent à réduire globalement le bien-être. Les exemples vont des problèmes classiques tels que les barrières tarifaires à des problèmes moins évidents comme la réglementation nationale sur les normes de sécurité des automobiles. Dans le premier cas, l'externalité engendrée par le gouvernement national est évidente et la mesure corrective l'est également. Dans le second cas, l'externalité découle non pas de l'établissement de normes mais, plutôt, de normes visant à avantager les entreprises nationales[3]. Dans ce cas, l'externalité principale qui n'est pas internalisée est la possibilité que le gouvernement national ne tienne pas compte des coûts de conformité qu'il impose aux producteurs étrangers. La solution consisterait ici à établir une norme qui tiendrait compte des autres normes en vigueur[4], sans accorder de considération particulière aux intérêts des producteurs nationaux. Manifestement, ce dernier résultat est moins évident mais il découle d'un examen attentif du problème sous-jacent.

Dans le document, nous soutenons que, dans tous les cas où cela est possible, les efforts internationaux devraient viser à identifier et à corriger les cau-

ses sous-jacentes, plutôt que les symptômes, qui semblent nécessiter une intervention. On peut penser ici à un sérieux déficit de la balance commerciale ou du compte courant, ou encore à un déséquilibre des échanges. L'essentiel de l'argument est que si nous mettons l'accent sur la suppression des disparités observées, cela signifie que nous supprimons également les gains commerciaux que la plupart des négociations multilatérales et bilatérales cherchent à préserver et à intensifier.

Après l'introduction, nous traitons de la nature de l'économie mondiale émergente en en décrivant l'importance pour le Canada. Au deuxième chapitre, nous examinons l'évolution de la politique commerciale canadienne et jetons les bases de l'analyse présentée au chapitre suivant sur les questions de politique qui se poseront dans l'avenir. La dernière partie renferme nos conclusions.

L'ÉCONOMIE MONDIALE

LA MONDIALISATION ET L'ÉCONOMIE DE L'INFORMATION

AU COURS DES DIX À QUINZE PROCHAINES ANNÉES, l'économie mondiale subira de profondes transformations. Alors qu'elle sera de plus en plus dépendante de l'information et que les mesures commerciales à la frontière disparaîtront, nous assisteront à une mondialisation croissante des échanges.

Le mouvement vers la société de l'information signifie beaucoup de choses pour beaucoup de gens, mais les conséquences les plus fondamentales des nouvelles technologies sont les suivantes :

- Une capacité accrue d'intégrer des activités productives géographiquement éloignées,
- une amélioration spectaculaire de la capacité technologique d'échanger certains services à l'échelle internationale,
- une part croissante des nouvelles activités commerciales tributaire de l'innovation et
- une complémentarité croissante du commerce international, de l'investissement direct et des flux technologiques dans le secteur des affaires.

Cette évolution se traduira par l'émergence d'entreprises dont les opérations et la propriété sont difficiles à définir en termes de nationalité. Une conséquence connexe sera l'interdépendance croissante d'un certain nombre de domaines de politique intérieure et internationale. La politique de concurrence et la politique en matière d'innovation étaient autrefois considérées comme des domaines de portée essentiellement nationale, mais cette affirmation est de moins en moins exacte. En outre, les liens entre l'investissement, la concurrence et la politique en matière d'innovation se resserrent[5]. En deux mots, le commerce international a une envergure et une orientation de plus en plus mondiales.

TENDANCES DU COMMERCE MONDIAL

LES DIFFÉRENCES DANS LES TAUX DE CROISSANCE et les réformes politiques entreprises feron qu'au cours des dix à quinze prochaines années, les marchés qui enregistreront la croissance la plus rapide (en pourcentage) seront probablement situés hors de l'Amérique du Nord. Pour l'ensemble de l'Asie de l'Est, notamment, on prévoit que les échanges commerciaux progresseront en moyenne à un taux annuel de plus de 10 p. 100 grâce au dynamisme des économies de marché de cette région, orientées vers l'exportation, et de la Chine. Pour les pays de l'Asie du Sud, les échanges commerciaux devraient croître à un rythme annuel de près de 8 p. 100. Dans le cas de la Chine et de

TABLEAU 1.1

TAUX DE CROISSANCE PRÉVUS, 1996–2005
EN POURCENTAGE

Région	Importations	Exportations	PIB
Ensemble du monde	6,3	6,3	3,5
Pays à revenu élevé	5,8	6,0	2,8
Pays à revenu moyen/faible			
Asie de l'Est et Pacifique	10,7	10,2	7,9
Asie du Sud	8,1	7,2	5,4
Amérique latine et Caraïbes	5,8	6,1	3,8
Europe et Asie centrale	5,9	5,1	4,3
Afrique du Nord et Moyen-Orient	5,9	4,1	2,9
Afrique sub-saharienne	5,5	4,8	3,8

Source : Banque mondiale, 1996*b*.

l'Inde, la progression des échanges commerciaux découle d'importantes réformes sur le plan des politiques et d'excellentes perspectives de croissance régionale. La situation des États nouvellement indépendants et des anciens pays communistes est un peu moins favorable, en partie à cause des craintes suscitées par les perspectives incertaines au niveau des réformes et de la croissance. Dans les pays d'Amérique latine, les échanges commerciaux devraient progresser à un rythme comparable à celui des pays à revenu élevé.

Dans bien des cas, la libéralisation accrue des politiques commerciales dans les pays en développement devrait contribuer à renforcer la croissance des échanges commerciaux. Les pays en développement ont fait des progrès remarquables en vue d'ouvrir leurs économies et il est à prévoir que cette tendance se poursuivra (Dean, 1995). Malheureusement, il y a certaines exceptions importantes; c'est ce qui explique les prévisions peu optimistes de croissance des échanges pour certains pays à faible revenu (Banque mondiale, 1996*a*).

LE RÔLE CROISSANT ET CHANGEANT DE L'IED

L'EXPANSION SPECTACULAIRE RÉCENTE de l'investissement étranger direct (IED) a révélé certains traits nouveaux. Bien que les stocks d'IED se trouvent encore principalement dans les pays industrialisés[6], les flux d'IED vers d'autres pays (plus particulièrement la Chine et Singapour) ont augmenté plus rapidement.

Si l'IED en Chine se stabilise à des niveaux approchant ceux enregistrés ces dernières années, ce pays deviendra une destination aussi importante que les États-Unis pour l'investissement étranger d'ici dix à quinze ans[7].

TABLEAU 1.2

CROISSANCE DES FLUX D'IED, 1985–1993
VARIATION ANNUELLE EN POURCENTAGE

Région	IED sortant	IED entrant
Amérique du Nord	9,9	10,1
Europe de l'Ouest	15,3	16,2
Asie du Sud et de l'Est	22,2	16,0
Reste du monde	14,5	10,0
Ensemble du monde	14,3	13,1

Source : Graham, 1996, p. 16.

En outre, les préoccupations des pays en développement, sur le plan des politiques, sont passées du besoin de se protéger contre l'investissement étranger à l'adoption de mesures visant à solliciter activement l'investissement étranger. Ce volte-face est en partie attribuable aux transferts de technologie qui sont aujourd'hui intégrés à la plupart des projets d'IED. La majorité des pays en développement sont maintenant conscients qu'ils ont besoin de transferts de technologie pour accélérer leur croissance. De façon générale, ils en sont aussi venus à constater que la crainte d'une éventuelle domination par les sociétés multinationales était exagérée.

La mondialisation signifie également que l'investissement, auparavant considéré comme substitut des échanges, est de plus en plus complémentaire du commerce, alors que les entreprises offrent un ensemble de biens (ou de services) en plus du soutien et du service local connexe.

LE CANADA ET L'ÉCONOMIE MONDIALE

LES ÉCHANGES DE MARCHANDISES occupent une place importante dans l'économie canadienne, représentant environ 30 p. 100 du PIB (voir le tableau 1.3). Ce ratio devrait augmenter dans les dix à quinze années à venir. Depuis environ vingt ans, les échanges de services ont cru à peu près au même rythme que l'économie canadienne (voir le tableau 1.4). Le volume des échanges de services est actuellement inférieur à celui des échanges de marchandises mais on s'attend à ce qu'il croisse beaucoup plus rapidement compte tenu des innovations technologiques mentionnées précédemment.

Si le Canada mise toujours sur d'importantes exportations de produits primaires (notamment les produits de la forêt, les céréales, les minéraux et les produits énergétiques), les biens manufacturés représentent aujourd'hui plus de 65 p. 100 de ses exportations de marchandises. La part des produits primaires

TABLEAU 1.3

COMMERCE DES MARCHANDISES PAR RAPPORT AU PNB, CANADA

	1935	1975	1995
Exportations (millions de dollars)	732	33 347	253 821
Part du PNB (%)	17	20	33
Importations (millions de dollars)	526	33 986	225 431
Part du PNB (%)	12	20	29

Sources : Leacy, 1983; Statistique Canada, 1996.

TABLEAU 1.4

ÉCHANGES DE SERVICES

	1935	1975	1995
Exportations de services (millions de dollars)	397	6 686	36 504
Part du PNB (%)	9	4	4
Importations de services (millions de dollars)	474	11 418	45 860
Part du PNB (%)	11	6	6

Sources : Leacy, 1983; Statistique Canada, 1996.
À l'exclusion des services ayant trait aux facteurs de production (revenu d'investissement).

dans les exportations totales du Canada (y compris les exportations de services qui ne sont pas des facteurs de production) est inférieure à 30 p. 100 et a diminué au cours des vingt dernières années.

Le profil géographique des échanges

Les relations commerciales du Canada avec les États-Unis sont très importantes. Au trimestre de 1996, les exportations vers les États-Unis représentaient plus de 80 p. 100 des exportations canadiennes. En comparaison, environ 25 p. 100 des exportations américaines sont destinées au Canada. Même si chacun des pays est le plus important partenaire commercial de l'autre, la dépendance

du Canada à l'égard du marché américain est beaucoup plus grande que celle des États-Unis à l'égard du marché canadien.

L'importance de plus en plus grande des pays à revenu faible ou moyen et leur participation accrue au commerce international a été abondamment commentée. Néanmoins, il se pourrait que l'on exagère l'importance future des échanges du Canada avec ces pays. Même si le commerce du Canada avec les nations asiatiques devrait croître beaucoup plus rapidement qu'avec les États-Unis, le volume des échanges et des investissements entre le Canada et les États-Unis dominera encore vraisemblablement le tableau du commerce international du Canada dans l'avenir prévisible.

L'investissement étranger direct

Lorsque les Canadiens parlent d'investissement étranger, ils pensent habituellement aux pays étrangers qui font l'acquisition d'entreprises canadiennes ou qui établissent des filiales au Canada. L'expression « investissement étranger » est surtout utilisée pour parler de l'investissement étranger venant au Canada. Comme il ressort du tableau 1.5, cela était exact à venir jusqu'à 1975. Toutefois, les flux d'investissement direct du Canada vers l'étranger sont aujourd'hui à peu près aussi importants que les flux d'investissement étranger entrant au Canada[8]. Au moment d'envisager la question des règles internationales sur l'investissement, le Canada doit adopter à la fois le point de vue du pays d'accueil et celui de l'investisseur éventuel.

TABLEAU 1.5

INVESTISSEMENT ÉTRANGER DIRECT

	1975	1995
Investissement étranger direct au Canada (millions de $)	39 000	168 077
Investissement direct du Canada à l'étranger (millions de $)	8 200	142 347
Ratio IED entrant/IEDsortant	4,7:1	1,2:1

Source : Hummels et Stern, 1994; CANSIM, 1996.

SOMMAIRE

Qu'est-ce que cela voudra dire pour les entreprises et les consommateurs canadiens au cours des dix à quinze prochaines années ?

- Les possibilités d'investissement et de commerce devraient croître plus rapidement que le PIB canadien. La croissance sera particulièrement forte en Asie de l'Est et du Sud.
- Même en tenant compte des taux plus élevés de croissance du commerce avec d'autres régions, les États-Unis continueront de dominer les échanges internationaux du Canada.
- Une gamme de plus en plus étendue de produits et de services sera accessible aux consommateurs canadiens à des prix intéressants. En partie, cette évolution sera attribuable à la technologie; mais pour une part importante, elle proviendra aussi de nos liens commerciaux internationaux.
- Nous pouvons nous attendre à des pressions constantes sur les marchés du travail dans deux grandes directions :
  - le roulement et le chômage frictionnel;
  - des écarts croissants de rémunération entre les travailleurs qualifiés et non qualifiés.

Encore une fois, ces pressions proviendront en partie du changement technologique et en partie d'une intensification de la concurrence commerciale.

L'ÉVOLUTION DES RELATIONS COMMERCIALES DU CANADA DURANT LA PÉRIODE D'APRÈS-GUERRE

DANS CETTE PARTIE, nous passons en revue l'évolution de la politique commerciale canadienne et du système d'échanges multilatéral, et présentons des données de référence pour l'orientation future de la politique. Certains aspects de la politique commerciale du Canada sont abordés dans le contexte de la place qu'occupe ce pays dans l'économie mondiale.

Au cours du dernier demi-siècle, le Canada a joué un rôle de premier plan au sein du système commercial mondial. À titre de signataire original de l'Accord général sur les tarifs douaniers et le commerce (GATT), le Canada a signalé l'importance de marchés d'exportation stables. Les restrictions que le Canada s'est imposé en matière de protection commerciale en adhérant au régime du GATT apparaissent comme une contrepartie plus qu'équitable cédée aux fins d'obtenir un accès plus prévisible aux marchés d'exportation dans le contexte de règles établies[9].

La place qu'occupe le Canada dans les échanges internationaux a aussi influencé les choix qu'il a faits en matière de politique commerciale. Comme nous l'avons indiqué, le Canada achemine environ 80 p. 100 de ses exportations vers les États-Unis; en conséquence, l'accès à ce marché est essentiel au succès de sa politique commerciale. Du même coup, la dépendance des exportations canadiennes à l'égard du marché américain a constitué une source de préoccupation. Devant la disparité évidente de l'influence économique et politique respective du Canada et des États-Unis, l'adhésion aux règles du GATT a constitué un contrepoids naturel à la suprématie américaine. Sur un autre plan, le Canada a, pratiquement depuis la Confédération, affiché une ambivalence persistente devant la perspective de conclure des modalités commerciales bilatérales préférentielles avec les États-Unis.

La dualité qui oppose l'engagement du Canada envers le principe de la non-discrimination inhérent au système commercial multilatéral et son désir d'en arriver à obtenir une garantie d'accès à son marché le plus important a, depuis longtemps, alimenté les débats. Jusqu'en 1965, le Canada a rejeté la voie bilatérale en faveur d'un soutien non équivoque au système multilatéral[10].

L'hésitation du Canada à établir des relations commerciales spéciales avec les États-Unis est compréhensible sous divers aspects. D'un côté, il y a la possibilité de maximiser les avantages découlant de négociations commerciales, compte tenu du niveau déjà élevé des échanges et des similitudes de vues entre le Canada et les États-Unis. De l'autre, la voie multilatérale offre la possibilité de réaliser des gains étendus avec le plus grand nombre possible de pays. Mais une autre question se pose : comment gérer le rapport de puissance relatif entre le Canada et les États-Unis. L'avantage de l'option bilatérale est que nous signalons l'importance que nous accordons à nos relations commerciales mutuelles. Cela comporte à la fois des avantages et des coûts au sens où nous

sommes ainsi entraînés dans des négociations où les États-Unis ont un plus grand pouvoir sur le choix des questions à débattre. Une question corollaire est celle du conflit entre le traitement préférentiel accordé aux États-Unis et le principe du traitement plus favorable des nations pauvres.

LE PACTE DE L'AUTOMOBILE

LE PACTE DE L'AUTOMOBILE DE 1965 conclu entre les États-Unis et le Canada pourrait être considéré comme un événement marquant, une occasion unique, dans l'histoire de la politique commerciale canadienne. La logique du Pacte de l'automobile découle de deux grandes réalités (relatés dans English, 1964, et dans Eastman et Stykolt, 1967) :

- Les courtes séries de production entraînaient des coûts sensiblement plus élevés pour la fabrication des automobiles au Canada comparativement aux États-Unis. Les véhicules construits au Canada étaient principalement destinés au marché canadien restreint. Du côté des exportations, les mesures frontalières ne permettaient pas aux entreprises canadiennes d'augmenter facilement leurs séries de production en vendant des voitures aux États-Unis.

- Les constructeurs d'automobiles américains dominaient l'industrie automobile canadienne et avaient tout à gagner d'un meilleur accès au marché canadien et d'une réduction des coûts découlant de la rationalisation de leurs opérations au Canada et aux États-Unis.

Parce que les trois grands de l'automobile jouxtaient la frontière canado-américaine, la principale source de résistance au libre-échange des voitures découlait de la crainte qu'ils envisagent éventuellement de démanteler l'industrie canadienne du montage des véhicules. Des formules détaillées visant à assurer au Canada une juste part du marché ont été intégrées au Pacte de l'automobile en vue de calmer ces craintes. Les trois grands constructeurs de voitures donnèrent leur adhésion au traité parce qu'ils ne prévoyaient pas que ces mesures leur imposent des restrictions indues.

Le Pacte de l'automobile est peut être l'exemple où les rendements relatifs de l'approche bilatérale en politique commerciale se sont révélés les plus avantageux. Il promettait d'importants gains des deux côtés de la frontière; par ailleurs, des négociations mondiales sur le libre-échange des voitures se seraient révélé extrêmement complexes et auraient eu peu de chance de réussir. Partis d'un niveau relativement modeste, les échanges de voitures et de pièces d'automobile représentent aujourd'hui plus de 40 p. 100 des exportations du Canada vers les États-Unis et plus de 30 p. 100 de l'ensemble des exportations canadiennes[11].

LE TOKYO ROUND

En 1970, le système du GATT avait déjà donné lieu à plusieurs rondes de négociations commerciales multilatérales. En plus d'avoir contribué à réduire sensiblement les tarifs pour les produits industriels, le Tokyo Round (1973-1979) a fait beaucoup progresser la codification des principes fondamentaux du système commercial multilatéral. Le principe du statut spécial et différencié (S-D) pour les pays en développement a été enchâssé dans la partie IV du GATT. Les codes de Tokyo (qui représentent en quelque sorte des manuels de procédures pour les droits anti-dumping, les mesures de sauvegarde et les droits compensatoires, entre autres) ont aussi été intégrés au GATT, représentant un important pas en avant en vue de donner au système une plus grande transparence.

Même si le Tokyo Round a permis d'enregistrer des progrès importants, des problèmes subsistaient. Les échanges de produits agricoles, de textiles et de vêtements continuaient de violer les principes fondamentaux du GATT. À la fin des années 80, le mécanisme de règlement des différends était critiqué en raison des délais qu'il suscitait et du refus des parties de se conformer aux décisions du GATT. L'application de la plupart des codes de Tokyo sur la base inconditionnelle de la nation la plus favorisée (NPF) avait provoqué des différends entre les parties contractantes. D'un côté, un groupe des participants avaient adhéré à tous les codes, prenant par le fait même l'engagement de les appliquer de façon inconditionnelle à tous les pays. De l'autre, de nombreux pays à revenu faible ou moyen n'accédèrent qu'à quelques-uns des codes, voire à aucun, donnant ainsi l'impression d'un certain opportunisme. Étant donné que ces mêmes pays ne participaient pas aux réductions tarifaires, ils contribuèrent à valider l'opinion selon laquelle le GATT regroupait un ensemble de nations riches et un contingent plus vaste de pays non participants.

Selon cette ligne de partage, le Canada faisait clairement partie du petit groupe des nations riches du GATT et, en un sens, l'expérience canadienne au sein du GATT après les accords de Tokyo n'a pas été très différente de celle des autres pays. Nous avons souffert du non-respect des décisions rendues par le GATT en notre faveur, mais nous avons aussi retardé l'application des décisions du GATT qui nous étaient défavorables. Le Canada a aussi pratiqué une politique équivoque en matière agricole : il a cherché à ouvrir l'accès aux marchés pour ses principaux produits d'exportation (les céréales et la viande de bovin), tout en préconisant une protection fondée sur des contingents dans les secteurs assujettis à des mesures de gestion de l'offre.

L'ALE ET L'ALENA

L'INTÉRÊT DU CANADA À NÉGOCIER LE LIBRE-ÉCHANGE avec les États-Unis a éventuellement mené à la signature de l'Accord de libre-échange (ALE) bilatéral entre le Canada et les États-Unis, en janvier 1988. L'intérêt de longue date à conclure une entente spéciale en matière de commerce avec les États-

Unis découlait des problèmes de règlement des différends et de la difficulté appréhendée d'étendre les négociations à de nouveaux domaines, de plus en plus importants (notamment les services et l'investissement) dans le contexte multilatéral.

Au cours des négociations, la préoccupation première du Canada était la sécurité d'accès, y compris une discipline plus rigoureuse au niveau des mesures de protection que pourraient prendre éventuellement les États-Unis. Pour sa part, les États-Unis semblaient principalement intéressés à créer un modèle pour les négociations de l'Uruguay Round et à imposer des limites à certains aspects de la politique canadienne jugés particulièrement offensants par les Américains. Il est aussi possible qu'il y ait eu une volonté de la part des États-Unis de récompenser un gouvernement partageant des vues identiques quant aux politiques économiques qu'il convient de poursuivre. Parmi les politiques que les États-Unis pourraient avoir cherché à restreindre, il y a les contrôles à l'exportation, en vertu du Programme énergétique national, et l'examen des projets de prise de contrôle par des intérêts étrangers, effectué par l'Agence canadienne d'examen de l'investissement étranger (FIRA).

L'ALE a éventuellement permis le libre-échange de la plupart des biens et renfermait des dispositions de vaste portée en vue du traitement national des échanges de services et de l'investissement. Ce qui est plus remarquable, l'ALE introduisait un mécanisme de règlement des différends conçu pour résoudre les principales faiblesses du processus du GATT : les délais et la non-conformité.

Les aspects du commerce des produits agricoles engendrant les plus grandes distorsions commerciales ont été exemptés du libre-échange des biens (notamment, les secteurs assujettis à un système de gestion de l'offre au Canada, et le sucre dans le cas des États-Unis).

De nombreux intervenants au Canada se montrèrent sceptiques devant le projet d'étendre l'ALE au Mexique dans le cadre de l'Accord de libre-échange nord-américain (ALENA), mais l'impact réel de l'élargissement de ce traité sur les échanges du Canada a probablement été modeste[12]. De toue évidence, le volume des échanges avec le Mexique n'a pas augmenté aussi rapidement que certains l'avaient prédit. Cela ne veut pas dire que l'extension de l'ALE n'était pas une bonne idée mais, plutôt, que ses effets ont été moins dramatiques pour le Canada que pour les autres parties.

À de nombreux égards, l'ALENA ressemble à l'ALE, mises à part les modifications évidentes qui étaient requises pour permettre l'entrée du Mexique. Parmi les modifications les plus importantes, nous relevons les suivantes :

> Accords parallèles – Les accords sur l'environnement et sur le travail ont été conclus parallèlement à l'ALENA et ne sont pas intégrés à cet accord. Par conséquent, ils ont tendance à traiter directement des questions sous-jacentes au lieu d'être axés sur des solutions commerciales, comme certains l'avaient préconosé.

Règles d'origine – Les règles d'origine de l'ALENA sont considérées par de nombreux observateurs comme étant moins étendues que celles de l'ALE. Notamment, les règles d'origine pour les voitures, les textiles et les vêtements comportent des exigences de contenu plus rigoureuses. Même si elles sont moins vulnérables aux manipulations bureaucratiques, il semble qu'à certains égards, ces règles soient conçues pour favoriser les trois grands constructeurs d'automobile aux dépens des producteurs étrangers[13].

Amélioration dans de nouveaux domaines – Un certain nombre de changements discrets ont pour effet d'étendre l'application des mesures de discipline déjà rigoureuses en matière d'investissement, de normes et de services.

Le libre-échange dans l'hémisphère américain

L'extension de l'ALENA pour y inclure éventuellement l'ensemble des pays américains a été présentée sous divers vocables, dont l'intégration économique de l'hémisphère occidental[14], l'initiative Enterprise for the Americas ou, plus récemment, la Zone de libre-échange des Amériques (ZLEA). À l'heure actuelle, on pense que ce projet se réalisera par une expansion pays par pays ou, peut-être, par l'intégration d'une version étendue du groupe Mercosur au sein de l'ALENA. Le Sommet des Amériques, tenu à Miami en 1994, s'est conclu sur un engagement des chefs d'État de négocier un accord de libre-échange d'ici l'an 2005. Le Canada a aussi indiqué qu'il était disposé à négocier des accords commerciaux bilatéraux avec certains pays d'Amérique latine, dont le Chili.

L'URUGUAY ROUND

BIEN QUE LE TEMPS NE PERMETTE PAS DE PRÉSENTER et d'analyser la portée complète de l'Uruguay Round pour le Canada, quelques caractéristiques importantes de cet accord méritent d'être soulignées. Certaines discussions en cours au sein de l'OMC sont aussi examinées un peu plus loin[15].

L'Uruguay Round a permis de marquer des progrès dans plusieurs domaines :

- l'inclusion de nouveaux secteurs;
- la libéralisation de certains secteurs problématiques;
- la participation accrue de nombreux pays périphériques;
- des efforts étendus pour renforcer le respect des règles en place et favoriser une plus grande conformité aux décisions des comités.

Couverture étendue

L'Uruguay Round représente une tentative en vue d'étendre la portée des mesures disciplinaires du GATT à de nouveaux secteurs du commerce international, en particulier les services, l'investissement étranger et la propriété intellectuelle. Ce prolongement était important parce que, en partie, la faiblesse perçue du GATT était qu'il ne traitait pas de ce qui était en voie de devenir des éléments clés de l'économie mondiale.

Même si le secteur des services représente près de 50 p. 100 du PNB de la plupart des pays industrialisés, les mesures disciplinaires du GATT ne s'y appliquaient pas. En partie, cela était attribuable au fait que le commerce des services est largement assujetti à la réglementation intérieure ou à des restrictions sur le droit des entreprises étrangères de faire affaire sur le marché intérieur, plutôt que par des mesures frontalières comme celles prévues dans le GATT; de là les liens évidents avec les discussions sur l'investissement.

Le cadre mis en place pour les négociations futures a une valeur inestimable parce qu'il permet de poursuivre la libéralisation des échanges de services dans un cadre multilatéral. Mais la mesure dans laquelle les pays se sont engagés à respecter les obligations en matière de traitement national déçoit quelque peu.

Les mesures relatives à l'investissement ont été discutées dans le contexte particulier des mesures concernant les investissement et liées au commerce (TRIMS). Ces discussions ont été très décevantes, pour plusieurs raisons. Premièrement, on a consacré beaucoup de temps à départager les mesures d'investissement liées aux échanges de celles qui ne le sont pas, même si la plupart des spécialistes de la question affirment qu'une telle distinction est purement artificielle. Toutes les mesures qui influent sur l'investissement peuvent être considérées comme liées au commerce, notamment si l'on tient compte du fait qu'une part croissante de l'investissement est complémentaire aux échanges.

Par contre, les progrès réalisés en vue de protéger la propriété intellectuelle ont été assez remarquables. Un large éventail de pays ont convenu d'améliorer sensiblement la protection de la propriété intellectuelle. En un sens, cela représente une concession colossale de la part des nations en développement, dont la très grande majorité sont importateurs nets de propriété intellectuelle. Mais la protection accrue de la propriété intellectuelle pourrait servir les intérêts de ces pays en les aidant à attirer des investisseurs.

Secteurs problématiques

Presque depuis la mise en place du GATT, les échanges de produits agricoles, de textiles et de vêtements sont demeurés hors de la portée des mesures de discipline habituelles du GATT. Avant l'Uruguay Round, le commerce dans ces secteurs problématiques violait les principes de la libéralisation progressive, de la NPF, de la transparence et du traitement spécial et différencié (S-D). De

façon générale, ces infractions risquaient d'affaiblir l'adhésion au système de commerce multilatéral.

Les contingents, les subventions à l'exportation et les subventions à la production agricole étaient largement utilisés dans les pays riches. On peut dire qu'il s'agissait d'une guerre froide entre les nations riches, livrée avec l'arme budgétaire. Le plus souvent, les pays pauvres exportateurs de produits agricoles n'étaient pas en mesure de soutenir cette concurrence.

L'Accord sur les produits agricoles issu de l'Uruguay Round précise des niveaux très modestes de libéralisation au début, mais il engage les nations à réintégrer le cadre disciplinaire du GATT, notamment par des mesures tarifaires et des restrictions sur les subventions à l'exportation. Si les rondes futures permettent d'abaisser encore les barrières commerciales, le Canada devrait bénéficier d'un meilleur accès aux marchés étrangers pour ses principaux produits d'exportation (les céréales et la viande de bovin); par contre, il devra assouplir des mesures frontalières extrêmement restrictives qui s'appliquent aux produits assujettis à un régime de gestion de l'offre.

Le commerce des textiles a été régi par un système complexe de contingents bilatéraux dans le cadre de l'Accord multi-fibre (AMF). Celui-ci représente une entente détaillée de gestion du commerce dont la principale fonction était de limiter l'accès aux marchés des pays riches pour les producteurs des pays à revenu moyen ou faible. S'ils se concrétisent, les engagements pris lors de l'Uruguay Round pourraient éventuellement mener à la disparition de l'AMF. Le principal élément qui risque de compromettre ce résultat est que les producteurs des pays riches aient recours à des droits anti-dumping pour limiter la pénétration des importations. Une telle éventualité susciterait probablement une déception profonde chez de nombreux pays exportateurs, notamment en raison des lacunes que comportent les mesures anti-dumping (voir, plus loin, la section intitulée *Mesures anti-dumping et politique de concurrence*).

Participation accrue

L'Uruguay Round a contribué pour beaucoup à intégrer les nations plus pauvres au système du commerce mondial. Dans une large mesure, ce succès découle de l'étonnant changement de cap opéré par de nombreux pays vers un régime commercial libéralisé[16]. Plus directement, le résultat le plus important de l'Uruguay Round est que chaque pays signataire ait accepté de respecter essentiellement la même liste étendue d'engagements que tous les autres pays. Cette uniformité supprimera dans les faits le système à deux paliers du GATT, où les pays riches adhéraient à un ensemble de codes, tandis que les pays à revenu faible ou moyen ne souscrivaient qu'aux moins contraignants.

Règles et pouvoirs

L'Uruguay Round renfermait aussi un certain nombre d'éléments qui ont contribué à renforcer le rôle des règles au sein du système d'échanges. Le plus important est que l'adoption d'un mécanisme de règlement des différends plus automatique (c'est-à-dire davantage fondé sur des règles)[17] signifie que les parties à un différend ont une capacité plus restreinte de s'interposer dans les travaux des comités d'enquête établis en vertu des accords de l'OMC.

CONCLUSION

DEPUIS L'ENTRÉE EN VIGUEUR DU GATT, le Canada a été l'un des plus chauds partisans du système de commerce multilatéral et (comme l'affirment beaucoup d'observateurs) l'un de ses principaux bénéficiaires. Néanmoins, ces dernières années, le Canada a accordé une attention particulière aux négociations panaméricaines. Une question qui reste posée est de savoir comment ces efforts se conjugueront à ceux qui visent à soutenir le système multilatéral et à en étendre le rayonnement.

LES ENJEUX FUTURS

DANS CE CHAPITRE, nous abordons plusieurs questions soulevées par la politique commerciale pour l'avenir immédiat. Dans la première section, nous poposons, en priorité, la recherche d'une libéralisation aussi étendue que possible du système commercial. Dans les sections suivantes, nous examinons toute une gamme d'autres questions touchant au commerce.

LIBÉRALISATION OU RETRAIT ?

EN RÉALITÉ, LE CANADA SEMBLE N'AVOIR D'AUTRE CHOIX que de poursuivre ses efforts en vue d'ouvrir l'accès aux marchés étrangers par des négociations multilatérales aussi bien que bilatérales. Certaines des raisons que nous pouvons invoquer sont assez évidentes :

- Le marché intérieur canadien est de petite taille.
- L'accès à la technologie est essentiel à la croissance économique du Canada.
- L'accès à l'investissement étranger revêt une importance capitale pour le Canada.

Le Canada doit donc continuer à rechercher une libéralisation progressive dans l'avenir immédiat. Cette orientation doit être interprétée à la lumière des nouvelles réalités du commerce international, surtout que la portée du mouvement de libéralisation va maintenant beaucoup plus loin que la simple réduction des tarifs douaniers.

Peut-être plus important que les raisons qui militent en faveur de la libéralisation, il y a la reconnaissance du danger de poursuivre une stratégie opposée, par des politiques visant à résoudre des problèmes intérieurs en prenant en otage le commerce, lesquelles se révéleraient à la fois coûteuses et très peu efficaces pour résoudre la cause profonde de ces problèmes[18]. Parce que la politique commerciale agit de façon si indirecte sur les problèmes de politique intérieure, les solutions axées sur des mesures de protection ne feront probablement que nuire à des initiatives mieux ciblées. À titre d'exemple, si nous réagissons au chômage technologique en nous repliant sur nous-mêmes, nous pourrions rendre l'adaptation aux nouvelles technologies encore plus difficile en haussant les coûts d'apprentissage, d'acquisition et d'utilisation de ces nouvelles technologies.

LE COMMERCE DES SERVICES

LES DISCUSSIONS AU SUJET DU COMMERCE DES SERVICES ont débuté avec l'Uruguay Round et ont abouti à l'Accord général sur le commerce des services (AGCS). Encore une fois, le nombre d'engagements pris était modeste, mais un

cadre venait d'être mis en place pour les négociations futures. Parce que le commerce des services ne comporte souvent aucun mouvement de biens d'un pays à l'autre, il fallait adopter une approche différente du modèle traditionnel du GATT, qui consistait à restreindre l'application des mesures frontalières aux produits. La libéralisation des services exige souvent de modifier une réglementation intérieure discriminatoire envers les fournisseurs de services étrangers. Les liens avec les discussions au sujet de l'investissement sont ici particulièrement évidents parce que le commerce des services est souvent rendu possible par l'investissement direct.

Le défi peut-être le plus important sur le plan multilatéral est l'application du traitement national à d'autres secteurs, avec moins d'exceptions. Cet objectif à long terme pourrait être envisagé dans le cadre d'une nouvelle ronde de négociations commerciales. Dans une large mesure, l'extension du traitement national exigera des gouvernements qu'ils définissent explicitement les objectifs des politiques qui violent le principe du traitement national, en vue de s'attaquer directement aux préoccupations sous-jacentes, au lieu d'appliquer des restrictions discriminatoires à certains prestateurs de services. Les dispositions de l'ALENA en matière de services prévoient une application plus étendue du principe du traitement national, avec moins d'exceptions, mais même dans ce cas certains secteurs demeurent exemptés.

Le Canada offre un exemple des justifications employées pour exempter certains secteurs de services de l'application du principe du traitement national. Il soutient depuis longtemps que la culture canadienne est menacée par la suprématie de la culture et des médias américains, ce qui nécessite un traitement spécial pour les industries culturelles. Plusieurs industries « culturelles » (p. ex. l'édition, la radiodiffusion et les arts) entrent dans la catégorie du commerce des services.

Dans plusieurs cas au cours des dernières années, le Canada a proposé de protéger des industries « culturelles » que les États-Unis considèrent comme des activités essentiellement commerciales. Dans un cas, on a empêché Borders Books (un chaîne de librairies des États-Unis) d'ouvrir des succursales au Canada. Au cœur du débat se pose la question de savoir si le commerce de librairie est une industrie culturelle. Alors qu'il semble évident que la publication des oeuvres des écrivains ou des autres artistes canadiens est une activité culturelle, il est bien moins évident que le commerce de détail tombe sous cette rubrique.

Il n'existe aucun consensus au Canada sur les aspects de la culture qui mériteraient une protection et sur ce qui revient à protéger des intérêts essentiellement commerciaux. Il semble que restreindre le commerce de détail constitue un moyen très indirect d'appuyer la culture canadienne. La façon la plus directe et transparente d'offrir un tel soutien serait d'aider les auteurs canadiens ou de faciliter la publication de leurs oeuvres. Une telle approche ne nécessiterait aucun règlement restreignant ce que les détaillants peuvent vendre, ni

d'exclure des détaillants de livres étrangers du marché canadien. De plus, l'intervention viserait le plus directement possible le problème perçu.

L'extension des dispositions du GATT pourrait être débattue lors d'une nouvelle ronde multilatérale, bien qu'on ne sache pas trop quels progrès pourraient être accomplis. Il y a moins de possibilités d'étendre les mesures disciplinaires au secteur des services dans le contexte de L'ALENA. Les répercussions de ce mécanisme vont vraisemblablement contribuer à l'accroissement du commerce des services; mais, comme nous l'avons déjà indiqué, étant donné les perspectives assez modestes qui s'offrent initialement pour les importations et les exportations de services, les volumes pourraient ne pas augmenter de façon dramatique. Néanmoins, un large éventail d'entreprises internationales seraient intéressées à renforcer leur présence sur ce marché.

LA POLITIQUE DE CONCURRENCE

TANDIS QUE L'ORDRE DU JOUR DES DÉBATS FUTURS sur la politique de concurrence à l'échelon international est loin d'être arrêté, l'urgence de tels débats est évidente[19]. Comme nous l'avons soutenu précédemment, l'économie mondiale de plus en plus étroitement intégrée a tissé des liens inextricables entre les politiques de concurrence à l'échelon national et la capacité des entreprises établies à l'étranger d'opérer effectivement sur les marchés internationaux. Cela s'applique aux entreprises qui veulent vendre leurs produits à l'étranger et à celles qui souhaitent faire des investissements directs ou établir une présence sur un marché.

Une des préoccupations premières de la politique de concurrence devraitêtre de promouvoir l'efficience économique, par exemple en s'assurant que les marchés seront aussi concurrentiels (disputables) que possible. Cela signifie habituellement que l'on acorde le traitement national aux entreprises et produits étrangers aux fins d'établissement et d'investissement. L'application d'un traitement national conditionnel[20] ne sera normalement pas compatible avec la recherche de l'efficience économique.

Le débat sur la politique de concurrence à l'échelon international devrait englober les grandes questions suivantes :

Cartels internationaux – Les activités des cartels internationaux se trouvent souvent à l'extérieur de la juridiction d'un pays, rendant nécessaire l'adoption de règles internationales[21].

Pratiques commerciales restrictives – Il arrive souvent que les pratiques commerciales ont pour effet d'exclure des fournisseurs étrangers.

Régie d'entreprise – Des formes différentes de régie d'entreprise influent sur la facilité ou la difficulté avec laquelle un nouveau concurrent peut entrer sur un marché. Dans certains cas, les entreprises étrangères risquent d'être particulièrement désavantagées. En outre, les entreprises habituées

à une entrée sans heurt dans leurs marchés nationaux pourraient s'attendre à un traitement réciproque à l'étranger.

Réglementation gouvernementale – Certains aspects de la réglementation gouvernementale ont pour effet d'accorder aux entreprises étrangères un traitement différent de celui qui s'applique aux entreprises nationales. En outre, certaines règles qui ne sont pas explicitement discriminatoires à l'endroit des entreprises étrangères risquent néanmoins de les défavoriser.

Normes de produits – Les normes peuvent interdire l'entrée de produits étrangers sans même faire de discrimination explicite à leur endroit. Les normes de sécurité divergentes entre pays peuvent découler d'approches nationales différentes pour arriver à des fins souvent comparables. Adapter des produits à différentes normes risque d'être coûteux pour les entreprises, en particulier si la production à plus grande échelle engendre de meilleurs rendements.

La négociation d'un accord international de vaste portée soulève de sérieuses difficultés. Premièrement, il faut reconnaître que différentes nations appliquent leur politique de concurrence à des degrés divers. Cela a provoqué de graves désaccords, notamment entre les États-Unis et le Japon. De plus, certains pays en développement n'ont pas de politique de concurrence.

Au delà de ces difficultés pratiques, les fondements économiques de certaines politiques font problème, tant au niveau théorique qu'au niveau empirique. Ainsi, les motifs théoriques pour s'opposer à certaines catégories de prises de contrôle horizontales ont changé depuis qu'il est largement reconnu que la concentration d'un marché pose un problème uniquement si ce marché n'est pas disputable. Même lorsque l'argument théorique est raisonnablement clair (comme pour le maintien du prix de revente), la politique appropriée peut dépendre de considérations individuelles (propres au pays ou au secteur) d'importance mesurable, comme les élasticités. Les motifs d'efficience permettant de contester certaines formes d'intégration verticale (comme le *keiretsu* au Japon) sont aussi très peu convaincants. Qui plus est, la politique de concurrence appropriée peut dépendre de la nature des liens entre rivalité et innovation. Une rivalité accrue peut favoriser l'innovation dans certaines circonstances, mais dans d'autres elle peut réduire la capacité d'innover.

En résumé, il n'est pas facile de trouver la politique de concurrence idéale; même si nous avions une maîtrise complète des principes économiques sous-jacents, la politique de concurrence idéale différerait probablement d'un pays à l'autre. Par conséquent, la négociation d'un accord international exécutoire couvrant tous les aspects de la politique de concurrence est peu probable dans un avenir prévisible. Voici les principales options qui s'offrent en vue de la conclusion éventuelle d'une entente multilatérale :

1. Faire un suivi de l'expérience acquise dans le cadre des ententes actuelles (ALENA et autre ententes entre gouvernements) et, simul-

tanément, poursuivre les discussions, probablement au sein de l'OCDE. Cette approche favoriserait l'émergence ultérieure d'une entente multilatérale plus étendue. Afin que les discussions puissent mener à une entente multilatérale de plus vaste portée, il est essentiel d'obtenir une large participation des nations non membres de l'OCDE.

2. Entreprendre des négociations très bientôt, de préférence dans le cadre d'une nouvelle ronde de pourparlers multilatéraux, en vue de conclure une entente (probablement plus restreinte) qui serait intégrée au mécanisme de règlement des différends de l'OMC. Les discussions pourraient ensuite se poursuivre dans d'autres forums en vue de faciliter l'élaboration d'une éventuelle entente multilatérale. L'accord plus restreint engloberait probablement des dispositions sur les cartels et les pratiques commerciales restrictives.

La seconde option est la plus avantageuse en autant qu'elle s'inscrive dans le contexte d'une nouvelle ronde multilatérale, notamment parce qu'elle offre toute la latitude voulue pour faire des arbitrages entre différents ordres du jour.

Mesures anti-dumping et politique de concurrence

Certains aspects des règles actuelles du GATT vont à l'encontre de l'objectif d'assurer la liberté d'entrée sur les marchés. Cela s'applique plus particulièrement aux pratiques anti-dumping actuelles. L'argument fondamental en faveur des droits anti-dumping (DAD) est qu'ils préviennent les comportements prédateurs par le jeu des importations. En d'autres termes, les entreprises nationales devraient être protégées contre les entreprises étrangères qui tentent de supprimer la concurrence par des prix abusifs.

La plupart des économistes prétendent que, dans leur application actuelle, les droits anti-dumping sont loin d'atteindre ce but[22]. Notamment, les méthodes d'estimation des prix et des coûts trahissent une forte partialité dans le sens d'établir la présence d'un dumping. De façon générale, de nombreux aspects de l'application des mesures anti-dumping favorisent la détermination d'un dumping alors même que la probabilité d'une intention abusive est faible[23].

Le motif à l'origine d'une grande partie des causes anti-dumping actuelles semble être la protection d'industries en déclin contre la concurrence des importations. Les mesures de sauvegarde prévues par le GATT devraient normalement être temporaires et faciliter l'adaptation (réduction de la taille) de l'industrie qui demande la protection; à l'opposé, les droits anti-dumping n'ont pas à être limités dans le temps par une clause de révision.

Un cas courant de DAD illustre le conflit qui existe entre l'intention derrière les mesures anti-dumping et leur application, en plus de faire ressortir les difficultés qui en résultent : Les fabricants canadiens de bicyclettes demandent l'imposition de DAD contre un vaste groupe de fabricants de bicyclettes étrangers. Ils ont entrepris cette démarche même si les producteurs canadiens

dominent le marché de la bicyclette à tel point qu'aucun fournisseur étranger ne pourrait tenter de supprimer toute concurrence intérieure[24]. Dans ce cas, les DAD accordés antérieurement ont aidé quelques fabricants nationaux, mais ils ont nuit à d'autres (qui utilisent des cadres assujettis aux DAD). De même, les fabricants canadiens ont souffert de l'imposition de DAD sur leurs exportations vers l'Europe.

Un volet possible d'un accord international sur la politique de concurrence serait l'imposition de restrictions aux « pratiques abusives », fondée sur le principe du traitement national. Si le but réel des droits anti-dumping est de prévenir les comportements abusifs, la politique de concurrence constitue alors un instrument plus approprié. Les pays devraient sérieusement envisager d'abandonner entièrement le système anti-dumping en faveur de mesures disciplinaires internationales ciblées sur l'abus en tant que pratique commerciale restrictive.

À tout le moins, si les mesures anti-dumping visent réellement les pratiques abusives, les mesures disciplinaires du GATT devraient alors être rendues plus précises afin de traduire cette orientation[25].

La réforme de l'Accord multi-fibre pourrait devenir d'otage du système actuel de règles définissant les droits anti-dumping. Plusieurs craignent l'adoption généralisée de tels droits, ce qui aurait des conséquences sérieuses pour les pays exportateurs[26].

Sommaire – concurrence

Compte tenu des raisons qui militent en faveur de l'amorce d'une nouvelle ronde de négociations multilatérales, il semble que toutes discussions futures ayant trait à la concurrence devrait avoir lieu dans ce contexcte.

L'INVESTISSEMENT

LA DISCIPLINE INTERNATIONALE EN MATIÈRE D'INVESTISSEMENT englobe à la fois la transparence et l'attribution généralisée du traitement national[27] aux entreprises souhaitant entrer sur un marché étranger[28].

Dans le contexte actuel, l'APEC a donné son appui à un ensemble de principes non exécutoires devant être mis en application (notamment la transparence, le traitement national et la non-discrimination) mais dont le libellé est ambigu. L'OCDE est en train de négocier un accord multilatéral sur l'investissement (AMI) et elle a déjà négocié des codes de conduite connexes pour ses membres[29]. En raison du nombre restreint de pays membres, l'OCDE a été en mesure d'aller plus loin sur le fond que l'APEC ou que les négociations entourant les TRIMS (mesures concernant les investissements et liées au commerce) dans le cadre de l'Uruguay Round. Par conséquent, l'une des propositions mises de l'avant prévoit que les discussions futures sur les mesures de discipline internationales en matière d'investissement aient lieu à l'OCDE, tout

en poursuivant les expériences et les efforts d'élaboration en cours dans le contexte de l'ALENA et des autres groupements régionaux.

L'inconvénient d'une telle démarche provient du fait que, parmi les sujets de négociation les plus manifestes, certains mettent en cause des pays ne faisant pas partie de l'OCDE. Plusieurs de ces pays considèrent les stimulants à l'investissement offerts par les pays riches comme étant l'un des premiers sujets à mettre à l'ordre du jour, tandis que les pays riches veulent parler des exigences de rendement imposées par de nombreuses nations plus pauvres. S'il est possible au sein de l'OCDE de parvenir plus rapidement à l'unanimité, rien n'indique qu'il serait possible d'y aborder un nombre sensiblement plus grand de sujets de fond[30]. De plus, c'est dans le contexte de négociations menées sous les auspices de l'OMC que l'on pourrait obtenir la portée géographique la plus étendue[31]. Une fois de plus, la possibilité de recouper les ordre du jour dans le contexte d'une nouvelle ronde de discussions multilatérales pourrait faciliter les négociations à l'OMC.

Un sujet qui mérite une attention spéciale est la mesure dans laquelle les mesures de discipline en matière d'investissement que l'on retrouve dans des ententes régionales ou multilatérales doivent s'appliquer[32]. La première solution serait de ne faire appliquer ces mesures (habituellement les plus rigoureuses) qu'aux nations signataires. C'est la façon dont sont appliquées actuellement les dispositions de l'ALENA sur l'investissement. L'autre solution serait d'accorder les avantages découlant d'une entente régionale sur une base non-discriminatoire. (Dans le cas de l'ALENA, cela équivaudrait à accorder le traitement national dans plusieurs circonstances.)

On oppose habituellement deux arguments à l'encontre de l'imposition de telles mesures à des pays non-signataires. Premièrement, en agissant ainsi, les nations membres perdraient certains des moyens dont elles disposent pour convaincre d'autres pays d'offrir des avantages comparables en retour, engendrant ainsi un problème d'opportunisme. Deuxièmement, les pays membres acceptent moins bien les normes substantives en raison du risque d'opportunisme; c'est le problème du traînard (« foot-dragger »). Un comportement opportuniste dans ce contexte doit laisser entrevoir la promesse d'avantages significatifs pour appuyer la thèse d'un traitement conditionnel des investisseurs.

En ce qui concerne les mesures frontalières habituelles, une libéralisation unilatérale engendre souvent la plupart des gains de bien-être que l'on associe à une libéralisation multilatérale. On suppose que les avantages proviennent de l'élimination de la distorsion causée par les tarifs nationaux et ont ainsi un effet plus direct, tandis que les avantages découlant d'une libéralisation à l'étranger (et les gains liés au comportement opportuniste de certaines nations non membres) dépendent des effets engendrés par des termes d'échange favorables[33]. Dans le contexte d'une libéralisation multilatérale, ces effets seraient vraisemblablement positifs pour certaines nations.

En ce qui a trait aux mesures de discipline visant l'investissement, il est possible que les avantages proviennent beaucoup plus de l'adoption de mesures

de discipline que de l'accès réciproque. Dans le contexte des accords commerciaux régionaux, l'attribution du traitement national aux investisseurs de tous les pays étrangers n'offrirait que des avantages limités aux nations opportunistes. Cela supprimerait aussi le besoin de déterminer le pays d'origine d'un investisseur – une tâche difficile dans le cas des sociétés d'envergure mondiale.

COMMERCE ET ENVIRONNEMENT

LA RELATION ENTRE LES NORMES DU COMMERCE INTERNATIONAL et certains aspects touchant à l'environnement représente l'une des questions les plus litigieuses qui devra être abordée au cours des prochaines décennies. Les liens et boucles de rétroaction entre le commerce, la croissance économique et l'environnement sont nombreux et la nature de certains liens reste mal connue[34].

Les effets se font sentir sur trois grand axes. Premièrement, la croissance économique semble avoir deux impacts : selon les normes environnementales actuelles, la croissance économique tend à causer une détérioration de la qualité de l'environnement parce que les rejets polluants augmentent au rythme de l'activité économique. Mais à mesure qu'augmente le revenu par habitant, les nations ont tendance à relever leurs normes environnementales[35].

Le commerce international peut contribuer à la croissance économique et, ainsi, ajouter un troisième lien entre la croissance, le commerce et la qualité de l'environnement. L'incidence directe de la libéralisation du commerce sur la qualité globale de l'environnement est probablement très modeste[36]. Cela s'explique notamment par le fait que la plus grande partie du commerce est motivée par des considérations autres que la volonté de se soustraire aux normes environnementales.

Il existe un lien indirect entre la qualité de l'environnement et le commerce : une réglementation environnementale plus rigoureuse peut stimuler le commerce du matériel servant à réduire la pollution, ainsi que des services et de la technologie connexe. Enfin, la qualité de l'environnement contribue à la croissance économique en améliorant la santé des travailleurs et en haussant directement la productivité dans les secteurs primaires.

Mais abstraction faite de l'énoncé de ce problème, les liens mentionnés soulèvent certaines questions. En premier lieu, les règles du système de commerce international peuvent-elle être modifiées pour les rendre compatibles avec les accords internationaux sur l'environnement, comme le Protocole de Montréal relatif à des substances qui appauvrissent la couche d'ozone ou les ententes proposées en vue de contrôler les émissions de gaz à effet de serre ? En second lieu, jusqu'à quel point les ententes internationales en matière de commerce et d'environnement devraient-elles être modifiées en vue d'atteindre une conformité réciproque ?

Le principe du traitement national exige que les biens importés reçoivent le même traitement que les biens de fabrication intérieure une fois les mesures frontalières appliquées. Dans le cas des biens, le traitement national ne restreint

aucunement les mesures (telles que les taxes) qui visent à contrôler la consommation de produits dommageables pour l'environnement. En outre, le traitement national ne restreint pas les mesures de régulation de la production intérieure.

La question peut-être la plus épineuse à résoudre est de savoir si un pays devrait pouvoir fonder les mesures qu'il applique à la frontière sur le laxime de la réglementation environnementale d'un autre pays ? Ainsi, les restrictions commerciales axées sur l'application de normes environnementales différentes peuvent être discriminatoires à l'endroit de pays à faible revenu, surtout ceux où la qualité de l'environnement est supérieure à celle du pays qui impose les restrictions[37]. De plus, ces restrictions ne cadrent pas avec l'aversion que manifeste habituellement le Canada contre l'application extra-territoriale des lois. La plupart des économistes jugent peu probable qu'un système de libre commerce compromette la réglementation environnementale.

Le commerce international pourrait être moins touché par de telles mesures que par des initiatives visant à résoudre certains des problèmes environnementaux les plus urgents. Par exemple, la réaction globale au changement climatique pourrait prendre la forme de limitations sévères de l'usage des combustibles fossiles. Divers modèles de réduction des émissions de bioxyde de carbone indiquent que l'impact sur l'économie mondiale serait suffisamment important pour toucher directement le commerce international, peu importe les changements apportés aux règles qui régissent les échanges internationaux[38]. À la lumière de ce fait, la préoccupation principale du Canada devrait porter sur la nature des engagements pris en vue de réduire les émissions de gaz à effet de serre plutôt que sur les modifications aux règles commerciales.

Un aspect éventuel de la réduction des émissions polluantes est la répartition équitable des coûts connexes, notamment entre les nations riches et les nations pauvres. Le projet de mise en oeuvre conjointe est une proposition qui va en ce sens et qui suppose les mesures suivantes :

- Les pays riches s'engagent à réduire leurs émissions polluantes d'une certaine quantité.
- Les pays riches peuvent entreprendre des projets de réduction des émissions polluantes dans certains pays pauvres (qui ne se sont engagés initialement à aucune réduction). Le cas échéant, le pays qui finance le projet bénéficie du crédit correspondant à la réduction réalisée[39].

Un tel arrangement aurait pour effet d'attribuer une plus grande part des coûts aux pays riches[40]. Étant donné que les citoyens des pays riches se préoccupent plus de la qualité de l'environnement que les citoyens des pays pauvres, un tel partage pourrait très bien convenir aux nations riches et aux nations pauvres. Comme nous l'avons indiqué précédemment, les estimations des coûts de la réduction des émissions polluantes sont très élevées et toute initiative de vaste portée risque d'être reportée jusqu'à ce que la preuve confirmant le réchauffement de la terre soit plus concluante[41].

DROITS DE LA PERSONNE, DROITS DES TRAVAILLEURS ET COMMERCE

L'OBJECTIF DES DISCUSSIONS PORTANT SUR LES DROITS DE LA PERSONNE, les droits des travailleurs et le commerce est de garantir que le commerce international ne nuise pas aux efforts internationaux de promotion des droits des travailleurs et de la personne. Le défi qui se pose est de rédiger des règles de protection des travailleurs qui ne gênent pas les exportations des pays pauvres. En particulier, on craint que des règles rédigées dans le but de bloquer les importations de marchandises provenant de pays où la protection des droits des travailleurs est insuffisante ne soient utilisées pour entraver les importations provenant de tout pays à faible rémunération. Une autre question qui se pose est de savoir si les sanctions du commerce international peuvent contribuer à renforcer sensiblement la protection des droits de la personne et des travailleurs.

Ces discussions pourraient aboutir à un accord semblable à celui conclu en parallèle de l'ALENA. Il pourrait prévoir des dispositions visant à surveiller la protection des droits de la personne en autorisant d'autres pays à demander des consultations, à mener des enquêtes et à dénoncer publiquement la conduite des pays fautifs. Le recours à des sanctions commerciales ne semble pas convenir à la situation. En pratique, des mesures commerciales frappant les exportations provenant de secteurs particuliers auraient très peu de chance de convaincre les gouvernements nationaux de modifier leurs politiques touchant les droits de la personne; en outre, des mesures commerciales visant l'ensemble de l'économie nuiraient vraisemblablement aux travailleurs que l'on cherche à protéger par ces mesures. Si les discussions sur les droits des travailleurs et de la personne débouchent sur la conclusion d'un accord qui n'englobe pas de mesures commerciales explicites, l'entente traduira donc une adhésion à ce raisonnement.

Questions ayant trait à l'environnement et aux droits de la personne

La position que devrait tenir le Canada dans des négociations cruciales portant sur des questions environnementales d'envergure planétaire semble claire. D'abord, nous devrions poursuivre de façon énergique la conclusion d'accords internationaux visant à solutionner les questions environnementales de portée mondiale. Ensuite, nous devrions faire pression dans le cadre de ces négociations pour que soient adoptés des systèmes de mise en oeuvre et d'exécution qui n'entrent pas inutilement en conflit avec certains principes-clés, comme le traitement national et la non-discrimination. Enfin, nous devrions encourager partout l'adoption de politiques environnementales visant à solutionner les problèmes environnementaux plutôt qu'à cibler des importations qui ne sont pas en cause pour l'essentiel.

Comme pour les questions liées à l'environnement, le Canada devrait principalement poursuivre les négociations sur les droits des travailleurs et de la personne au niveau, notamment, de l'Organisation internationale du travail. Par ailleurs, nous ne devrions appuyer un système de mesures commerciales que s'il est évident que ces mesures visent vraiment à améliorer les droits des travailleurs ou de la personne, et ne seront pas utilisées de façon opportune par des entreprises nationales qui voudraient se protéger contre les importations en provenance de pays à faible rémunération. Autrement, le Canada risquerait de nuire aux travailleurs que ces mesures visent à aider.

LE COMMERCE DES BIENS

ALORS QUE L'URUGUAY ROUND A ÉTÉ LARGEMENT ACCLAMÉ comme un point tournant dans le commerce international des produits agricoles, il reste à voir si la conclusion de l'entente sur l'agriculture sera suivie de l'adhésion aux principes du GATT et d'une libéralisation progressive. Les producteurs assujettis à des régimes de gestion de l'offre au Canada sont bien protégés en vertu des tarifs élevés actuels. Une baisse des tarifs pourrait mettre à l'épreuve l'engagement de plusieurs pays envers le système de commerce multilatéral. Mais les consommateurs et les exportateurs de céréales et de viande de bovin ont tout à gagner de l'adoption d'un calendrier exécutoire de réduction des barrières tarifaires pour les produits agricoles[42]. L'ambitieux projet de tarification sera une victoire illusoire si les tarifs élevés actuels sur certains biens ne sont pas réduits.

L'Uruguay Round a aussi libéralisé le commerce des vêtements et des textiles. L'Accord multi-fibre restreignait le commerce provenant des pays à faible et moyen revenu vers les marchés des pays industrialisés; cet accord devrait cesser de s'appliquer d'ici une quinzaine d'années. Ce changement avantagera les nations à faible revenu dont les exportations sont actuellement assujetties à l'AMF. Cependant, ces avantages ne se concrétiseront qu'à condition que les pays industrialisés ne répliquent pas (comme certains le craignent) à une plus grande pénétration des exportations par des campagnes visant à faire appliquer des mesures anti-dumping.

Dans le secteur agricole autant que dans celui des textiles et du vêtement, il existe clairement un traitement spécial et différencié. Les principaux exportateurs de denrées agricoles primaires et de vêtements sont contraints par des régimes de politiques qui favorisent les producteurs des pays à revenu élevé au détriment de ceux des régions à plus faible revenu.

Dans une nouvelle ronde de négociations, il conviendrait d'envisager une éventuelle élimination de toutes les mesures frontalières. Même à défaut d'atteindre cet objectif ambitieux, on pourrait s'attacher à résoudre certaines questions importantes[43].

LES ACCORDS COMMERCIAUX PRÉFÉRENTIELS EN AMÉRIQUE

CERTAINES QUESTIONS SPÉCIFIQUES VISANT À ÉTENDRE la portée de l'ALENA ont été examinées ci-dessus sous les thèmes de l'investissement et de la politique de concurrence. Mais il y a d'autres questions plus générales que le Canada devrait s'efforcer d'aborder.

Deux importants critères d'évaluation de la participation du Canada à d'autres forums sur le commerce (plus particulièrement l'APEC et la zone de libre-échange des Amériques) sont leur impact sur les intérêts commerciaux du Canada (accès amélioré, augmentation du commerce et des flux d'investissement) et leur impact sur les progrès réalisés au sein du système multilatéral.

Plusieurs commentateurs (mais non tous) soutiennent que la participation du Canada aux discussions de l'ALENA a pavé la voie aux discussions multilatérales ou, dans plusieurs cas, a servi de modèle aux accords multilatéraux subséquents. (L'accord sur les aspects des droits de propriété intellectuelle qui touchent au commerce, ou TRIPS, en est probablement le meilleure exemple; sur ce plan, les ententes de l'ALENA et de l'Uruguay Round sont très similaires.) Par ailleurs, les pays étrangers ne partagent pas toujours ce point de vue; plusieurs pays d'Asie craignent en effet une diversion potentielle du commerce et de l'investissement par suite de l'extension de l'ALENA.

Les avantages pour le Canada d'une extension de l'ALENA à l'ensemble des pays américains ont peu de chance d'atteindre ceux de l'entente originale entre le Canada et les États-Unis ou de son prolongement pour y inclure le Mexique. Même l'extension de l'ALE n'a probablement rapporté au Canada que de modestes bénéfices[44]. Une partie des gains que pourrait retirer le Canada d'une intégration économique panaméricaine sont peut-être déjà en train de se concrétiser alors que des pays d'Amérique latine tels que le Chili et (plus récemment) l'Argentine adoptent unilatéralement des régimes commerciaux plus libéraux.

On dit souvent que la géographie et la culture importent moins en matière de commerce qu'auparavant; néanmoins, les distances importent toujours pour de vastes secteurs du commerce. La révolution de l'information a grandement facilité la production de pièces au Chili, mais les frais de transport pour les réexpédier au Canada n'ont pas diminué dans la même mesure. Les progrès techniques dans le domaine du transport sont significatifs, mais ils ne sont pas à l'échelle de ceux réalisés dans les technologies de l'information[45].

Du point de vue du Canada, les principaux gains monétaires à escompter des discussions sur le commerce panaméricain vont vraisemblablement provenir de l'extension du contenu de l'ALENA plutôt que de sa portée régionale. Étant donné que l'ALENA englobe déjà une bonne partie des services, de l'investissement, du commerce des biens et de la propriété intellectuelle, on peut s'attendre à ce que ces gains soient modestes.

Tout compte fait, le Canada devrait accorder à ces discussions une priorité inférieure à celle des discussions multilatérales. De plus, notre participation

aux discussions sur la ZLEA devraient être orientées de manière à favoriser les progrès au niveau multilatéral, notamment en vue d'une nouvelle ronde de pourparlers multilatéraux.

L'APEC ET LA LIBÉRALISATION DE LA ZONE DU PACIFIQUE

LE CANADA ET LES ÉTATS-UNIS SONT TOUS DEUX MEMBRES du forum de coopération économique de l'Asie-Pacifique. L'APEC regroupe un large éventail de nations intéressées par la coopération économique dans la zone du Pacifique. La plupart des pays membres se trouvent en l'Asie de l'Est, dont certaines des économies les plus dynamiques du monde. Le groupe a engagé des discussions sur toute une gamme de sujets liés à une éventuelle intégration plus profonde des pays de la zone du Pacifique. Entre autres, il a adopté un ensemble de principes en matière d'investissement (voir la section *Investissement*, ci-dessus).

Mais si les dirigeants se sont engagés dans un exercice de vaste portée axé sur une intégration globale, les discussions consacrées à une intégration plus poussée dans certains domaines (par exemple l'investissement et la politique de concurrence) se déroulent généralement de manière à dégager un consensus et à rechercher une application officieuse plutôt qu'à constituer un système fondé sur des règles. Dans une certaine mesure, cette approche révèle des différences culturelles de même que l'importance variée que les nations asiatiques attachent à une intégration plus profonde.

Plusieurs nations de premier plan du Sud-Est asiatique lient en grande partie leur succès économique passé et futur à la libéralisation des mesures frontalières (appelée intégration superficielle). Ces nations estiment qu'une plus grande attention devrait être accordée à la tâche de poursuivre les progrès dans cette voie plutôt que d'envisager une intégration plus poussée. Jusqu'à un certain point, cette attitude a constitué un obstacle et pourrait le demeurer.

La composition de l'APEC est à la fois un avantage et un inconvénient. La collectivité que représente l'APEC est vaste au point d'inclure la Chine, les États-Unis et le Chili, mais pas suffisamment pour y inclure de façon significative l'ensemble des pays américains. Bien que les nations de l'APEC représentent un vaste marché en croissance rapide[46], il est encore difficile de dire si l'APEC doit être considéré comme l'assise d'un nouvel accord commercial régional, une tribune servant à promouvoir les discussions dans les forums multilatéraux ou une curiosité intéressante par sa fonction et son appellation.

Dans l'éventualité d'une nouvelle ronde de pourparlers multilatéraux, l'APEC pourrait se révéler un forum d'importance cruciale pour résoudre le conflit entre l'approche axée sur les règles, appuyée par les États-Unis et (à des degrés divers) par le Canada et l'Union européenne, et l'approche informelle visant à dégager un consensus qu'appuient plusieurs nations asiatiques[47]. Au delà des sujets qui entrent dans ce cadre, l'APEC ne semble pas destinée à servir de complément utile à une nouvelle ronde multilatérale.

L'étendue de sa collectivité rendra toute entente à l'intérieur de l'APEC difficile. Une étendue restreinte de la collectivité laisse, de manière significative, moins de liberté d'action pour effectuer des échanges d'ordres du jour que dans le contexte d'une nouvelle ronde multilatérale.

LE COMMERCE AVEC LES ANCIENS PAYS COMMUNISTES

LES CINQ DERNIÈRES ANNÉES ONT ÉTÉ MARQUÉES par des changements révolutionnaires au niveau des politiques économiques de l'ancienne Union Soviétique, des pays d'Europe centrale et de la Chine. Le commerce et les flux d'investissement ont aussi subi les changements dramatiques déjà décrits. Une tâche majeure pour la communauté internationale au cours des dix à quinze prochaines années sera l'intégration de ces économies à l'économie mondiale. La tâche est redoutable. Qui plus est, l'engagement à adopter des politiques économiques plus ouvertes varie d'une nation à l'autre au sein de ce groupe.

Pour plusieurs anciens états soviétiques, l'intégration avec l'Union européenne se déroule déjà naturellement en raison de leur situation géographique et de leur degré plus élevé d'intégration avant la réforme. Des projets sont à l'étude en vue de poursuivre cette intégration en accordant le statut de membre de l'UE à d'anciens pays du bloc de l'Est, tel que la République tchèque. Les discussions sur l'intégration européenne se déroulent au sein de plusieurs forums (dont le Conseil de l'Europe et l'Initiative centre européenne). Plusieurs anciens états soviétiques ont déjà fait connaître clairement leur désir de s'intégrer à l'économie mondiale.

Au cours des dix à quinze prochaines années, la plupart des États nouvellement indépendants exprimeront le désir de rejoindre la Chine parmi les nouvelles parties contractantes de l'OMC. Une question fondamentale qui se pose est de savoir si ces nouvelles nations commerçantes seront aptes à assumer la gamme complète des engagements de l'OMC et, dans l'affirmative, quand seront-elles prêtes à le faire ? Suite à la disparition récente du système à deux paliers du GATT, grâce à l'application de la plupart des mesures de discipline de l'OMC aux pays en développement, l'idée d'une série d'engagements transitoires semble peu attrayante, mais pourrait s'avérer nécessaire. Dans le cas d'une adhésion progressive, il faudrait établir des exemptions de durée limitée pour certains participants au lieu d'adopter un nouvelle série d'exemptions qui risqueraient de donner un mauvais signal. Des éléments significatifs du GATT d'avant l'Uruguay Round accordaient un traitement différentiel et plus favorable aux pays en développement, mais une telle approche a peut-être eu des effets défavorables en permettant à des pays en développement de pratiquer des politiques qui n'étaient certes pas dans leur intérêt. Ces pays pouvaient se prévaloir de ces mesures (et, autrefois, de l'exemption d'une pleine participation à la réduction des tarifs) tant qu'ils se classaient comme pays « en développement ».

Le plus important, toutefois, est qu'il ne serait pas réaliste de supposer que les réalités politiques dans tous les États continueront de favoriser un engagement ferme envers une réforme multilatérale. La meilleure assurance d'un tel engagement sera la bonne tenue affichée par les États qui ont abordé le plus sérieusement cet effort de réforme.

L'ORDRE DU JOUR DE L'OMC

AVANT MÊME LA SIGNATURE DE L'ACTE FINAL DE L'URUGUAY ROUND, on discutait beaucoup de la prochaine ronde de pourparlers commerciaux multilatéraux. Cette nouvelle ronde portait initialement la désignation de ronde « Verte », pour signaler le besoin exprimé d'une discipline multilatérale en vue de protéger des droits de la personne ou de promouvoir des politiques environnementales. Il semble maintenant évident qu'il existe un ordre du jour extrêmement ambitieux et prometteur pour la tenue d'une nouvelle ronde de négociations commerciales, comportant au moins les éléments clés suivants :

Services – Étendre le traitement national de façon plus générale.

Investissement – Étendre la portée à l'ensemble des questions d'investissement, et non uniquement à celles qui sont (explicitement) liées au commerce.

Politique de concurrence – Aborder les aspects clés du comportement anti-concurrentiel et entreprendre la tâche plus vaste de réaliser un consensus sur une extension de la portée de ces dispositions[48].

Environnement – Améliorer l'interface entre les règles commerciales multilatérales et les aspects commerciaux des ententes en matière d'environnement et, ainsi, les renforcer.

Droits – Établir des restrictions claires aux sanctions commerciales imposées visiblement par suite d'une protection inadéquate des droits des travailleurs ou de la personne.

Subventions – Relier les définitions et les recours en matière de subventions aux nouvelles discussions sur l'investissement et les services.

Commerce des biens – Faire un suivi des progrès réalisés au lendemain de l'Uruguay Round dans les domaines de l'agriculture, des textiles et du vêtement, et envisager l'objectif éventuel du retrait des mesures frontalières de type NPF pour tous les produits[49].

Il reste plusieurs questions importantes à négocier et la diversité de ces questions est suffisante pour permettre certains arbitrages réciproques au niveau des ordres du jour des participants, ce qui devrait faciliter le processus.

Les chances de progrès au palier multilatéral semblent bonnes, en particulier depuis que les pays en développement adoptent des régimes de commerce plus libéraux. Par ailleurs, l'appui continu des nations plus pauvres aux règles de protection de la propriété intellectuelle ne donnera des résultats concrets que si les nations riches maintiennent leur engagement à l'égard du système multilatéral.

CONCLUSION

DANS CETTE ÉTUDE, NOUS AVONS PROPOSÉ UNE VISION de la politique commerciale canadienne pour les dix à quinze prochaines années, articulée autour de deux grands thèmes :

Premièrement, le Canada devrait appuyer la libéralisation au sens le plus large de ce terme. En d'autres mots, le Canada devrait poursuivre des négociations dans plusieurs forums mais avoir comme priorité l'amorce d'une nouvelle ronde multilatérale. Il existe un ordre du jour assez long (et manifestement assez complet) pour qu'un tel exercice soit utile. La stratégie de négociation du Canada dans les autres forums devrait toujours prendre en considération le forum multilatéral.

Deuxièmement, pour certaines approches en matière de politiques, la détermination de la cause fondamentale d'un problème apparent permet souvent de trouver la solution appropriée. Dans la mesure du possible, l'analyse du Canada devrait s'amorcer dans cette perspective. Il y a des exemples explicites où l'identification d'une externalité clé fait ressortir une solution; mais ce qui doit retenir davantage l'attention, ce sont les propositions qui ciblent des indices (par exemple la balance commerciale ou la part des échanges commerciaux) en l'absence de toute analyse économique pertinente. Le Canada doit s'opposer à toute initiative de ce genre.

Les plus grands défis que devront affronter les responsables des politiques au Canada durant les dix à quinze prochaines années seront vraisemblablement la diminution de la dette publique et l'amélioration de la capacité du marché du travail de fournir les emplois et les compétences requis. Si une politique commerciale prudente constitue un allié important en vue d'atteindre ces objectifs, elle ne peut remplacer la mise en place de bonnes politiques intérieures. Par ailleurs, il est évident que de mauvaises politiques commerciales (notamment celles qui visent à faire du commerce un bouc émissaire) entraveraient la poursuite des objectifs de la politique intérieure.

NOTES

1 À titre d'exemple, l'Organisation internationale du travail pour les droits des travailleurs et le Comité intergouvernemental sur le changement climatique pour ce qui est des questions ayant trait au changement climatique.

2 Autrement dit, l'intégration économique traitant de sujets autres que les mesures frontalières visant les biens et les sanctions connexes (communément appelée intégration superficielle.)

3 Dans cet exemple, il peut y avoir plusieurs externalités étant donné que le gouvernement national responsable de l'établissement des normes n'a à défrayer aucun des coûts de conformité à ces normes.

4 Cela supposerait l'adoption d'une norme acceptant n'importe quelle autre norme – une formule appelée la reconnaissance mutuelle.

5 Kaell et coll., 1995.

6 Environ 70 p. 100 des stocks d'IED se trouvent en Amérique du Nord, en Europe de l'Ouest et au Japon.

7 L'IED en Chine a chuté de façon marquée en 1995, mais il s'est rétabli depuis.

8 À noter que les stocks d'investissement étranger au Canada dépassent toujours par une magre considérable les stocks d'investissement canadien à l'étranger.

9 Plusieurs économistes soutiennent que, pour une petite économie ouverte, la discipline imposée en matière de protection intérieure est un important avantage de l'adhésion au régime du GATT, indépendamment de toute concession stabilisatrice de la part d'autres pays.

10 Cela ne veut pas dire qu'il n'y avait aucun soutien significatif à des liens économiques plus étroits avec les États-Unis. Plutôt, les ententes commerciales préférentielles furent en définitive ignorées jusqu'au Pacte de l'automobile.

11 Voir le *Quotidien de Statistiques Canada*, 18 juillet 1996.

12 Watson, 1992.

13 Lipsey et coll., 1994.

14 Hufbauer et coll., 1994.

15 Voir Schott et Buurman, 1994, pour une vue d'ensemble; et Banque mondiale, 1995. Nguyen et coll., 1995 et 1996, présentent une évaluation numérique.

16 Dean, 1995.

17 Le mécanisme adopté s'inspire fortement du modèle ALE/ALENA pour ce qui est des limites de temps et des échéances.

18 Ce sujet est repris dans Bhagwati, 1990.

19 Cette section est largement inspirée de Graham, 1995 et 1996.

20 Les entreprises du pays *A* bénéficient du même traitement dans le pays *B* que celui accordé aux entreprises du pays *B* dans le pays *A*.

21 Les cartels d'exportation sont implicitement tolérés en vertu du GATT. Voir Dam, 1970, p. 244 et suivantes.

22 Voir le chapitre de Messerlin dans Schott, 1990, et le chapitre de Finger dans Finger and Olechowski, 1987.

23 Entre autres, cela comprend certaines pratiques telles que le « cumul » pour établir le préjudice, et des définitions souples pour des produits semblables. Voir Finger, 1992.

24 « Bike makers face uphill climb », *The Globe and Mail*, 6 août 1996.

25 Voir le chapitre de Lipstein dans Graham et Richardson, 1996.

26 En vertu de l'AMF, les exportateurs bénéficiaient de précieux droits à des contingents. Si l'AMF est éliminé progressivement pour être remplacé par un recours plus étendu aux DAD, les exportateurs feront alors face à des barrières mais seront privés des droits de contingents.

27 Y compris le traitement national pour ce qui est de la réglementation, du transfert des fonds et du droit d'établissement.

28 Cette section est largement inspirée de Graham et Richardson, 1996.

29 Le Code de libéralisation des mouvements de capitaux, le Code de libéralisation des opérations invisibles et l'Instrument relatif au traitement national.

30 Par exemple, les pays riches pourraient accepter une extension significative des restrictions quant aux exigences de rendement, mais les restrictions applicables aux stimulants à l'investissement acceptées au sein de l'OCDE pourraient être moins rigoureuses si les nations plus pauvres participaient à ces négociations.

31 C'est essentiellement l'argument présenté dans Graham et Richarson, 1996.

32 C'est la question des modalités d'exemption.

33 Le terme correspondant à l'effet d'une libéralisation du commerce sur les termes d'échange est la perte de gain pour les investisseurs nationaux imputable au fait que les nations opportunistes n'appliquent pas de mesures de discipline comparables. À cause de la fluidité croissante des marchés de capitaux, ce terme risque d'être faible.

34 Voir Anderson et Blackhurst, 1992; Uimonen, 1995; et Low, 1992.

35 Grossman et Kruger, 1992; et Radetzki, 1992.

36 Perroni et Wigle, 1994.

37 Ainsi, certains soutiennent que les nations qui rendent obligatoires certaines technologies très propres pourraient percevoir des droits sur des articles provenant de pays employant des technologies moins propres. Une telle approche risque d'engendrer une situation où la vente à Los Angeles (où la qualité de l'air est notoirement mauvaise) d'articles fabriqués au Ghana (où la qualité de l'air est excellente) mais avec une technologie un peu moins « propre » serait interdite pour des raisons environnementales.

38 Dean, 1993; et Cline, 1992.

39 Australian Bureau for Agricultural and Ressource Economics, 1995; Hinchy et coll., 1993.

40 Etant donné qu'une tonne de carbone produit le même impact sans égard au lieu de son émission, tout arrangement imposant aux nations riches des responsabilités en matière de réduction des émissions aura un rapport coût-efficacité beaucoup plus élevé si une partie de cette réduction peut se faire dans des pays plus pauvres, où le coût marginal de la réduction des émissions polluantes est plus faible.

41 *The Economist*, 1995.

42 Cela n'est pas sans soulever de difficultés parce que le système de gestion de l'offre comporte aussi une dimension inter-provinciale importante qui favorise le Québec.

43 L'élimination complète des tarifs risque de se buter à l'opposition des pays en développement qui les utilisent comme source de revenu, mais des arguments supérieurs favorisent d'autres façons d'engendrer des revenus.

44 Les estimations minutieusement structurées des gains sociaux pour le Canada résultant de sa participation à l'ALENA montrent de très modestes résultats. La principale question ici est de savoir savoir si la base de comparaison doit être l'époque qui a précédé ou celle qui a suivi l'Accord de libre-échange. François et Shiells, 1994; Hufbauer et coll., 1994.

45 Pour les mêmes raisons, l'accord commercial bilatéral du Canada avec le Chili ne produira probablement pas de gains importants ou ne contribuera pas de façon significative aux discussions multilatérales.

46 En dépit du fait que l'APEC englobe des économies en forte croissance, les estimations des gains pour le Canada découlant d'une libéralisation du commerce au sein de l'APEC sont négatives ou très faibles (moins de 0,1 p. 100 du PNB). Young et Huff , 1996; Adams et coll., 1996.

47 C'est le thème central d'un ouvrage récent du Brookings Institution; voir Lawrence et coll., 1996.

48 Un important test de confiance pour le système multilatéral sera, à tout le moins, de concentrer les mesures anti-dumping sur les comportements abusifs et, idéalement, de parvenir à une entente sur une politique de concurrence internationale qui pourrait remplacer les mesures anti-dumping.

49 Cela ne signifie pas la fin des mesures de sauvegarde, mais on éliminerait ainsi tous les obstacles à la plus grande partie du commerce des biens.

BIBLIOGRAPHIE

Adams, P., K. M. Huff, R. McDougall, K. R. Pearson et A. Powell, « Medium-Term Consequences for Australia of an APEC Free Trade Area », document reprographié, Monash University, 1996.

Affaires extérieures Canada, *La politique commerciale du Canada pour les années 80*, ministre des Approvisionnements et Services Canada, Ottawa, 1983.

Anderson, K. et R. Blackhurst (éd.), *The Greening of World Trade Issues*, Harvester Wheatsheaf, Toronto, 1992.

Australian Bureau for Agricultural and Resource Economics, *Joint Implementation of Carbon Reduction Schemes*, Australian Bureau for Agricultural and Resource Economics, Canberra, 1995.

Banque mondiale, *The Uruguay Round and the Developing Economies*, Banque mondiale, Washington (D.C.), 1995.

Banque mondiale, « Disparities in Global Integration and Growth », *World Bank Policy and Research Bulletin*, vol. 7, n° 2, 1996*a*, p. 1-4.

Banque mondiale, *Global Economic Prospects and the Developing Countries*, Banque mondiale, Washington (D.C.), 1996*b*.

Bhagwati, J., *Protectionism*, MIT Press, Cambridge, 1990.

Bleaney, M., « Economic Liberalization in Eastern Europe », *World Economy*, vol. 17, n° 4, 1994, p. 497-507.

CANSIM, *Canada's International Investment Position at Year End*, Technical Report, Statistique Canada, CANSIM Matrix 4180, 1996.

Cline, W. R., *The Economics of Global Warming*, Institute for International Economics, Washington (D.C.), 1992.

Cook, P., « Is Free Trade Dead or Alive? », *The Globe and Mail*, 12 juin 1996.

Dam, K. W., T*he GATT: Law and the International Economic Organization*, University of Chicago Press, Chicago, 1970.

Dean, A. (éd.), *The Costs of Cutting Carbon Emissions: Results from Global Models*, Organisation de coopération et de développement économiques, Paris, 1993.

Dean, J. M., « The Trade Policy Revolution in Developing Countries », *World Economy*, vol. 18, (Global Trade Policy Annual), 1995, p. 173-189.

Eastman, H. C. et S. Stykolt, *The Tariff and Competition in Canada*, MacMillan, Toronto, 1967.

English, H. E., I*ndustrial Structure in Canada's International Competitive Position*, Private Planning Association of Canada, Montréal, 1964.

Finger, M. J., « Dumping and Antidumping: The Rhetoric and Reality of Protection in Industrial Countries », *The World Bank Research Observer*, vol. 7, n° 2, 1992, p. 121-144.

Finger, M. J. et A. Olechowski, *The Uruguay Round: A Handbook for the Multilateral Trade Negotiations*, Banque internationale pour la reconstruction et le développement, Washington (D.C.), 1987.

Francois, J. et C. Shiells (éd.), *Modeling the North American Free Trade Agreement*, Cambridge University Press, Cambridge, 1994.

Graham, E. M., « Competition Policy and the New Trade Agenda », paru dans *New Dimensions of Market Access in a Globalising World Economy*, publié sous la direction de l'Organisation de coopération et de développement économiques, 1995.

Graham, E. M., *Global Corporations and National Governments*, Institute for International Economics, Washington (D.C.), 1996.

Graham, E. M. et J. D. Richardson, « Competition Policies for a Global Economy », Institute for International Economics, Washington (D.C.), à paraître.

Grossman, G. M. et A. B. Krueger, *Environmental Impacts of a North American Free Trade Agreement*, Document de discussion nº 158, Woodrow Wilson School, février 1992.

Hart, M., « What's Next: Negotiating Rules for a Global Economy », paru dans *New Dimensions of Market Access in a Globalising World Economy*, publié sous la direction de l'Organisation de coopération et de développement économiques, 1995.

Hertel, T. W. (éd.), *Global Trade Analysis: Modeling and Applications*, Cambridge University Press, Cambridge, 1997.

Hinchy, M., S. Thorpe et B. S. Fisher, *A Tradable Emissions Permit Scheme*, Research Report 93.5, Australian Bureau for Agricultural and Resource Economics, mars 1993.

Hufbauer, G. Clyde, J. J. Schott et D. Clark, *Western Hemispheric Economic Integration*, Institute for International Economics, Washington (D.C.), 1994.

Hummels, D. L. et R. M. Stern, « Evolving Patterns of North American Merchandise Trade and Investment, 1960-1990 », *World Economy*, vol. 17, nº 1, 1994, p. 5-29.

Jackson, J. H., *Restructuring the GATT System*, Council on Foreign Relations Press, New York, 1990.

Jackson, J. H., « The World Trade Organization: Watershed Innovation or Cautious Small Step Forward? », *World Economy*, vol. 18, (Global Trade Policy Annual), 1995.

Kaell, A., D. Ireland et Z. Sadeque, « Trade, Competition Policy and Market Access », paru dans N*ew Dimensions of Market Access in a Globalising World Economy*, publié sous la direction de l'Organisation de coopération et de développement économiques, 1995.

Krugman, P. R., *Pop Internationalism*, MIT Press, Cambridge, 1996.

Lawrence, R. Z., A. Bressand et T. Ito, *A Vision for the World Economy*, The Brookings Institution, Washington (D.C.), 1996.

Leacy, F. H. (éd.), *Statistiques historiques du Canada*, deuxième édition, Statistique Canada, Ottawa, 1983.

Lipsey, R. G., D. Schwanen et R. J. Wonnacott, *The NAFTA: What's In, What's Out, What's Next*, Institut C. D. Howe, Toronto, 1994.

Lloyd, P. et G. Sampson, « Competition and Trade Policy: Identifying the Issues after the Uruguay Round », *World Economy*, vol. 18, nº 5, 1995, p. 681-705.

Low, P. (éd.), *International Trade and the Environment*, Banque mondiale, Washington (D.C.), 1992.

Michalopoulos, C. et D. G. Tarr (éd.), *Trade in the New Independent States*, Banque mondiale, Washington (D.C.), 1994.

Nguyen, T., C. Perroni et R. Wigle, « A Uruguay Round Success? », *World Economy*, vol. 18, nº 1, 1995, p. 25-30.

Nguyen, T., C. Perroni et R. Wigle, « Uruguay Round Impacts on Canada », *Analyse de politiques*, vol. XXII, nº 4, 1996, p. 342-355.

Organisation de coopération et de développement économiques, *New Dimensions of Market Access in a Globalising World Economy*, Organisation de coopération et de développement économiques, Paris, 1995.

Perroni, C. et R. M. Wigle, « International Trade and Environmental Quality: How Important are the Linkages? », *Revue canadienne d'économique*, vol. XXVII, nº 3, 1994, p. 551-567.

Radetzki, M., « Economic Growth and the Environment », paru dans *International Trade and the Environment*, publié sous la direction de F. H. Low, Banque mondiale, Washington (D.C.), 1992.

Schott, J. J. et J. W. Buurman, *The Uruguay Round: An Assessment*, Institute for International Economics, Washington (D.C.), 1994.

Schott, J. J. (éd.), *Completing the Uruguay Round: A Results Oriented Approach to the GATT Negotiations*, Institute for International Economics, Washington (D.C.), 1990.

Statistique Canada, *Weekly Digest*, Section de la balance des paiements, juin 1996.

The Economist, « The Greening of Protectionism », mars 1993.

The Economist, « Stay Cool », avril 1995.

Trela, I. et J. Whalley, « Barrier Representation in North American Integration », *World Economy*, vol. 17, n° 1, 1994, p. 31-44.

Uimonen, P. P., « Trade Rules and Environmental Controversies During the Uruguay Round », *World Economy*, vol. 18, n° 1, 1995, p. 71-86.

Watson, W. G., « North American Free Trade: Lessons from the Trade Data », *Analyse de politiques*, vol. XVIII, n° 1, 1992, p. 1-12.

Woodall, P., « The Hitchhiker's Guide to Cybernomics », *The Economist*, 28 septembre 1996.

Young, L. M. et K. M. Huff, « Free Trade in the Pacific Rim: On What Basis? », dans *Global Trade Analysis: Modeling and Applications*, ouvrage publié sous la direction de T. W. Hertel, Cambridge University Press, Cambridge, à paraître.

APPENDICE
PRINCIPES FONDAMENTAUX DU SYSTÈME COMMERCIAL MULTILATÉRAL

DANS CETTE SECTION, NOUS PRÉSENTONS UN BREF APERÇU de certains des principes fondamentaux du système commercial multilatéral.

LIBÉRALISATION PROGRESSIVE

CE PRINCIPE EST LE PLUS SIMPLE. Les participants au système commercial souhaitent habituellement coopérer en vue de réduire les barrières commerciales, selon la logique qu'il est dans l'intérêt général des nations de le faire de façon réciproque[1].

NON-DISCRIMINATION

CE PRINCIPE EST SOUVENT APPELÉ le principe de la nation la plus favorisée (NPF), selon lequel aucun pays ne devrait recevoir un traitement moins favorable que celui accordé au partenaire commercial « le plus favorisé ». En pratique, cela signifie que les importations d'aucun pays ne devraient être traitées différemment (mieux ou pire) que celles de tout autre pays.

TRAITEMENT NATIONAL

LE PRINCIPE DU TRAITEMENT NATIONAL EST AUSSI RELATIVEMENT SIMPLE. Il signifie qu'une fois appliquées à la frontière les mesures appropriées, les biens importés devraient être traités au moins aussi favorablement que les biens produits sur le marché intérieur. Ce principe vise essentiellement à décourager les mesures de protection voilées (comme lorsque les importations sont assujetties à des taxes supplémentaires ou à des essais complexes, alors que les biens produits sur le marché intérieur ne le sont pas).

LES NATIONS LES PLUS PAUVRES

LE PRINCIPLE SELON LEQUEL UN TRAITEMENT PLUS FAVORABLE est accordé aux nations les plus pauvres est habituellement appelé le principe du traitement spécial et différencié (S-D). Il traduit deux préoccupations. Premièrement, on pense généralement que les nations les plus pauvres ne pourront améliorer leur développement économique et social que si l'on accorde à leurs exportations un accès favorable sur les marchés étrangers. Deuxièmement, les nations les plus pauvres peuvent me pas pouvoir se payer l'expertise nécessaire pour mettre en oeuvre certains volets de leurs obligations internationales. Dans chaque cas, les règles du commerce international ont préconisé un traitement préférentiel, particulièrement à l'endroit des nations les plus pauvres.

CONCURRENCE LOYALE ET MESURES DE SAUVEGARDE

LE PRINCIPE D'UNE CONCURRENCE LOYALE signifie que les entreprises ne devraient pas avoir à soutenir la concurrence d'importations déloyales. Ce principe comporte deux aspects principaux. Les importations déloyales englobent celles qui sont subventionnées par les gouvernements étrangers et celles qui font l'objet d'un « dumping » sur les marchés étrangers[2]. Dans chaque cas, les industries nationales qui subissent l'assaut de ces importations déloyales peuvent invoquer des mesures de protection.

En outre, en vertu de l'instrument (distinct) des mesures de « sauvegarde », les industries nationales devraient pouvoir bénéficier d'une protection temporaire lorsque la croissance rapide des importations les prive d'une part importante du marché intérieur. À noter que les mesures de « sauvegarde » s'appliquent aux importations loyales. Dans ce cas, le raisonnement que l'on fait est qu'avec l'évolution des avantages comparatifs, certains secteurs croîtront tandis que d'autres déclineront, mais que les entreprises ont droit à un délai raisonnable pour s'ajuster à la concurrence provenant des importations[3].

TRANSPARENCE

LE PRINCIPE DE LA TRANSPARENCE REJOINT certains des autres principes dans la mesure où il signifie que l'effet d'une barrière commerciale devrait être bien compris et expliqué aussi clairement que possible. Cela veut dire que les fournisseurs éventuels sur un marché étranger peuvent mesurer l'effet d'une barrière commerciale donnée et que les consommateurs du marché intérieur sont en mesure de comprendre le niveau de protection que l'on accorde aux producteurs nationaux. Ce principe touche aussi celui du traitement national parce que l'impact des mesures qui violeraient ce principe ne sera vraisemblablement pas « transparent » pour les exportateurs ou les consommateurs.

NOTES

1 Parmi les principes fondamentaux du GATT, il y a celui du « caractère exécutoire » des obstacles au commerce. Celui-ci correspond à un engagement de respecter un barème tarifaire donné. Aux fins de notre exposé, il sera interprété comme un moyen de traiter avec une échappatoire (importante) lors de négociations commerciales : la modification unilatérale du barème tarifaire avant le début des négociations.

2 Comme nous le verrons, le caractère déloyal des biens que l'on présume faire l'objet d'un « dumping » ne ressort pas toujours clairement.

3 La nature de l'adaptation peut simplement prendre la forme d'un réoutillage ou d'un recyclage de la main-d'oeuvre mais, dans bien des cas, elle signifie qu'une industrie subira un déclin en raison de la concurrence des importations.

Publications de recherche d'Industrie Canada

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Obstacles officiels et officieux à l'investissement dans les pays du G-7 : résumé et conclusions, Industrie Canada, personnel de la Direction de l'analyse de la politique micro-économique, notamment Ashfaq Ahmad, Colleen Barnes et John Knubley, 1994.

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L'INTÉGRATION ÉCONOMIQUE DE L'AMÉRIQUE DU NORD : LES 25 DERNIÈRES ANNÉES ET LES 25 PROCHAINES ANNÉES

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Novembre 1998

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Par Gary C. Hufbauer et Jeffrey J. Schott
Institute for International Economics, Washington (DC)

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PRÉFACE

À L'APPROCHE DU NOUVEAU MILLÉNAIRE, les Canadiens assistent à une transformation radicale des paramètres de l'économie. La tendance à la mondialisation des marchés et à l'intégration de plus en plus poussée de l'activité économique entre les nations s'accentue. Les progrès spectaculaires de l'informatique et des communications facilitent ce mouvement de mondialisation et changent fondamentalement le milieu de travail et le mode de vie des Canadiens. Du même coup, et comme conséquence première de la révolution de l'information, les activités axées sur le savoir occupent une place sans cesse plus grande dans notre économie et celle des autres pays industrialisés.

Cette mutation fondamentale de l'économie nous incite à faire une comparaison avec la révolution industrielle du 19e siècle. Comme à cette époque, les grands changements structurels engendrent des incertitudes. Les entreprises et les travailleurs luttent pour se tailler une place dans ce nouvel ordre économique. Les Canadiens se demandent si les ressources matérielles, humaines et institutionnelles de leur pays constituent une assise suffisamment solide pour garantir leur prospérité future. Beaucoup estiment que les perspectives qui s'offrent au Canada sont beaucoup moins sûres qu'à l'époque où les richesses naturelles jouaient un rôle clé dans l'édification de l'économie du pays.

Afin d'explorer plus à fond les possibilités et les défis que laissent entrevoir ces développements à moyen et à long terme, la Direction de l'analyse de la politique micro-économique d'Industrie Canada a invité un groupe de spécialistes à présenter leur « vision » du Canada au 21e siècle dans un certain nombre de domaines importants. Chaque auteur devait s'attaquer à deux tâches redoutables : d'abord dégager les grandes tendances historiques en vue d'élaborer des scénarios illustrant comment les choses évolueront vraisemblablement au cours des dix à quinze prochaines années dans le domaine qui lui avait été assigné, puis examiner les conséquences à moyen terme de cette évolution pour l'économie canadienne.

Les essais qui découlent de cet exercice sont en voie de publication sous le thème général « Le Canada au 21e siècle ». La collection englobe onze documents traitant des perspectives qui s'offrent au Canada à moyen terme dans différents domaines. Ces documents sont répartis en trois volets. Le premier, *Mise en situation*, est consacré aux tendances fondamentales qui façonneront le contexte économique à moyen terme au Canada. Le second volet, *Ressources et technologie*, traite de l'évolution de certains facteurs importants sur le plan de la création de la richesse au Canada, ainsi que des mesures requises pour leur donner un solide fondement en vue d'assurer la prospérité du pays. Le troisième et dernier volet, *Relever le défi*, scrute les réactions des particuliers, des entreprises et des gouvernements aux défis qui se présenteront à moyen terme et propose certains éléments de solution en vue d'orienter le pays sur la bonne voie.

S'inscrivant dans le volet *Mise en situation*, cette étude de Gary Hufbauer et Jeffrey Schott, de l'Institute for International Economics, s'intéresse à la dimension régionale des relations commerciales du Canada. Les auteurs retracent l'évolution des échanges, des investissements et des autres liens commerciaux entre le Canada et les États-Unis, et ils s'interrogent sur l'évolution future des relations économiques dans l'espace nord-américain.

Les auteurs sont optimistes quant aux perspectives d'une intégration économique plus poussée en Amérique du Nord. Ils estiment que les forces du libre-échange continueront de prévaloir sur les sentiments protectionnistes aux États-Unis et que le progrès économique en Amérique du Nord favorisera une expansion des échanges Canada-États-Unis qui, d'ici 2005 ou 2010, pourraient être de 20 à 30 p. 100 supérieurs à ce qu'ils auraient été en l'absence des accords commerciaux récemment conclus. Dans l'intervalle, les réformes économiques entreprises dans les pays d'Amérique latine préparent le terrain à un élargissement de l'ALENA et à l'émergence graduelle d'une zone de libre-échange pour les Amériques.

SOMMAIRE

CETTE ÉTUDE OFFRE UNE RÉTROSPECTIVE ET UNE PROJECTION du processus d'intégration économique en Amérique du Nord. Elle débute par un survol historique des relations économiques entre le Canada et les États-Unis ces 25 dernières années pour ensuite passer à la boule de cristal: l'évolution probable des relations économiques bilatérales durant le prochain quart de siècle.

LES 25 DERNIÈRES ANNÉES

CETTE PARTIE TRAITE DES SOURCES DE L'INTÉGRATION « SILENCIEUSE » qui a marqué le dernier quart de siècle. Dans la seconde partie, les auteurs s'appuient sur cette analyse pour esquisser le cheminement futur des relations économiques bilatérales.

L'investissement et le commerce bilatéral

Le Canada fait partie des pays de l'OCDE qui dépendent le plus des échanges internationaux, tandis que les États-Unis sont l'un de ceux qui en dépendent le moins. Chacun des deux pays est le meilleur client de l'autre mais les États-Unis n'ont pas de rivaux étrangers sur le marché canadien tandis que le Canada n'est que le premier parmi plusieurs partenaires commerciaux des États-Unis. En termes simples, le marché américain est plus important pour le Canada que ne l'est le marché canadien pour les États-Unis.

Au cours de la période 1975-1995, les échanges bilatéraux de biens et de services ont crû plus rapidement que le PIB, augmentant à un taux annuel moyen d'environ 11 p. 100. Les machines et le matériel de transport dominent le commerce bilatéral, représentant entre 40 et 45 p. 100 du total. À l'opposé, les flux bilatéraux d'investissement direct ont été moins robustes et l'investissement direct des États-Unis au Canada a ralenti de façon significative depuis 1990. Les entreprises semblent augmenter la production dans leurs installations les plus efficientes et elles ont tendance à fermer des établissements de plus petite taille qui étaient auparavant nécessaires en raison des barrières au commerce.

Ces tendances globales masquent la croissance importante de toute une série de marchés régionaux le long de la frontière. Au cours des dernières années, le commerce entre les États frontaliers et les provinces canadiennes voisines a augmenté beaucoup plus rapidement que le commerce bilatéral national.

Questions de politique macro-économique

Le Canada et les États-Unis partagent de nombreuses valeurs sur le plan économique, mais ils se démarquent nettement l'un de l'autre pour ce qui est du rôle du gouvernement dans l'économie. Si les dépenses du gouvernement

central représentent à peu près le même pourcentage du PIB dans les deux pays, les dépenses des provinces canadiennes sont, proportionnellement, à peu près le double de celles des États américains. La dette extérieure du Canada dépasse 100 p. 100 du PIB (comparativement à moins de 20 p. 100 pour les États-Unis) et son déficit budgétaire en pourcentage du PIB est à peu près deux fois celui des États-Unis. En conséquence, les décideurs canadiens sont en quelque sorte pris dans un étau entre les coûts énormes des programmes sociaux et le soutien politique dont jouissent ces programmes.

Depuis 1970, le Canada et les États-Unis ont aussi divergé pour ce qui est du pourcentage du PIB absorbé par les impôts sur le revenu et sur les bénéfices : il a augmenté au Canada mais a diminué aux États-Unis. En 1993, l'écart à ce titre était de 3 p. 100 du PIB. Les taxes sur les biens et services au Canada ont depuis longtemps été environ le double de celles appliquées aux États-Unis.

L'économie canadienne évolue parallèlement à l'économie américaine sans que leurs cheminements soient pour autant identiques. Les liens les plus étroits se retrouvent sur les marchés monétaires où la corrélation est presque parfaite entre les taux canadiens et américains à échéance de dix ans. Sauf pour quelques années après 1990, il en a été de même des taux d'inflation. Par contre, le taux de change varie encore beaucoup.

Ce sont peut-être les marchés du travail qui diffèrent le plus. Jusqu'à la fin de la dernière décennie, l'évolution du chômage au Canada suivait la tendance aux États-Unis avec un an de retard. Depuis, le taux canadien a sensiblement augmenté alors que le taux américain a baissé graduellement. Cette divergence est probablement attribuable au fait que la dernière récession est survenue plus tard au Canada et y a été beaucoup plus profonde. Les salaires canadiens étant plus rigides que les salaires américains, ils ont continué d'augmenter au même rythme que ces derniers. En pareil contexte, les salaires canadiens auraient dû augmenter beaucoup moins pour éviter que les efforts déployés pour éradiquer l'inflation n'engendrent une poussée de chômage.

Irritants en matière de commerce et d'investissement

Parmi les obstacles à l'intégration des économies nord-américaines figurent en bonne place les interventions unilatérales en politique commerciale qui peuvent fausser les flux d'investissement et compromettre les stratégies des entreprises qui veulent rationaliser leur production dans l'ensemble de la région. Dans ce texte, nous étudions trois genres de mesures : les droits antidumping et les droits compensateurs, les initiatives prises sous l'empire de l'article 301 de la *Trade Act* des États-Unis et, enfin, les sanctions économiques.

Les droits antidumping et compensateurs ont rarement été imposés compte tenu de l'importance du commerce bilatéral. Ils ont toutefois reçu beaucoup d'attention au Canada puisqu'ils ont frappé de gros secteurs d'exportation comme le bois d'oeuvre. Les États-Unis ont pris 70 actions de ce genre au cours des trois dernières décennies. Toutefois, ces dernières années, on a

observé un déclin rapide de la fréquence de ces interventions. L'apaisement des tensions qu'elles engendraient est essentiellement due à la nouvelle procédure de règlement des conflits prévue dans l'ALE (Acord de libre-échange canado-américain).

Est-ce que, dans l'avenir, des négociations régionales ou multilatérales pourraient restreindre les abus du système de droits antidumping? Les tentatives passées ne portent guère à l'optimisme. Pire encore, les récents accords du GATT ont encore accru le foisonnement de directives sensées guider l'action des agences chargées de mettre en oeuvre ces interventions. Les auteurs manifestent peu d'enthousiasme pour de nouveaux efforts de ce genre; ils croient préférable de laisser dépérir les pratiques antidumping plutôt que de tenter de les supprimer. Les émondages antérieurs se sont transformés en greffes qui n'ont fait que renforcer ces pratiques.

Les droits compensateurs poseront un problème tant que les gouvernements continueront de subventionner certains secteurs afin de redistribuer le revenu ou d'augmenter l'emploi. Les deux pays ont tenté sans succès de limiter les subventions accordées par les provinces, les États et les administrations locales, notamment lorsque ceux-ci se concurrencent pour attirer de nouveaux investissements. Les négociations régionales et multilatérales n'ont pas réussi à imposer une discipline dans ce domaine. Seules les contraintes budgétaires ou une révolte des contribuables semblent capable de mettre fin à ces subventions.

Les initiatives américaines fondées sur l'article 301 n'ont pas suscité de préoccupations importantes, mise à part l'importante exception des industries culturelles. Cette disposition a trait à l'article 301 de la *Trade Act* de 1974. Elle autorise le président à user de représailles contre les pratiques commerciales étrangères « déloyales ». Des actions unilatérales au titre de l'article 301 sont encore possibles si les politiques en cause ne sont pas expressément prévues dans les règles de l'Organisation mondiale du commerce. Comme le Canada insiste pour soustraire les industries culturelles aux dispositions de l'ALENA et de l'OMC, il est plus facile de contester les pratiques canadiennes en ce domaine en invoquant l'article 301. Les avocats nord-américains spécialisés en commerce international pourraient faire de bonnes affaires.

Les sanctions économiques. Ces instruments de politique étrangère n'ont que rarement fait l'objet de différends entre le Canada et les Etats-Unis, du moins jusqu'à l'adoption récente de la *Helms-Burton Act* aux États-Unis. De même, ces sanctions n'ont jamais sérieusement nui aux échanges ou aux investissements dans la région. Cependant, on doit s'inquiéter de la tendance à enchâsser les sanctions économiques dans des lois plutôt que dans des directives présidentielles comme ce fut le cas pour Cuba, l'Iran et l'Irak. Si cette tendance devait se renforcer, les États-Unis se retrouveraient de plus en plus mêlés à des différends acrimonieux avec le Canada et d'autres pays pour avoir utilisé pareilles sanctions.

Initiatives économiques bilatérales

Depuis une génération, les relations économiques canado-américaines reflètent une sensibilisation croissante à la nécessité de régler les conflits par voie de négociation plutôt que par des initiatives unilatérales. Les auteurs passent brièvement en revue les grands accords survenus durant cette période : le Pacte de l'automobile, l'ALE et l'ALENA.

Le Pacte de l'auto a stimulé l'investissement dans le secteur canadien de l'automobile et créé un réseau d'échanges très dense de part et d'autre de la frontière. Conceptuellement, le Pacte de l'auto a été le précurseur de l'Accord de libre-échange canado-américain. En effet, il a constitué la première dérogation importante à la politique de libéralisation multilatérale des échanges que les États-Unis poursuivaient depuis la Deuxième Guerre mondiale.

L'ALE a renforcé les relations commerciales bilatérales, a créé de nouveaux droits et de nouvelles obligations en matière d'investissement et de services en plus d'établir de nouveaux mécanismes de règlement des différends. Ces dispositions ont par la suite servi de modèle à d'autres négociations, tant régionales que multilatérales. Depuis l'ALE, les échanges bilatéraux ont crû au rythme de 21 p. 100 l'an dans le secteur des services financiers et à presque 30 p. 100 dans les secteurs voisins des services informatiques et de l'information. L'ALE a essentiellement fourni les assises institutionnelles à la libéralisation supplémentaire des échanges dans le cadre de l'ALENA.

LES 25 PROCHAINES ANNÉES

L'intégration économique : le cas de l'Allemagne et des pays du Benelux

Cette section traite de la convergence entre les économies de l'Allemagne et des pays du Benelux au cours des 30 dernières années et des leçons qu'elle recèle peut-être pour la convergence future des économies canadienne et américaine. L'intégration en Europe du Nord a été particulièrement poussée en raison des frontières communes et des liens linguistiques (le français et l'anglais y sont utilisés comme langues secondes). En 1960, les pays du Benelux et l'Allemagne de l'Ouest avaient atteint un niveau formel d'intégration semblable à celui atteint seulement en 1990 par le Canada et les États-Unis.

Les auteurs tirent de cette expérience européenne plusieurs conclusions.

Premièrement, en proportion du PIB, les échanges nord-américains continueront probablement d'augmenter. Quoique le ratio échanges/PIB augmente naturellement en raison de la mondialisation, en Europe il a progressé encore plus rapidement durant les années 60 et 70. Les auteurs attribuent cette différence aux efforts d'intégration.

L'intégration des économies européennes s'est traduite par une hausse de 50 p. 100 – par rapport à ce qui serait probablement arrivé par ailleurs – des

échanges intra-régionaux. Comme les barrières commerciales en Amérique du Nord sont moins élevées que celles qui existaient à l'époque en Europe, l'augmentation des échanges, sera forcément plus faible mais devrait atteindre entre 20 et 30 p. 100.

En outre, le ratio échanges/PIB va probablement augmenter au Canada et aux États-Unis. En 1993, les échanges de biens et de services équivalaient à 60 p. 100 du PIB au Canada et à 22 p. 100 aux États-Unis. Ces chiffres pourraient atteindre 80 p. 100 et 35 p. 100, respectivement, au cours des 20 prochaines années.

Cette évolution peut être décrite d'une autre façon : la croissance du ratio échanges/PIB signifie que les importations canadiennes et américaines croîtront d'un point de pourcentage de plus que le PIB réel.

Deuxièmement, si l'on se fie à de nombreux indicateurs macroéconomiques, l'Amérique du Nord a déjà atteint le niveau de convergence observé en Europe du Nord. Les deux indicateurs où l'on pourrait constater une convergence accrue sont le taux de change et le taux de chômage. Si le taux de change fluctue moins dans l'avenir, ce sera moins à cause de la politique suivie par la Banque du Canada qu'en raison de phénomènes fondamentaux comme la synchronisation des taux d'inflation. Par contre, l'impulsion attribuable aux marchés ouverts pour les biens et services va probablement entraîner une plus grande flexibilité du marché du travail au Canada et rapprocher les taux de chômage des deux pays.

Troisièmement, l'intégration n'exige pas que les politiques fiscales convergent. En Europe, même après une intégration économique très poussée, les régimes de taxation sont plus différenciées qu'ils ne l'étaient en 1965. En d'autres termes, les petits pays ont pu poursuivre des politiques sociales plus ambitieuses que leur grand partenaire. Les auteurs prévoient que les différences de structure fiscale entre le Canada et les États-Unis dureront encore un certain temps; ils ne voient pas pourquoi la convergence des économies forcerait, en soi, le Canada à s'aligner sur les préférences américaines pour des impôts et des dépenses publiques moins élevés.

Conséquences pour la compétitivité

L'expérience européenne laisse croire qu'il reste suffisamment de chemin à parcourir pour que la convergence entre les économies canadiennes et américaines se poursuive pendant encore une génération. Ce scénario fait ressortir quatre leçons pour les entreprises et les politiques canadiennes :

- Les entreprises doivent s'aligner sur le leader en matière de qualité et de coûts dans leur domaine, sinon elles risquent de disparaître. Elles doivent économiser la main-d'oeuvre et réduire leurs coûts au minimum.

- Les décisions relatives à l'emplacement des entreprises devraient être influencées au premier chef par la disponibilité et les habitudes de travail de la main-d'oeuvre.
- Les gouvernements pourraient constater que des subventions bien ciblées réussissent à attirer de nouvelles entreprises. Cependant, au regard des contraintes budgétaires, les élus devront établir des priorités entre les programmes généraux (comme de meilleures écoles) et les programmes ciblés comme l'aménagement d'accès routiers pour certains sites industriels.
- Les gouvernements devraient favoriser les taxes sur les biens et services, qui peuvent être rajustées à la frontière, et le régimes d'imposition du revenu assez uniformes pour éviter l'exode de personnes hautement qualifiées ou d'entreprises très profitables mais par ailleurs très mobiles.

L'AVENIR DE LA POLITIQUE COMMERCIALE ET SES CONSÉQUENCES POUR L'INTÉGRATION ÉCONOMIQUE DE L'AMÉRIQUE DU NORD

DANS LA DERNIÈRE PARTIE, LES AUTEURS EXPLIQUENT comment ils entrevoient l'évolution de la politique commerciale américaine et, comment celle-ci pourrait influer sur les relations économiques canado-américaines. Ils soutiennent que la politique commerciale américaine s'inscrira dans la continuité des dernières décennies et restera fondée sur une combinaison de mesures législatives intérieures, d'initiatives commerciales régionales et de négociations multilatérales dans le cadre de l'OMC. Les auteurs décrivent l'évolution probable des efforts actuels d'intégration économique dans l'hémisphère occidental et la région de l'Asie-Pacifique ainsi que les nouvelles initiatives au sein de l'OMC.

Les États-Unis et le Canada se sont engagés à éliminer les entraves au commerce entre leurs principaux partenaires de l'Amérique latine et de l'Asie-Pacifique. Si ces obstacles sont vraiment levés, la libéralisation des échanges et des investissements engendrera d'importantes réformes dans les économies dynamiques de l'Asie de l'Est et de l'Amérique du Sud. En Amérique du Nord, par contre, il ne sera guère nécessaire de modifier radicalement la plupart des politiques visant le secteur manufacturier, à l'exception notable de l'industrie du vêtement. La réforme du secteur agricole demeurera un sujet délicat dans les deux régions, comme ce fut le cas dans le contexte canado-américain. Pour les économies nord-américaines, les trois principales conséquences de ces engagements seront :

- des pressions accrues en vue de l'adaptation de l'industrie du vêtement;
- une concurrence plus vive dans les secteurs de la viande et des produits laitiers, de la part de l'Australie et de la Nouvelle-Zélande, et dans celui du sucre, de la part du Brésil et peut-être de Cuba;

- des marchés d'exportation en expansion chez les partenaires commerciaux régionaux en raison de l'accélération de la croissance suscitée par l'augmentation des échanges.

L'hémisphère occidental : les auteurs sont optimistes quant à l'avènement d'une Zone de libre-échange des Amériques (ZLEA), et ce, pour plusieurs raisons. Premièrement, les réformes économiques se poursuivent dans tout l'hémisphère et elles renforcent les bases de la croissance économique à moyen et à long terme. Deuxièmement, le processus du Sommet des Amériques fonctionne bien. Troisièmement, la dynamique de l'intégration poursuit sa progression dans le cadre de plusieurs accords sous-régionaux.

Quel est le cheminement le plus probable de la ZLEA? Les auteurs croient qu'une ZLEA se formera progressivement, dans la foulée pragmatique des efforts d'intégration au niveau sous-régional (y compris l'expansion de l'ALENA) et des tentatives faites à l'échelle de l'hémisphère pour harmoniser les règles nationales ou sous-régionales pouvant faire obstacle à la ZLEA. L'ALENA jouera un rôle clef dans l'intégration économique de l'hémisphère puisque ses membres sont à l'origine de 85 p. 100 de la production de l'hémisphère. Un renforcement des liens entre l'ALENA et MERCOSUR sera aussi essentiel.

Les négociations sur l'accession du Chili à l'ALENA devraient se dérouler rapidement une fois que le président américain aura obtenu du Congrès le renouvellement de son pouvoir d'utiliser la procédure accélérée (« fast track authority »). Les plus grandes difficultés découleront sans doute de certaines dispositions de l'ALENA qui vont au delà de celles de l'OMC, notamment les accords parallèles sur l'investissement, la propriété intellectuelle, les services, le travail et la protection de l'environnement.

L'Asie-Pacifique : le Canada et les États-Unis ont pris l'engagement d'œuvrer en vue d'une libéralisation complète des échanges et des flux d'investissement d'ici 2010 dans la région de l'APEC. Comment on atteindra cet objectif demeure obscur puisque le mode de négociation asiatique adopté par l'APEC laisse beaucoup d'incertitude quant à l'étendue et à l'échéancier des réformes nationales visant les pratiques commerciales. Les membres de l'APEC ont convenu d'éliminer les obstacles frontaliers au commerce, mais il reste à voir dans quelle mesure cet engagement s'étendra aux politiques nationales. À noter toutefois qu'on a déjà commencé à discuter d'un large éventail de sujets, y compris les politiques en matière d'investissement et de concurrence.

Il n'en demeure pas moins difficile d'imaginer que les réformes au sein de l'APEC puissent aller plus loin que les obligations de libre-échange déjà inscrites à l'ALENA. La norme canado-américaine en la matière constitue vraisemblablement un seuil maximum. La politique de concurrence est le seul domaine où l'APEC pourrait aller plus loin, puisque les efforts régionaux et multilatéraux en sont encore à leurs premiers balbutiements dans ce dossier.

Bref, les auteurs estiment que les négociations entre les gouvernements de l'APEC ne serviront pas de catalyseur à l'intégration économique nord-

américaine. Ce seront plutôt l'attrait des marchés asiatiques en expansion et les défis de la concurrence sur ces marchés qui dicteront la restructuration de l'industrie nord-américaine.

L'OMC : si les initiatives de libre-échange au niveau régional se poursuivent, elles devraient mener à de nouvelles négociations au sein de l'OMC en vue d'un libre-échange à l'échelle mondiale.

La question essentielle est de savoir si ces discussions futures sous l'égide de l'OMC peuvent conduire au même degré d'intégration poussée que l'on observe en Europe et qui s'installe en Amérique du Nord, y compris la convergence ou la réciprocité en matière de réglementation intérieure. Les négociations sous l'égide de l'OMC mettent en balance les normes européennes et celles d'autres régions. Dans certains domaines, les dispositions européennes sont plus rigoureuses que celles de l'ALENA et les politiques nord-américaines pourraient devoir être relevées à la norme européenne.

CONCLUSIONS

AU COURS DES 25 PROCHAINES ANNÉES, l'intégration économique nord-américaine s'accentuera sensiblement :

- La frontière canado-américaine deviendra aussi discrète que la frontière germano-hollandaise l'est aujourd'hui. Les obstacles frontaliers aux échanges vont passer à l'histoire : le recours aux mesures antidumping — déjà en déclin — disparaîtra au profit d'une concurrence au niveau de la réglementation et de subventions à l'investissement.
- Le commerce extérieur jouera un rôle de plus en plus grand dans les deux économies et les échanges bilatéraux continueront leur progression rapide.
- Les échanges avec l'Asie vont accaparer une part beaucoup plus grande des exportations et des importations du Canada et des États-Unis accélérant ainsi l'expansion des ports de la côte ouest.
- Quelle que soit l'issue de la question québécoise, les auteurs prévoient que l'expansion des pouvoirs des provinces et des États se poursuivra aux dépens de ceux des gouvernements fédéraux. Dans les deux pays, la direction de l'intégration économique sera davantage tributaire des provinces et des États que dans le passé. La dévolution des pouvoirs va réduire l'assiette fiscale des administrations centrales et continuer d'exercer une contrainte sur les dépenses sociales.

INTRODUCTION

LE CANADA ET LES ÉTATS-UNIS PARTAGENT la plus longue frontière démilitarisée au monde et sont, l'un pour l'autre, les plus importants partenaires commerciaux. Depuis l'époque coloniale jusqu'à la signature et à la mise en œuvre de l'ALENA, les deux économies ont eu des liens étroits. À partir du milieu du siècle dernier, de nombreux efforts ont été faits pour codifier ces liens dans des accords de libre-échange. Mais jusqu'à tout récemment, la raison politique avait triomphé de la raison économique.

Cette étude débute par une rétrospective des 25 dernières années de relations économiques bilatérales pour ensuite explorer comment les liens économiques entre le Canada et les États-Unis évolueront vraisemblablement au cours du prochain quart de siècle. De l'analyse des sources de « l'intégration silencieuse » de la dernière génération et de celle de la très médiatisée diplomatie commerciale de cette période, les auteurs tentent de déceler des indices de l'évolution future des relations économiques bilatérales.

LES 25 DERNIÈRES ANNÉES

L'INVESTISSEMENT ET LE COMMERCE BILATÉRAL

LE CANADA S'EST TOUJOURS SOUCIÉ de ses relations commerciales avec les États-Unis. Il y a 25 ans, les échanges bilatéraux de marchandises atteignaient les 20 milliards de dollars et représentaient 65 p. 100 des échanges du Canada et 24 p. 100 de ceux des États-Unis. Entre 1970 et 1995, les exportations canadiennes se sont de plus en plus orientées vers les États-Unis, en dépit des efforts de diversification de l'époque Trudeau. La part des importations canadiennes provenant des États-Unis est demeurée constante durant cette période. En 1995, les échanges bilatéraux s'étaient multipliés par plus de 10 pour atteindre 260 milliards de dollars. La dépendance du Canada par rapport au marché américain a atteint 74 p. 100 de l'ensemble de ses échanges; la part du Canada dans le commerce des États-Unis a par contre diminué et n'est plus que de 20 p. 100 (tableau 1).

En termes simples, le marché américain est plus important pour le Canada que ne l'est le marché canadien pour les États-Unis. L'importance du marché américain pour le Canada ressort du fait que 25 p. 100 du personnel canadien chargé de la promotion économique et commerciale est en poste aux États-Unis. La disparité entre les deux pays au titre de l'importance relative des échanges bilatéraux reflète la différence de taille entre les deux pays : la population des États-Unis est dix fois supérieure à celle du Canada (tableau 2).

Le commerce bilatéral

Le Canada fait partie des pays de l'OCDE qui dépendent le plus des échanges commerciaux, tandis que les États-Unis sont l'un des pays qui en dépendent le moins. Chacun est le meilleur client de l'autre, mais les États-Unis n'ont pas de rivaux étrangers sur le marché canadien tandis que le Canada n'est que le premier parmi plusieurs partenaires commerciaux importants des États-Unis. En 1995, 80 p. 100 des exportations de marchandises canadiennes sont allées aux États-Unis et 66 p. 100 des importations canadiennes provenaient de ce pays. Les chiffres américains correspondant, 22 et 19 p. 100, marquent bien le contraste entre les deux pays.

Le commerce bilatéral continue de croître plus rapidement que le PIB. De 1970 à 1995, les exportations américaines au Canada (tout comme les importations) ont crû à un taux annuel de 11 p. 100 (tableau 3). Ces données sur les échanges sont en dollars courants; calculée de la même façon, la croissance du PIB américain s'établit à 8,5 p. 100 durant cette période.

Le tableau 4 montre la composition des échanges bilatéraux au cours des 25 dernières années. Les machines et le matériel de transport dominent ces échanges; rien là d'étonnant puisque c'est dans ces domaines que les deux pays ont élaboré les premiers accords de commerce administré. Ces secteurs

TABLEAU 1

COMMERCE BILATÉRAL DES MARCHANDISES, 1960-1995
PART EN POURCENTAGE

	1960	1965	1970	1975	1980	1985	1990	1995
Canada								
(Part des États-Unis)								
Importations	70	68	66	66	68	69	63	66
Exportations	58	62	62	62	61	75	75	80
États-Unis								
(Part du Canada)								
Importations	23	28	22	22	16	19	22	19
Exportations	20	21	20	20	16	22	18	22

Source : *Direction of Trade Statistics Yearbook*, FMI.

TABLEAU 2

COMPARAISONS CANADA–ÉTATS-UNIS, DONNÉES DE BASE, 1965-1993

		1965	1970	1975	1980	1985	1990	1993
États-Unis								
Population	M	194,3	205,1	216,0	227,8	238,5	249,9	257,8
PIB réel, 1987	M $US	2 436 653	2 828 484	3 166 350	3 732 761	4 244 497	4 863 689	5 132 829
PIB réel par habitant, 1987	$US	12 540	13 794	14 661	16 389	17 799	19 461	19 907
PIB nominal	M $US	704 094	1 011 563	1 587 563	2 708 147	4 016 650	5 489 600	6 259 899
Exportations (biens et services non fin.)	M $US	36 742	59 087	136 993	277 525	296 384	548 900	647 800
Importations (biens et services non fin.)	M $US	31 529	55 760	122 729	293 896	417 623	628 500	724 300
Exportations et importations de biens et services commerciaux en pourcentage du PIB		9,7	11,4	16,4	21,1	17,8	21,4	21,9
Canada								
Population	M	19,7	21,3	23,2	24,6	25,9	27,8	28,8
PIB réel, 1987	M $US	171 476	215 308	275 314	332 522	383 484	441 722	446 132
PIB réel par habitant, 1987	$US	8 714	10 097	11 862	13 520	14 782	15 894	15 500
PIB nominal	M $US	52 867	84 438	167 236	263 192	347 379	568 072	546 350
Exportations (biens et services non fin.)	M $US	9 915	19 165	38 297	74 904	98 807	144 773	161 405
Importations (biens et services non fin.)	M $US	10 020	17 019	40 664	70 075	90 362	146 750	164 726
Exportations et importations de biens et services commerciaux en pourcentage du PIB		37,7	42,9	47,2	55,1	54,5	51,3	59,7

Source : *World Data 1995*, Banque mondiale, 1995.

TABLEAU 3

LE COMMERCE DES MARCHANDISES ENTRE LE CANADA, LES ÉTATS-UNIS ET LE RESTE DU MONDE, 1961-1995
MILLIARDS DE $US

	1961	1965	1970	1975	1980	1985	1990	1995	Croissance annuelle moyenne 1970-1995
Canada									
Importations des É.-U.	3,9	5,6	9,5	23,1	41,2	54,1	75,3	109,0	10,3 %
Importations totales	5,8	8,0	14,0	35,2	61,0	78,7	119,7	164,3	10,4 %
Exportations aux É.-U.	3,2	4,7	10,4	21,2	41,1	68,3	95,4	152,8	11,3 %
Exportations totales	8,0	8,1	16,7	34,1	67,7	90,8	126,4	190,2	10,2 %
États-Unis									
Importations du Canada	3,3	4,9	11,1	22,8	42,0	69,4	85,3	148,3	10,9 %
Importations totales	14,8	21,4	40,0	103,4	257,0	361,6	39,3	770,9	12,6 %
Exportations au Canada	3,7	5,6	9,1	21,7	35,4	47,3	93,8	126,0	11,1 %
Exportations totales	21,0	27,4	43,2	107,6	220,8	213,1	517,0	582,5	11,0 %

Source : *Direction of Trade Statistics Yearbook*, FMI.

TABLEAU 4A

EXPORTATIONS DES ÉTATS-UNIS AU CANADA, 1970-1995
VALEUR F.A.S[a]., EN MILLIARDS DE $US

	1970	1975	1980	1985	1990	1995	Croissance annuelle moyenne
0—Aliments et animaux vivants	547,6	1 042,0	1 451,2	1 305,3	4 467,5	6 144,0	10,2 %
1—Boissons et tabac	8,8	13,8	89,4	65,4	133,9	215,4	13,6 %
2—Matières brutes non comestibles 535,9 sauf les carburants	906,9	1 826,2	1 487,4	2 986,6	4 413,1	8,8 %	
3—Carburants minéraux, lubrifiants 271,3 et matières connnexes	866,5	1 843,1	1 604,7	2 167,9	1 472,5	7,0 %	
4—Huiles, gras, cires d'origine végétale et animale	21,8	48,3	32,4	32,6	58,8	130,5	7,4 %
5—Produits chimiques et produits connexes n.m.a.[b]	553,8	1 222,7	2 134,4	2 698,1	6 139,3	10 652,5	12,6 %
6—Biens manufacturés classés principalement par matière	1 137,6	3 023,0	3 773,3	3 937,0	10 096,7	16 252,3	11,2 %
7—Machines et matériel de transport4 869,6	12 360,1	17 993,8	26 900,6	45 294,2	69 717,2	11,2 %	
8—Articles manufacturés divers	574,8	1 292,8	2 427,2	2 757,0	7 926,9	12 686,7	13,2 %
9—Marchandises et transactions n.m.a.	270,5	531,4	2 397,1	4 240,9	3 694,7	4 339,8	11,7 %
Total	8 791,8	21 307,4	33 968,0	45 028,9	82 966,5	126 024,1	11,2 %

a Franco le long du navire.
b Non mentionnés ailleurs.
Source : U.S. Department of Commerce.

TABLEAU 4B

IMPORTATIONS AUX ÉTATS-UNIS EN PROVENANCE DU CANADA, 1970-1995
VALEUR EN DOUANE, EN MILLIARDS DE $US

	1970	1975	1980	1985	1990	1995	Croissance annuelle moyenne
0—Aliments et animaux vivants	463,1	673,6	1 393,4	2 376,4	3 768,1	5 655,3	10,5 %
1—Boissons et tabac	181,9	246,4	387,7	495,8	594,9	680,1	5,4 %
2—Matières brutes non comestibles sauf les carburants	1 679,2	2 770,2	5 239,0	5 583,1	7 481,6	10 920,2	7,8 %
3—Carburants minéraux, lubrifiants et matières connexes	1 000,1	4 708,8	7 114,0	10 071,2	9 846,2	13 686,4	11,0 %
4—Huiles, gras, cires d'origine végétale et animale	1,2	4,8	5,8	20,5	92,4	339,2	25,3 %
5—Produits chimiques et produits connexes n.m.a.[a]	361,6	795,3	2 493,6	2 912,9	4 305,0	8 150,4	13,3 %
6—Biens manufacturés classés principalement par matière	2 222,5	3 625,6	8 175,5	10 716,6	15 778,4	25 389,1	10,2 %
7—Machines et matériel de transport	4 404,8	7 966,2	12 304,9	29 396,8	40 754,4	63 794,9	11,3 %
8—Articles manufacturés divers	282,4	475,7	1 642,5	2 997,5	3 593,8	7 760,9	14,2 %
9—Marchandises et transactions n.m.a.	494,1	903,2	2 698,9	4 435,6	5 157,2	8 742,2	12,2 %
Total	11 091,1	22 169,8	41 455,4	69 006,3	91 372,0	14 5118,7	10,8 %

a Non mentionnés ailleurs.
Source : U.S. Department of Commerce.

TABLEAU 5

LES DIX PRINCIPAUX ACHETEURS DE PRODUITS MANUFACTURÉS DES ÉTATS-UNIS, 1989-1995
POURCENTAGE DES EXPORTATIONS DE PRODUITS MANUFACTURÉS DES ÉTATS-UNIS

	1989	1990	1991	1992	1993	1994	1995
Canada	25	23	22	22	23	24	23
Japon	9	10	9	8	8	8	9
Mexique	7	8	8	9	9	10	8
Royaume-Uni	7	7	6	6	6	6	5
Allemagne	5	5	6	5	4	4	4
Corée du Sud	3	3	3	3	3	3	4
Taïwan	3	3	3	3	3	3	3
Singapour	2	2	2	2	3	3	3
Pays-Bas	3	3	3	3	3	3	3
France	4	4	4	4	3	3	3

Source : U.S. Department of Commerce.

comptent pour 40 à 45 p. 100 des échanges de la période, exception faite de la période de forte inflation et de prix pétroliers élevés de la fin des années 70 et du début des années 80. La part des carburants minéraux a fléchi depuis le premier choc pétrolier des années 70; les échanges d'aliments et boissons sont demeurés stables entre 5 et 6 p. 100 du total. Selon le Département du commerce des États-Unis, le Canada arrive régulièrement en tête de liste des acheteurs étrangers de biens manufacturés américains (tableau 5); les achats canadiens comptent pour près de 25 p. 100 du total, soit un peu plus que la part de l'ensemble des exportations américaines accaparée par le Canada.

Les échanges de services ont crû à peu près au même rythme que les échanges de marchandises : les exportations canadiennes de services commerciaux vers les États-Unis augmentent de 13 p. 100 l'an depuis 1982; les exportations américaines équivalentes croissent de 10 p. 100 l'an (tableau 6). Comme on pouvait s'y attendre, les échanges bilatéraux de services informatiques et d'information ont fortement augmenté sur l'ensemble de la période et sont ceux ayant connu la croissance la plus rapide depuis 1990. Toutefois, les exportations américaines de services de gestion demeurent en tête de liste : en 1994 elles se chiffraient à 2,5 milliards de dollars En outre, ce chiffre ne comprend pas les ventes des filiales de sociétés américaines de conseils en gestion qui ont proliféré récemment à Vancouver, Toronto et dans d'autres grandes villes canadiennes.

TABLEAU 6

ÉCHANGES DE SERVICES COMMERCIAUX ENTRE LES ÉTATS-UNIS ET LE CANADA, 1982-1994
MILLIONS DE $CAN

	1982	1986	1990	1994	Croissance annuelle moyenne 1982-1994	Croissance annuelle moyenne 1990-1994
Du Canada aux États-Unis						
Communications	87	126	210	324	12 %	11 %
Assurances	264	569	725	828	10 %	3 %
Autres services financiers		144	229	489	17 %	21 %
Services informatiques et d'information	44	110	155	608	24 %	41 %
Redevances et droits de licences	15	47	69	20	24 %	31 %
Commissions	247	358	516	863	11 %	14 %
Location d'équipement	105	165	156	198	5 %	6 %
Services de gestion	49	161	451	497	21 %	2 %
Publicité	30	21	55	32	1 %	-13 %
Recherche et développement	122	465	755	793	17 %	1 %
Services d'architecture et d'ingénierie	105	194	212	589	15 %	29 %
Services commerciaux divers	608	966	973	1 375	7 %	9 %
Services personnels, culturels et de loisir	74	147	267	269	11 %	0 %
Total	1 732	3 452	4 920	7 336	13 %	11 %

TABLEAU 6 (SUITE)

	1982	1986	1990	1994	Croissance annuelle moyenne 1982-1994	Croissance annuelle moyenne 1990-1994
Des États-Unis au Canada						
Communications	7	31	78	121	27 %	12 %
Assurances	360	686	1 157	1 064	9 %	-2 %
Autres services financiers	54	292	385	521	21 %	8 %
Services informatiques et d'information	69	109	513	989	25 %	18 %
Redevances et droits de licences	761	989	1 450	1 810	7 %	6 %
Commissions	218	333	390	595	9 %	11 %
Location d'équipment	333	328	260	356	1 %	8 %
Services de gestion	685	976	1 525	2 447	11 %	13 %
Publicité	53	122	171	288	15 %	14 %
Recherche et développement	287	978	761	850	9 %	3 %
Services d'architecture et d'ingénierie	130	136	253	512	12 %	19 %
Services commerciaux divers	864	1 353	1 048	1 490	5 %	9 %
Services personnels, culturels et de loisir	127	138	263	334	8 %	6 %
Total	3 961	6 431	8 690	11 812	10 %	8 %

Nota : Les totaux peuvent ne pas correspondre en raison de l'omission de certaines catégories.
Source : Statistique Canada.

Une distinction qui s'estompe : l'intégration commerciale Canada – États-Unis

La majorité des Canadiens vivent dans des centres urbains situés à moins de 160 kilomètres de la frontière américaine. Ces distances et la concentration géographique des consommateurs canadiens déterminent dans une large mesure les relations canado-américaines. Cent millions de consommateurs américains résident à moins d'une journée de conduite du sud de l'Ontario; à partir de Chicago les routiers ne prennent que quinze heures pour rejoindre Winnipeg. De même il ne faut pas plus d'une journée de route pour livrer à Montréal, Toronto ou Halifax au départ de Boston, NewYork ou Philadelphie (tableau 7). Toujours par la route, les marchandises mettent deux jours pour aller de Vancouver à Los Angeles, beaucoup moins qu'il n'en faut à partir de Chicago. Un réseau ferroviaire de plus en plus intégré vient renforcer ces axes de transport. En outre, le trafic aérien entre le Canada et les États-Unis est le plus dense observé entre deux pays : environ 13 millions de passagers par an. Le nouvel accord bilatéral sur le transport aérien, conclu en février 1995 et connu sous le nom d'accord « Ciels ouverts », a engendré un million de passages additionnels dès sa première année[1].

Cet accord permet aux transporteurs canadiens de relier n'importe quel point entre le Canada et les États-Unis; il en va de même pour les transporteurs américains à l'exception de 3 destinations : Montréal, Toronto et Vancouver. Ces dernières restrictions disparaîtront en 1998. L'accord prévoit 23 trajets nouveaux pour les transporteurs canadiens, 33 pour les vols nolisés et 46 nouveaux trajets pour les transporteurs américains. Le jour même de la signature de l'accord « ciels ouverts », on paraphait une entente sur la gestion de la frontière commune destinée à faciliter les mouvements transfrontaliers réguliers, par voie aérienne et terrestre.

Plusieurs marchés régionaux se sont constitués le long de la frontière. Des villes canadiennes parmi les plus importantes sont situées plus près de leurs voisines américaines que canadiennes. L'un des liens routiers les plus utilisés, le pont Ambassador (le plus long pont suspendu entre deux pays) relie Détroit à Windsor-Essex-Tilburg, au coeur de l'industrie automobile canadienne. Les transporteurs de fret peuvent aussi emprunter le tunnel entre Détroit et Windsor. Plus à l'ouest, les provinces du Manitoba, de la Saskatchewan et de l'Alberta se sont jointes au Minnesota et au Dakota du Nord dans divers projets de promotion commerciale comme l'association du corridor commercial du centre de l'Amérique du Nord ou le corridor commercial de la rivière Rouge.

Depuis quelques années, les échanges au sein des marchés régionaux qui se sont constitués le long de la frontière ont progressé plus rapidement qu'à l'échelon national (tableau 8). Les exportations au Canada en provenance des 10 États frontaliers ont crû en moyenne de 42 p. 100 par an entre 1993 et 1995, soit beaucoup plus vite que l'ensemble des échanges canado-américains (26 p. 100). Près de 50 p. 100 des exportations américaines au Canada proviennent

TABLEAU 7

DURÉE DU TRAJET
HEURES

	New York	Chicago	San Francisco
Halifax à	24	56	144
Montréal à	18	25	120
Toronto à	12	20	108
Winnipeg à	72	36	84
Calgary à	82	46	58
Vancouver à	108	70	36

Source : Canada, Ministère des affaires étrangères et du commerce international.

TABLEAU 8

EXPORTATIONS AU CANADA EN PROVENANCE DE DIVERS ÉTATS AMÉRICAINS, 1993-1995
MILLIARDS DE $US

	1993	1994	1995	Taux de change 1993-1995
Alaska	0,08	0,12	0,20	132,9 %
Washington	1,72	1,86	2,29	32,8 %
Idaho	0,16	0,21	0,29	86,6 %
Montana	0,14	0,14	0,14	-3,2 %
Dakota du Nord	0,23	0,25	0,32	38,7 %
Minnesota	1,95	2,11	2,44	25,2 %
Wisconsin	1,95	2,44	2,81	44,2 %
Illinois	4,86	5,76	6,45	32,8 %
Indiana	4,26	4,59	4,59	7,7 %
Michigan	11,43	20,81	21,94	91,8 %
Ohio	7,67	8,50	8,88	15,7 %
Pennsylvanie	3,73	4,07	4,67	25,2 %
New York	6,58	7,49	9,24	40,5 %
Vermont	2,08	2,06	2,51	20,9 %
New Hampshire	0,38	0,42	0,49	31,1 %
Maine	0,36	0,41	0,40	29,7 %
Total, É.-U.	100,19	114,25	126,02	25,8 %
Total, États frontaliers	47,59	61,24	67,74	42,3 %

Source : U.S. Department of Commerce.

maintenant des États frontaliers. De même, les zones métropolitaines adossées à la frontière comme Toronto, Windsor et Vancouver expédient pro-bablement plus de 50 p. 100 des exportations canadiennes vers les États-Unis.

Chaque année, 23 millions d'Américains se rendent au Canada pour moins d'une journée et 35 millions y font des séjours plus longs, de trois ou quatre jours. Environ 54 millions de Canadiens vont aux États-Unis chaque année; 40 millions de ces voyages sont d'une seule journée. Comme la population canadienne est de 30 millions, le Canadien moyen effectue plus d'un séjour par an aux États-Unis. Il devient de plus en plus facile de franchir la frontière : les citoyens américains n'ont même pas besoin de passeport pour entrer au Canada, un permis de conduire ou un certificat de naissance suffit. Dans quelques années, il sera fréquent de voir les douaniers d'un pays appliquer simultanément les contrôles de l'autre pays.

Investissement étranger direct

L'investissement est un autre lien économique important. Beaucoup de sociétés américaines ont ouvert des filiales au Canada; celles-ci ont souvent connu des performances supérieures à celles de l'entreprise mère. Les filiales canadiennes bénéficient de la proximité de leur quartier général américain; le PDG de Compaq Canada l'a exprimé en ces termes : « Nous sommes en mesure de profiter des programmes, des idées et des initiatives prises aux États-Unis ...Nous sommes à trois heures de vol de Houston et, ainsi, en mesure de comprendre comment la dynamique du marché américain affecte le Canada et de prendre en compte les exigences propres au marché canadien[2] ».

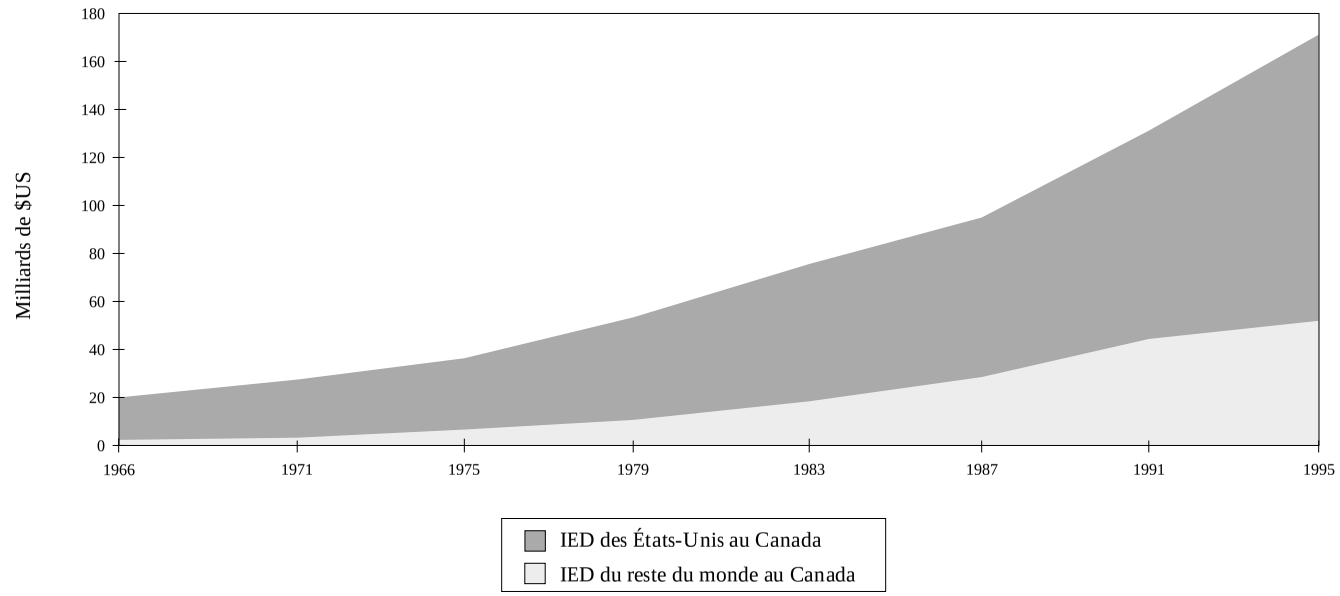
Les investissements de portefeuille des Américains au Canada ont toujours été – et demeurent – une source importante de financement des déficits des gouvernements canadiens. En 1991, les États-Unis détenaient 138 milliards de dollars en titres canadiens soit 38 p. 100 du total. Ils constituent la principale source de financement extérieur du pays, les avoirs japonais venant loin derrière avec 58 milliards de dollars (16 p. 100 du total).

En dépit de l'importance historique des flux d'investissement direct américains vers le Canada, on a observé un léger recul de la part des États-Unis dans le stock total d'IED au Canada durant les années 80 et 90 (figures 1 et 2). Seul le secteur financier a vu l'investissement direct américain augmenter en termes réels durant cette période; les secteurs du pétrole et des mines ont par contre vu fléchir la valeur réelle de l'IED américain. Le maladroit Programme énergétique national de l'époque Trudeau a contribué à ce déclin, mais une cause plus importante a sans doute été le mauvais climat d'investissement dans les secteurs pétrolier et minier depuis le début des années 80.

Contrairement à la robuste croissance des échanges bilatéraux, celle des flux d'investissement bilatéraux a été plutôt modeste depuis 1990 (tableau 9). Entre 1970 et 1994, l'IED canadien aux États-Unis a augmenté de 11 p. 100 par année alors que l'investissement américain au Canada progressait de 5 p. 100

FIGURE 1

INVESTISSEMENT ÉTRANGER DIRECT AU CANADA, 1966-1995



Source : Statistique Canada.

FIGURE 2

STOCK D'INVESTISSEMENT ÉTRANGER DIRECT AU CANADA, PART DES ÉTATS-UNIS

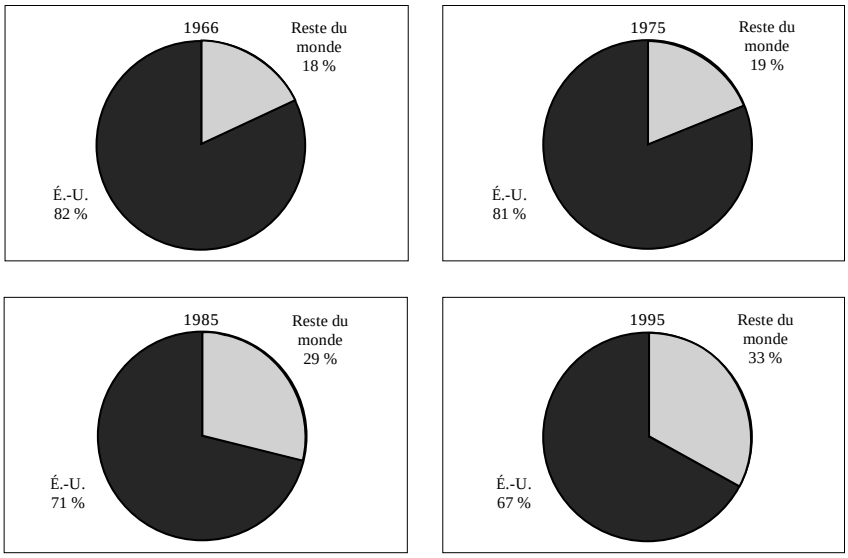
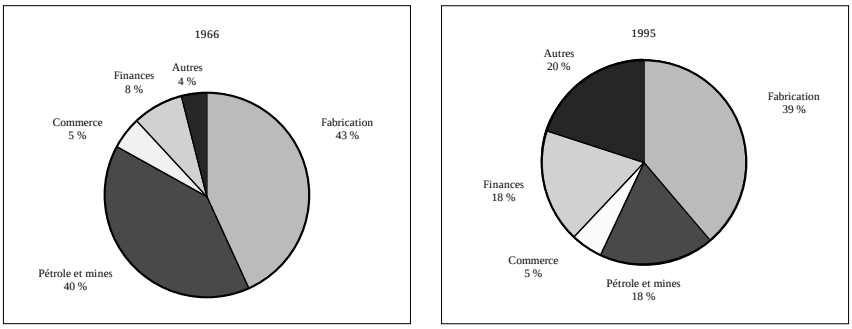


FIGURE 3

IED DES ÉTATS-UNIS AU CANADA, PAR SECTEUR, 1966 ET 1995



Source : Statistique Canada.

TABLEAU 9

STOCKS D'INVESTISSEMENT ÉTRANGER DIRECT (IED), ÉTATS-UNIS ET CANADA, 1970-1994
MILLIARDS DE $US

	Pétrole	Fabrication	Services[a]	Autres	Total
IED du Canada aux États-Unis					
1970	0,5	1,9	0,5	0,4	3,3
1975	1,0	3,1	0,6	0,9	5,6
1980	1,5	3,5	1,1	5,6	11,7
1985	1,6	4,6	1,5	9,4	17,1
1990	1,4	9,3	2,4	14,6	27,7
1994	2,6	16,9	2,0	21,8	43,2
Taux de croissance annuel	7,1 %	9,5 %	5,8 %	18,1 %	11,3 %
IED des États-Unis au Canada					
1970	5,3	9,2	1,8	5,1	21,4
1975	7,8	13,8	4,1	6,6	32,3
1980	10,4	18,8	6,1	8,2	43,5
1985	10,5	21,8	6,3	8,5	47,1
1990	10,7	31,6	13,1	10,2	65,5
1994	8,6	35,0	13,0	16,3	72,8
Taux de croissance annuel	2,0 %	5,7 %	8,6 %	5,0 %	5,2 %

a Pour l'investissement canadien aux États-Unis, les données portent sur le commerce de gros.
Pour l'investissement américain au Canada, les données portent sur les services financiers et bancaires.

Source : U.S. Department of Commerce.

l'an en valeur nominale. Depuis 1990, on observe une légère accélération du rythme de croissance de l'IED canadien, tandis que celui de l'IED américain au Canada a ralenti à 2 p. 100. Ces divergences entre les tendances du commerce et de l'investissement laissent penser que les entreprises américaines augmentent leur production dans les établissements les plus efficaces et ferment progressivement les installations de plus petite taille dont l'existence dépendait des barrières tarifaires.

Questions de politique macro-économique

Le Canada et les États-Unis sont deux pays industriels, riches et démocratiques, à économie de marché. Le Canada est dix fois plus petit que les États-Unis, pour ce qui est de la population et du PIB; son revenu par habitant est aussi légèrement inférieur à celui des États-Unis. En dépit de leurs ressemblances, il existe des différences fondamentales entre les deux pays. Aux États-Unis, les gouvernements jouent un rôle beaucoup moins grand dans la vie économique. Une ligne de démarcation claire sépare les secteurs public et privé. Au contraire, les Canadiens sont très attachés à leur régime universel d'assurance-santé, aux subventions à l'éducation et aux prestations d'assurance-chômage de longue durée.

Le tableau 10 montre la différence entre le Canada et les États-Unis en matière de dépenses gouvernementales. Si les gouvernements fédéraux des deux pays accaparent une part semblable du PIB, les provinces canadiennes dépensent deux fois plus que les États américains.

Au cours des dernières années, le déficit budgétaire au Canada a été deux fois plus grand qu'aux États-Unis. La dette extérieure canadienne dépasse 100 p. 100 du PIB, alors que ce chiffre n'atteint pas 20 p. 100 aux États-Unis. Cet état de fait préoccupe les citoyens et réduit la marge de manoeuvre des dirigeants politiques canadiens. Ceux-ci se retrouvent coincés en quelque sorte entre les coûts énormes des programmes sociaux et le soutien politique dont jouissent ces mesures. Les dépenses publiques au titre des programmes sociaux atteignent 30 p. 100 du PIB[3] et le service de la dette, 25 p. 100. Le gouvernement est donc acculé à des choix difficiles entre réduire les dépenses des secteurs politiquement sensibles, comme la défense, le développement régional et l'agriculture, et continuer à accumuler les déficits. Les débats parlementaires ont fini par ressembler aux tirades budgétaires entendues au Congrès américain. Le gouvernement Chrétien s'est engagé à réduire le déficit à 3 p. 100 du PIB pour l'exercice financier 1996-1997 et plusieurs provinces se sont attaqué résolûment à leurs déficits.

En 1970, les impôts sur le revenu et les bénéfices des sociétés représentaient la même proportion du PIB dans les deux pays (tableau 11). Depuis lors, cette fraction a diminué aux États-Unis et augmenté au Canada; en 1993 la différence atteignait 3 p. 100 du PIB. Les taxes sur les biens et services ont syatématiquement été deux fois plus lourdes au Canada qu'aux États-Unis, donnant aux Canadiens une raison additionnelle de franchir la frontière. La taxe sur les

TABLEAU 10

REVENUS ET DÉPENSES DES GOUVERNEMENTS, ÉTATS-UNIS ET CANADA, 1972-1992
POURCENTAGE DU PIB

	1972	1976	1980	1984	1988	1992
États-Unis						
Gouvernement fédéral						
Revenus	17,7	17,6	20,2	19,0	19,6	19,1
Dépenses	19,2	21,2	22,0	22,8	22,8	24,0
Gouvernements des États						
Revenus	6,7	6,8	7,0	7,5	8,1	8,7
Dépenses	8,5	8,8	8,9	8,7	9,4	10,9
Canada						
Gouvernement fédéral						
Revenus	18,6	19,1	18,6	19,2	19,7	20,9
Dépenses	17,8	20,1	21,2	25,0	22,0	25,2
Governments provinciaux						
Revenus	12,8	14,8	16,0	16,6	16,5	17,1
Dépenses	17,8	19,7	20,3	22,1	21,5	25,1

Sources : *Government Finance Statistics* et *Statistiques financières internationales*, FMI.

TABLEAU 11

RECETTES FISCALES, ÉTATS-UNIS ET CANADA, 1965-1993
POURCENTAGE DU PIB

	1965	1970	1975	1980	1985	1990	1993
Canada							
Impôts sur le revenu et les bénéfices	10,0	14,0	15,3	14,7	14,6	17,7	15,7
Charges sociales	0,5	1,3	1,2	1,2	1,5	1,2	1,3
Impôts fonciers	3,7	4,0	3,1	2,9	3,1	3,6	4,0
Taxes sur les biens et services	10,5	9,9	10,4	10,3	10,5	9,4	9,5
Total	25,9	31,3	32,4	31,6	33,1	36,5	35,6
États-Unis							
Impôts sur le revenu et les bénéfices	11,9	14,0	12,6	13,8	12,3	12,7	12,6
Charges sociales	1,7	2,4	1,9	2,9	3,2	3,4	3,4
Impôts fonciers	3,9	4,0	3,8	2,9	2,9	3,2	3,4
Taxes sur les biens et services	5,7	5,6	5,4	4,9	5,1	4,8	5,1
Total	25,8	29,2	29,0	29,3	28,7	29,4	29,7

Source : *Statistiques des recettes publiques des pays membres de l'OCDE*, OCDE, 1995.

produits et services (TPS) — une taxe à la consommation de 7 p. 100 calculée sur la valeur ajoutée, perçue en cascade — rapporte beaucoup mais s'avère très impopulaire auprès des consommateurs canadiens. Lors de la campagne électorale de 1993, le Parti libéral a promis de remplacer la TPS par un système engendrant des revenus équivalents mais ménageant davantage les consommateurs et les petites entreprises. À ce jour, cette promesse est restée lettre morte. Les porte-parole de la droite se plaignent donc amèrement des coûts pour les entreprises des politiques canadiennes.

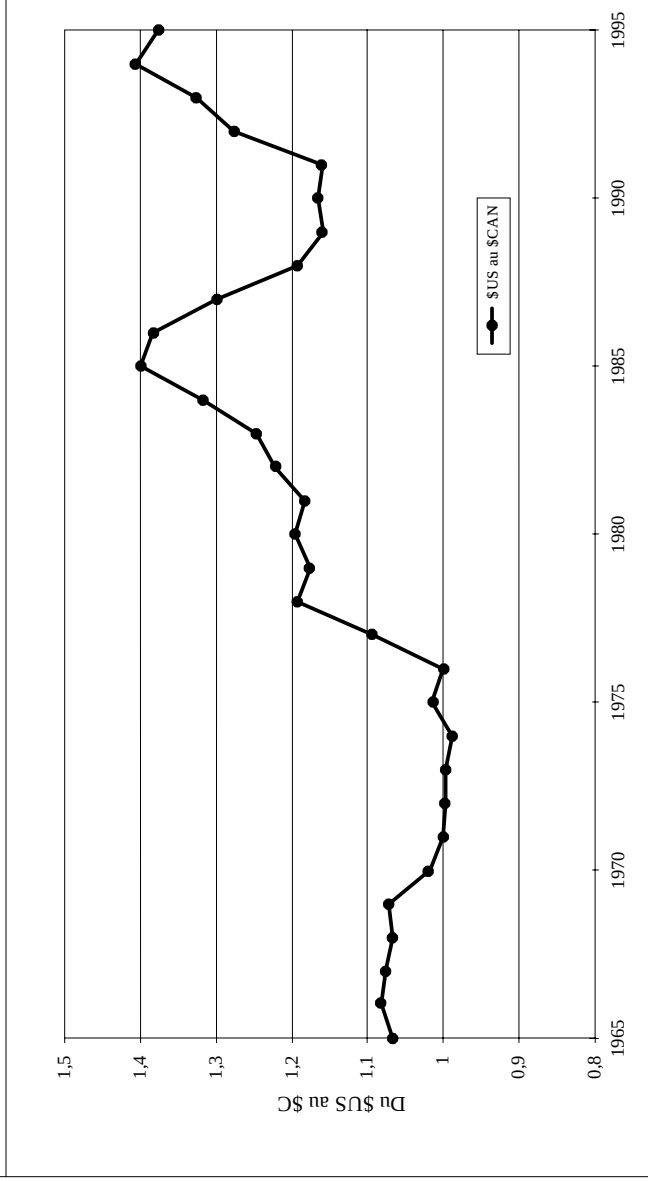
Comme l'indiquent les montants de dépenses publiques, le gouvernement fédéral et les provinces sont des acteurs de premier plan dans l'économie canadienne. Les gouvernements au Canada ont poursuivi des objectifs industriels et ont stimulé le secteur manufacturier afin de réduire la dépendance à l'égard des ressources naturelles. Grâce à ce ciblage des activités industrielles, les exportations canadiennes ont évolué vers les produits finis, aux dépens des produits de la forêt et des autres ressources naturelles. Traditionnellement, le Canada a utilisé des tarifs douaniers pour favoriser le développement industriel et ces tarifs étaient généralement plus élevés que ceux des États-Unis. Cette caractéristique est évidemment en voie de disparaître dans le cadre de l'ALENA. Les tarifs imposent des coûts importants aux producteurs (et consommateurs) canadiens qui importent des biens de l'extérieur de l'Amérique du Nord; dans certains secteurs, ces coûts rendent les entreprises canadiennes moins concurrentielles que les autres entreprises nord-américaines. Reconnaissant ce problème, le Canada a réduit ses tarifs (de la nation la plus favorisée) sur les textiles peu de temps après la signature de l'ALENA, de façon à permettre aux producteurs canadiens de vêtements de mieux soutenir la concurrence des entreprises américaines et mexicaines.

Bien que les deux économies soient étroitement intégrées, le taux de change continue de fluctuer de façon importante (figure 4). Depuis 1975, le Canada n'a pas tenté d'arrimer la valeur de sa monnaie au dollar américain. La Banque du Canada considère que le taux de change est certes important mais qu'il n'est pas le facteur décisif dans ses décisions de politique monétaire. Entre 1985 et 1990, la force du dollar canadien a considérablement réduit la compétitivité des entreprises canadiennes par rapport à leurs concurrentes américaines. Depuis 1990, le taux de change est devenu plus favorable aux entreprises canadiennes.

L'économie canadienne évolue parallèlement à l'économie américaine sans pour autant que leurs cheminements soient identiques. Les liens les plus étroits se retrouvent sur les marchés monétaires. La corrélation (figure 5) est presque parfaite entre les taux canadiens et américains à 10 ans. De fait, pour cinq des six périodes étudiées, elle atteint ou dépasse 0,90. De même, la corrélation est forte (figure 6) entre les prix canadiens et américains des actions pour la plupart des périodes quinquennales (environ 0,60 en moyenne). Toutefois, elle était inférieure à 0,40 pour la période 1991-1995.

FIGURE 4

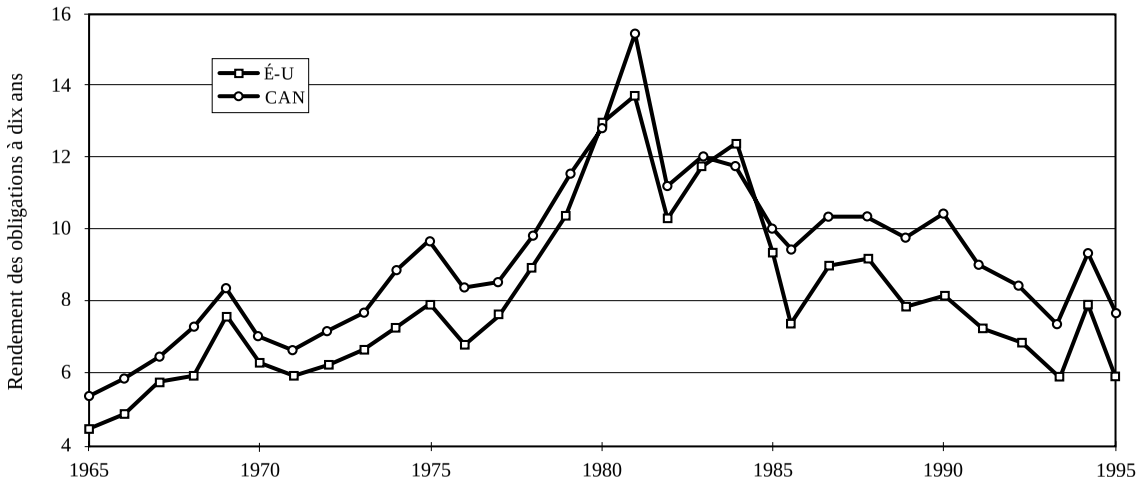
TAUX DE CHANGE ENTRE LE CANADA ET LES ÉTATS-UNIS, 1965-1995



Source : *Statistiques financières internationales*, FMI.

FIGURE 5

TAUX D'INTÉRÊT À MOYEN TERME AUX ÉTATS-UNIS ET AU CANADA, 1965-1995
POURCENTAGE



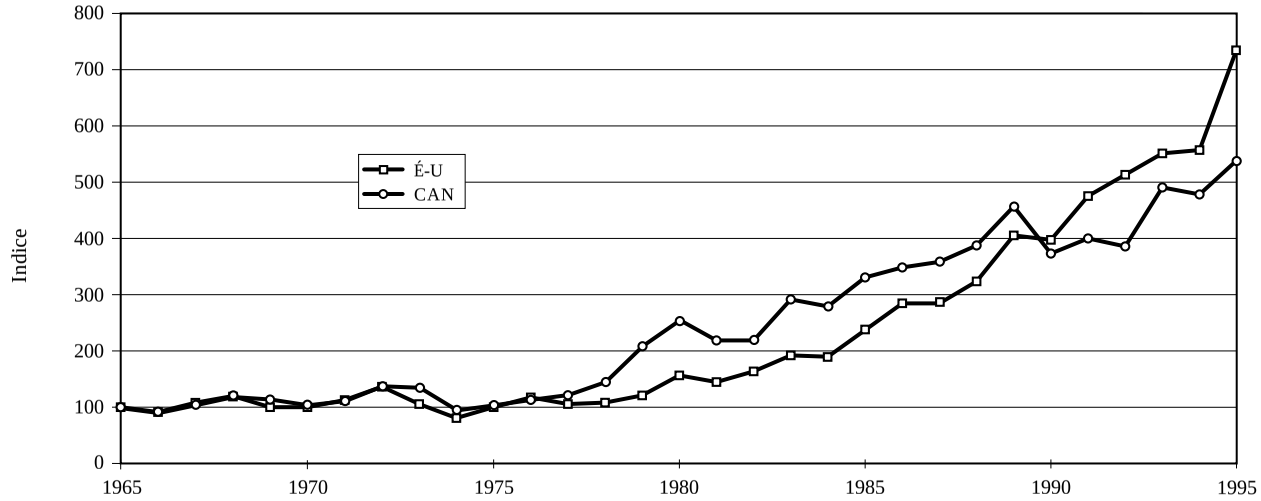
Taux de corrélation (États-Unis c. Canada, données mensuelles)

1966-1970	0,98	1976-1980	0,97	1986-1990	0,77
1971-1975	0,95	1981-1985	0,94	1991-1995	0,93

Source : *Statistiques financières internationales*, FMI, juin 1996.

FIGURE 6

INDICE DES PRIX DES ACTIONS AU CANADA ET AUX ÉTATS-UNIS, 1965-1995



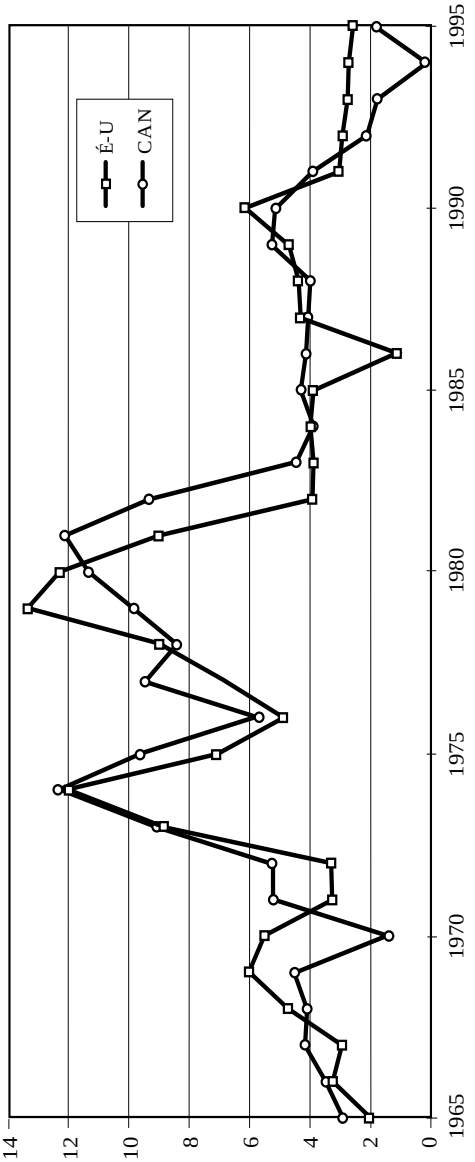
Taux de corrélation (États-Unis c. Canada, indice mensuel, données déclarées)

1966-1970 0,63	1976-1980 0,65	1986-1990 0,70
1971-1975 0,56	1981-1985 0,60	1991-1995 0,38

Source : *Statistiques financières internationales*, FMI, juin 1996.

FIGURE 7

INFLATION AU CANADA ET AUX ÉTATS-UNIS, 1965-1995



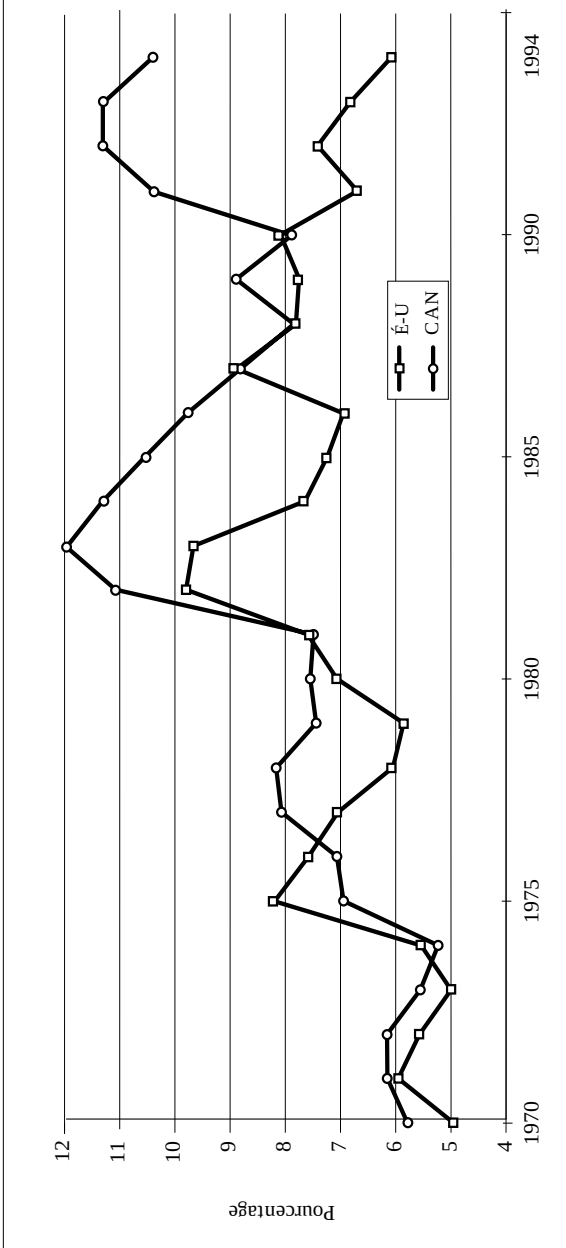
Taux de corrélation (États-Unis c. Canada, données mensuelles)

1966-1970	0,22	1976-1980	0,69	1986-1990	0,51
1971-1975	0,90	1981-1985	0,87	1991-1995	0,85

Source : *Statistiques financières internationales*, FMI, juin 1996.

FIGURE 8

CHÔMAGE AU CANADA ET AUX ÉTATS-UNIS, 1970-1994

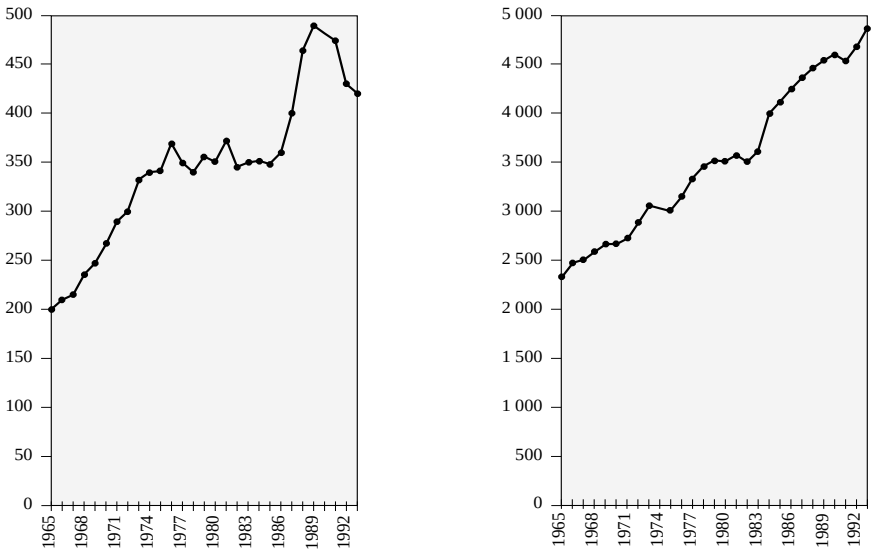


Taux de corrélation (États-Unis c. Canada, données annuelles)
1970-1994 0,51

Source : *Statistiques financières internationales*, FMI, juin 1996.

FIGURE 9

PIB AU CANADA ET AUX ÉTATS-UNIS, 1965-1993
AUX PRIX DU MARCHÉ, EN MILLIARDS DE $US



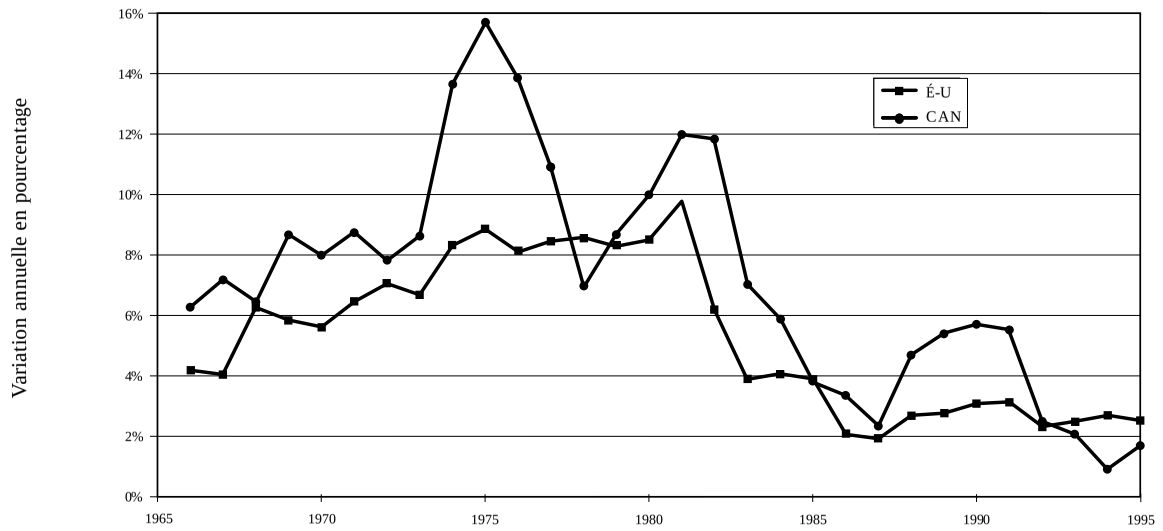
Source : *Statistiques financières internationales*, FMI.

Au début des années 70 et 80, on observe une étroite corrélation entre les taux d'inflation au Canada et aux États-Unis. Vers 1990, la Banque du Canada a décidé de poursuivre une politique très restrictive et, en 1994, le taux d'inflation avait été pratiquement réduit à zéro. Il est un peu remonté depuis, convergeant vers le taux américain de 2 p. 100 (figure 7).

Jusqu'à la fin des années 80, l'évolution du chômage au Canada suivait l'évolution américaine, avec un décalage d'un an. Cependant, vers 1990, le taux canadien a brusquement monté alors que le taux américain baissait graduellement (figure 8). Comment expliquer cette divergence? Les deux économies ont connu une récession au début des années 90; toutefois, elle vint plus tard au Canada et fut beaucoup plus brutale qu'aux États-Unis (figure 9). Malgré tout, les salaires canadiens ont continué d'augmenter au même rythme que les salaires américains (comme il ressort du tableau 10). Qui plus est, les marchés du travail sont plus rigides au Canada qu'aux États-Unis. Dans ces conditions les efforts déployés au Canada pour atteindre un taux d'inflation nul auraient nécessité des

FIGURE 10

SALAIRES AU CANADA ET AUX ÉTATS-UNIS, 1965-1995



Taux de corrélation (États-Unis c. Canada, données annuelles)
1965-1995 0,86

Source : *Statistiques financières internationales*, FMI, juin 1996.

gains salariaux beaucoup plus modestes, en particulier pour les nouveaux travailleurs, afin d'éviter une hausse du chômage – ce qui ne s'est pas produit.

Commerce et investissement : irritants récents dans les relations canado-américaines

Même les meilleurs amis se disputent parfois. Les frictions en matière d'investissement et de commerce vont de pair avec des liens économiques étroits entre deux pays. Il n'est donc pas surprenant d'observer des différends sur le plan de la politique commerciale entre le Canada et les États-Unis. À mesure que l'intégration des deux économies progressera et qu'elles deviendront aussi plus intimement liées à l'économie mondiale, ces divergences vont certainement continuer d'occuper l'avant-scène de la diplomatie commerciale.

Parmi les obstacles à l'intégration des économies nord-américaines mentionnons les initiatives unilatérales en matière de politique commerciale qui peuvent fausser les flux d'investissement et compromettre les stratégies des entreprises qui veulent rationaliser leur production dans l'ensemble de la région. Trois types de mesures méritent un examen plus attentif : les droits antidumping et compensateurs, les initiatives prises sous l'empire de l'article 301 de la *Trade Act* des États-Unis et, enfin, les sanctions économiques.

Les droits antidumping et compensateurs (DAC) ont donné lieu à des disputes acrimonieuses dans le passé. Ils ont rarement été utilisés compte tenu de l'importance du commerce bilatéral. Mais ils ont reçu beaucoup d'attention au Canada puisqu'ils frappaient d'importants secteurs d'exportation comme le bois d'oeuvre. Le déclin de ces mesures comme instrument de la politique commerciale américaine n'offre qu'une mince consolation aux Canadiens dont l'accès au marché est soumis aux aléas des requêtes présentées au Département du Commerce des États-Unis.

Au cours des trois dernières décennies, les États-Unis ont imposé à 70 reprises des droits antidumping ou compensateurs à l'endroit du Canada. C'est durant les années 80 que ces initiatives ont été les plus fréquentes, avec une moyenne de 3,8 fois l'an. Depuis 1990, ce chiffre est tombé à 2,5. Et encore, il surestime l'importance récente du phénomène parce que 13 des 15 cas eurent lieu en 1991-1992 et que la moitié d'entre eux visait l'industrie de l'acier. L'industrie du bois d'oeuvre est demeuré une cible favorite de ce genre de mesures : des droits compensateurs lui ont été imposés en 1982, en 1986 et encore en 1991.

Les plus récents différends canado-américains ont surgi dans les secteurs du bois d'oeuvre, de l'uranium, de la volaille et des produits laitiers, du blé, du sucre et des industries culturelles. Une plainte formelle des États-Unis s'annonce également concernant les costumes en laine. Dans plusieurs cas, les Américains remettent en question le système canadien de gestion des importations et des exportations. Le système de gestion de l'offre de l'industrie de la volaille est devenu caduc à la signature de l'Uruguay Round, mais ses mesures

de contingentement ont été remplacées par des droits de douane pouvant atteindre 350 p. 100. Les États-Unis ont prétendu que cette politique était interdite par l'ALENA. Le groupe spécial chargé d'entendre le différend a unanimement rejeté cette allégation. Il n'en reste pas moins que les tarifs très élevés imposés par le Canada demeurent une question politique d'actualité aux États-Unis. De même, des critiques américains des pratiques commerciales canadiennes comme le sénateur Richard Lugar ont suggéré que le Canada abolisse la Commission canadienne du blé. Ce point de vue est partagé par beaucoup d'agriculteurs de la Saskatchewan et de l'Alberta qui préfèrent expédier leur blé par camion pour le vendre directement sur le marché américain.

Bien que l'Accord de libre-échange (ALE) ne prétende pas éliminer tous les différends commerciaux, il a contribué à réduire les tensions en instituant de nouvelles procédures. Même si le Canada et les États-Unis peuvent continuer de prendre des mesures internes en cas de différend commercial, l'ALE a mis en place un nouveau mécanisme pour revoir les décisions prises par l'une ou l'autre partie. L'ALENA a étendu et rendu permanente cette disposition de l'ALE.

Les États-Unis et le Canada ont abondamment utilisé le mécanisme de règlement des différends prévu à l'ALE puis à l'ALENA. En date du 1er novembre 1995, 75 différends avaient été soumis à cette procédure : 17 en vertu du chapitre 19 de l'ALENA, 52 en vertu du chapitre 19 de l'ALE, 1 en vertu du chapitre 20 de l'ALENA et 5 en vertu du chapitre 18 de l'ALE[4]. Trente mois après l'entrée en vigueur de l'ALENA, les groupes spéciaux prévus au chapitre 19 de l'ALENA s'étaient prononcés dans 7 des appels soumis : 2 portaient sur des mesures américaines, 1 sur une mesure mexicaine et 4 sur des mesures canadiennes.

Est-ce que, dans l'avenir, des négociations régionales ou multilatérales pourraient restreindre les abus du système de droits antidumping qui se sont multipliés depuis la proclamation de la loi canadienne sur ce sujet, il y a 75 ans? Les tentatives passées ne portent guère à l'optimisme; pire encore, les récents accords du Tokyo Round et de l'Uruguay Round ont encore accru le foisonnement de directives sensées guider l'action des agences de mise en oeuvre de telles mesures, ouvrant ainsi la porte à des diagnostics très subjectifs de dumping ou de préjudices subis. Nous nous méfions de nouveaux efforts en ce sens; ils serait préférable de laisser dépérir les pratiques antidumping plutôt que de tenter de les faire disparaître. Les émondages antérieurs se sont transformés en greffes qui les ont tout simplement renforcées.

Une exception pourrait être la mesure suggérée par Messerlin[5], qui exigerait que, pour être recevable, toute requête antidumping soit soumise à un critère de politique de concurrence. Toutes les dispositions antidumping demeureraient en place, mais on s'assurerait ainsi qu'elles n'accentuent pas le caractère monopolistique des marchés concernés.

En d'autres termes, un critère de politique de concurrence serait superposé à l'utilisation des lois antidumping. Cela ne satisferait pas aux demandes cana-

diennes de remplacer le modèle antidumping par une approche fondée sur la politique de concurrence, mais la suggestion de Messerlin favoriserait l'atteinte des objectifs de promotion de la concurrence recherchés par le Canada dans le cadre de l'ALE et de l'ALENA.

Les droits compensateurs poseront problème tant et aussi longtemps que les gouvernements n'abandonneront pas leur habitude de subventionner certains secteurs pour redistribuer le revenu ou augmenter l'emploi. Les deux pays ont tenté sans succès de limiter les subventions accordées par les provinces et les États qui rivalisent pour attirer de nouveaux investissements. Les différends de ce genre remontent loin dans l'histoire : ils existaient dès le début des années 60 et ont conduit au Pacte de l'automobile. Récemment, cette concurrence au niveau des subventions s'est manifestée dans la course aux enchères entre les États américains qui voulaient accueillir Mercedes-Benz et BMW.

Malgré trente ans de négociations, ni l'ALE, ni l'ALENA, ni l'OMC n'impose de règles vraiment contraignantes à l'égard des subventions offertes par les adminsitrations publiques infra-nationales. Plus encore, il semble bien que les négociations récentes sur l'investissement étranger au sein de l'OCDE éviteront tout simplement cette question. Les efforts du Canada en vue de renforcer les règles en matière de subventions au niveau régional, en vertu de l'article 1907 de l'ALENA, traduisent la même absence de volonté politique dans l'un et l'autre pays. Seule les contraintes budgétaires ou une révolte des contribuables sembleraient pouvoir resteindre ces subventions.

Les initiatives américaines fondées sur l'article 301 n'ont guère causé de souci, mise à part l'importante exception des industries culturelles. Cette disposition est l'article 301 du *Trade Act* de 1974. Elle autorise le président à user de représailles contre des pratiques commerciales étrangères « déloyales ». Jusqu'en 1994, seulement 8 des 90 recours à l'article 301 ont été dirigés contre le Canada. Quatre d'entre eux visaient des produits manufacturés, deux le bois d'oeuvre, un l'agriculture et un des services[6].

Un contentieux permanent oppose le Canada et les États-Unis en rapport avec l'article 301 : les mesures de protection des industries culturelles au Canada. Le différend concernant les émissions diffusées par le réseau Country Music Television montre bien comment ces questions culturelles peuvent exacerber les disputes et combien leur solution est de nature essentiellement politique. Durant deux ans des entreprises américaines ont porté leurs revendications devant les tribunaux canadiens. En 1995, le représentant au commerce des États-Unis (USTR) instituait une enquête en vertu de l'article 301 et, en 1996, il arraivait à la conclusion que les politiques canadiennes en matière de télédiffusion refusaient aux entreprises américaines le même traitement que celui accordé aux entreprises canadiennes. La même année, un accord commercial a été conclu et, à l'automne, une entreprise canado-américaine était créée : CMT (Canada).

Selon les nouvelles dispositions de l'OMC sur le règlement des différends, les pays ne doivent pas avoir recours à des mesures de représailles avant qu'un

groupe spécial ne les y autorise au terme d'un examen du dossier. Par conséquent, toute initiative unilatérale prise avant la décision du groupe spécial contreviendrait aux engagements pris vis-à-vis l'OMC, à moins qu'elle ne concerne un domaine exclu du traité. C'est pourquoi, en matière de travail et d'environnement, il pourrait être utile d'adopter, au sein de l'OMC, des règles de base respectant un critère de pertinence commerciale.

Bref, les règles de l'OMC autorisent les représailles prévues par l'article 301 après la décision d'un groupe spécial lorsque le pays visé n'entend pas modifier ses politiques pour se conformer aux dispositions de l'OMC. Toutefois on limite l'utilisation de telles initiatives ou la nature des sanctions pouvant être imposées à une sphère de plus en plus restreinte, celle des échanges commerciaux non visés par les accords de l'OMC. L'insistance du Canada à vouloir exclure les industries culturelles des accords régionaux et multilatéraux facilite donc le recours, par les États-Unis, aux dispositions de l'article 301 contre toute pratique commerciale jugée contestable dans ce domaine.

Les sanctions économiques utilisées comme instrument de politique étrangère n'ont que rarement fait l'objet de différends entre le Canada et les États-Unis, du moins jusqu'à la récente adoption de la *Helms-Burton Act* qui prévoit l'application extra-territoriale de sanctions visant à restreindre les relations avec Cuba sur le plan du commerce et de l'investissement. Dans les faits, les deux pays ont appliqué les sanctions adoptées par les Nations Unies contre l'Irak, l'Iran, la Lybie, la Serbie et l'Afrique du Sud.

La plupart des sanctions décidées unilatéralement par les États-Unis visaient des pays où les intérêts économiques du Canada sont marginaux, à deux exceptions près : la Chine et Cuba. Les mesures à l'encontre de la Chine amélioraient les perspectives de ventes canadiennes à ce pays et n'ont donc pas soulevé d'objections au Canada. Il en a été bien autrement de la *Helms-Burton Act* qui limite les activités des entreprises canadiennes et de leurs dirigeants sur le marché américain si elles transgressent cette loi.

Dans l'ensemble, les sanctions américaines n'ont jamais sérieusement nui aux échanges ou aux investissements dans la région. Mais on doit s'inquiéter de la tendance à enchâsser les sanctions économiques dans des lois plutôt que dans des directives présidentielles, comme ce fut le cas pour Cuba, l'Iran et l'Irak. On recourt à cette pratique lorsqu'il y a un profond désaccord entre le pouvoir exécutif et le Congrès et que ce dernier est peu disposé à laisser carte blanche au président en matière de sanctions commerciales. Il s'ensuit que ces sanctions sont figées dans un texte de loi jusqu'à ce que l'on adopte une nouvelle loi visant à modifier celle en vigueur. Si cette tendance devait se renforcer, les États-Unis pourraient se retrouver de plus en plus empêtrés dans des différends acrimonieux avec le Canada et d'autres partenaires commerciaux pour avoir utilisé de telles sanctions.

INITIATIVES ÉCONOMIQUES BILATÉRALES

DEPUIS UNE GÉNÉRATION les initiatives économiques canado-américaines reflètent une sensibilisation croissante à la nécessité de régler les conflits par des négociations plutôt que par des initiatives unilatérales. Le rendement politique d'une réthorique enflammée diminue progressivement, même sur des sujets aussi explosifs que le bois d'oeuvre, la culture ou les échanges avec Cuba.

Le premier jalon décisif de l'après-guerre en matière de relations commerciales canado-américaines fut la conclusion, en 1965, de l'Accord sur le commerce des produits de l'automobile, mieux connu sous le nom de Pacte de l'auto. Avant les années 60, l'industrie de l'automobile était passablement isolée et marquée par un certain nationalisme dans les deux pays. À la fin des années 50, le marché canadien était protégé par des barrières tarifaires et des exigences strictes en matière de contenu local. Afin de stimuler ce secteur, les législateurs canadiens conçurent alors un régime de remise des droits de douane, lequel avait le même effet qu'une subvention à l'exportation. Cela incita un manufacturier américain de pièces à déposer une requête pour que soient appliqués des droits compensateurs. Le Pacte de l'auto permit de dénouer l'impasse et de mettre en place une structure favorable à l'intégration de l'industrie.

Le Pacte de l'auto abolissait les droits des douane sur la plupart des échanges de produits liés à l'automobile entre le Canada et les États-Unis, tout en comportant des garanties pour le Canada au chapitre de la production et de l'investissement. Ces dispositions de sauvegarde exigeaient que les producteurs montent au Canada à peu près le même nombre de voitures qu'ils y vendaient pour bénéficier des droits d'importation en franchise de douane. En outre, ils devaient s'assurer qu'au moins 60 p. 100 de la valeur ajoutée des véhicules vendus au Canada soit d'origine canadienne[7]. Le Pacte de l'auto a donné naissance à un énorme réseau commercial transfrontalier et a stimulé l'investissement dans le secteur automobile au Canada. Comme on le constate aujourd'hui, le Canada n'a pas eu à invoquer les clauses de sauvegarde pour assurer une croissance rapide de ce secteur. Le tableau 12 montre la vigueur des échanges canado-américains dans le secteur de l'automobile entre 1980 et 1995.

Conceptuellement, le Pacte de l'auto annonçait l'Accord de libre-échange canado-américain. En effet, il constitua la première dérogation importante à la stratégie de libéralisation multilatérale des échanges que les États-Unis poursuivaient depuis la Deuxième Guerre mondiale. Le secteur de l'automobile a continué d'être un enjeu de taille dans les discussions qui ont mené à l'ALE et à l'ALENA mais, en définitive, les dispositions fondamentales de l'Accord de 1965 ont été maintenues. La principale conséquence de ce cheminement est que le Mexique s'est intégré au marché nord-américain de l'automobile.

Aucune initiative importante n'est survenue durant les années 70 dans les relations commerciales canado-américaines mais, au début de la décennie suivante, l'idée d'une reprise des pourparlers sur le libre-échange a gagné des

adeptes au Canada. Les chocs des prix pétroliers et l'inflation répandue avaient fragilisé l'économie mondiale durant les années 70 et les négociations commerciales multilatérales du Tokyo Round avaient absorbé beaucoup d'énergie. L'économie canadienne avait connu pas mal de soubresauts au cours de cette période, qui fut suivie d'une sévère récession au début des années 80. En 1983, le ministère canadien des Affaires étrangères publiait un document de réflexion sur la politique commerciale dans lequel on proposait l'ouverture de pourparlers avec les Américains en vue de libéraliser les échanges dans certains secteurs. Cette approche s'inspirait de l'éclatant succès du Pacte de l'auto. Toutefois, les conditions propres à ce secteur n'existaient pas ailleurs et, de fait, le libre-échange négocié secteur par secteur a échoué. En effet, chacun offrait de négocier dans les secteurs où ses perspectives d'exportation étaient bonnes, mais refusait de le faire dans ceux où ses entreprises étaient relativement faibles. Malgré tout, la rupture des négociations sectorielles n'a pas fait disparaître l'idée de libéraliser les échanges entre le Canada et les États-Unis; plutôt, elle a montré comment en élargir la portée.

En 1985, la Commission MacDonald publiait son évaluation de l'économie canadienne et recommandait que le Canada entreprenne des négociations commerciales étendues avec les États-Unis. Sur le plan tant politique qu'intellectuel, cela ouvrit la voie au sommet Shamrock qui, la même année, aboutissait à la Déclaration sur le commerce en matière de biens et services. À l'automne de la même année, le premier ministre Mulroney annonçait que le Canada chercherait à entamer des négociations sur le libre-échange avec les États-Unis.

Le 1er janvier 1989, l'Accord de libre-échange canado-américain entrait en vigueur. L'ALE englobait les barrières tarifaires et non-tarifaires ainsi que de nouvelles institutions. Négocié sous l'empire de l'article XXIV du GATT, l'ALE traitait des questions habituelles comme l'accès aux marchés et les contingentements. Il allait toutefois plus loin dans de nombreux domaines et comportait des dispositions touchant les services, l'investissement, les services financiers et l'énergie. Le calendrier de mise en oeuvre prévoyait une libéralisation complète des échanges et des investissements après dix ans, avec des dérogations importantes pour les industries culturelles, l'agriculture et l'énergie.

Un apport fondamental de l'ALE réside dans son mécanisme innovateur et détaillé de règlement des différends, évoqué précédemment. Les différends sont répartis en deux groupes. Ceux qui ne touchent pas aux services financiers ou aux droits antidumping et compensateurs relèvent du chapitre 18; ils sont assujettis à une procédure d'avis, suivie de négociations, et peuvent être renvoyés à une commission bilatérale et, enfin, à une procédure d'arbitrage exécutoire. Les différends concernant les droits antidumping et compensateurs relèvent du chapitre 19, qui prévoit l'établissement de comités bilatéraux.

Durant les négociations, le Canada a proposé un code détaillé sur les achats gouvernementaux afin de pouvoir obtenir l'accès aux vastes marchés publics américains. Cette tentative a échoué bien que les dispositions de l'ALE sur les achats gouvernementaux assurent une plus grande transparence des

TABLEAU 12

COMMERCE CANADO-AMÉRICAIN DE VÉHICULES À MOTEUR, 1980-1994
MILLIARDS DE $US

	1980	1981	1982	1983	1984	Taux de croissance moyen sur 5 ans
Exportations américaines au Canada	3,0	3,1	2,4	4,1	4,8	17,1 %
Exportations canadiennes aux États-Unis	4,0	4,4	6,2	8,2	11,3	30,7 %
	1985	1986	1987	1988	1989	
Exportations américaines au Canada	6,3	6,5	6,6	6,7	7,3	3,8 %
Exportations canadiennes aux États-Unis	12,9	14,3	11,5	14,9	14,4	4,2 %
	1990	1991	1992	1993	1994	
Exportations américaines au Canada	6,2	6,7	5,8	6,2	7,6	5,9 %
Exportations canadiennes aux États-Unis	14,8	15,1	15,8	19,5	24,1	13,5 %

Source : U.S. Department of Commerce.

appels d'offres. Subséquemment, l'accord négocié en ce domaine dans le cadre de l'Uruguay Round a fait disparaître quelques autres obstacles aux achats publics transfrontaliers.

Il n'y a eu qu'une libéralisation limitée des échanges de produits agricoles dans le cadre de l'ALE. Même si les tarifs sur les produits agricoles ont été abolis, les deux pays purent maintenir les mesures de contigentement sur lesquelles s'appuyaient les régimes de gestion de l'offre et de soutien des prix. Néanmoins, l'accord a fait progresser la notion de ESP (équivalent à une subvention à la production), qui est une méthode de calcul de l'étendue du soutien public accordé. Cette méthode a par la suite servi de base aux pourparlers sur l'agriculture dans le cadre de l'Uruguay Round.

L'inclusion des services dans l'ALE a constitué un important pas en avant. Pour les services, l'ALE impose aux deux pays un cadre d'obligations contractuelles portant sur le traitement national, les licences et l'accréditation. Les dispositions de l'ALE sur les services ont inspiré l'Accord général sur le commerce des services (AGCS), négocié dans le cadre de l'Uruguay Round. La grande différence entre les deux traités est que l'ALE renfermait des engagements véritables à libéraliser la plupart des services (sauf les transports et les télécommunications), alors que l'AGCS ne prévoyait qu'un cadre en vue d'une éventuelle libéralisation.

Les dispositions de l'ALE concernant l'investissement ont été formulées de façon à permettre aux entreprises de bénéficier d'un marché nord-américain élargi. On s'est engagé à accorder le traitement national dans le plupart des cas et l'entente interdisait l'imposition de toute nouvelle exigence de rendement aux sociétés en matière de commerce. Les États-Unis ont traditionnellement préconisé une politique de libéralisation des flux d' investissement (sauf, bien entendu, dans les secteurs de la défense et des télécommunications), alors que le Canada avait souvent envisagé la possibilité d'imposer des restrictions à l'investissement étranger, comme ce fut le cas sous le régime Trudeau, dont la Politique énergétique nationale fait encore frémir les investisseurs américains.

L'ALE englobe les services financiers. Les deux pays avaient déjà entrepris la déréglementation de leurs marchés financiers et les dispositions de l'ALE reflétaient les progrès marqués faits au cours des décennies antérieures vers l'intégration des marchés financiers nord-américains. Comme nous l'avons indiqué, les investissements dans le secteur financier avaient gagné en importance dans les relations financières canado-américaines depuis 1970 (figure 3).

Les dispositions financières de l'ALE ont ouvert le marché canadien aux investisseurs américains. En retour, les sociétés de courtage valeurs mobilières et les banques canadiennes ont pu souscrire et vendre des titres du gouvernement canadien sur le marché américain. En outre, dans le contexte d'une évolution qui prend aujourd'hui toute son importance, les États-Unis ont accepté une disposition qui permet aux institutions canadiennes de profiter pleinement de tous les changements futurs aux lois et règlements américains dans le domaine bancaire (par exemple la *Glass-Steagall Act*). Les échanges de services

TABLEAU 13

ALENA – CROISSANCE DES EXPORTATIONS, 1988-1995
POURCENTAGE

	Croissance 1988-1995	Croissance 1990-1995	Croissance annuelle moyenne 1988-1995	Croissance annuelle moyenne 1993-1995
États-Unis vers				
Monde	83	49	9	12
Canada	81	52	9	12
Mexique	122	60	12	4
ALENA	90	54	10	10
Canada vers				
Monde	63	50	7	16
États-Unis	87	60	9	16
Mexique	95	61	10	15
ALENA	87	60	9	6
Mexique vers				
Monde	291	194	22	30
États-Unis	396	254	26	34
Canada	625	776	33	13
ALENA	401	261	26	33

Source : *Direction of Trade Statistics*, FMI.

financiers entre les deux pays ont crû à un rythme annuel moyen de 21 p. 100 depuis l'ALE, alors que dans les secteurs connexes des services informatiques et d'information, la croissance a atteint 30 p. 100 l'an.

L'Accord de libre-échange nord-américain a constitué un autre pas en direction de l'intégration du marché nord-américain. Avant l'ALENA, tant le Canada que les États-Unis avaient mis en place des ententes cadres distinctes avec le Mexique en matière d'échanges et d'investissements. L'ALE a servi de cadre de référence à la libéralisation plus étendue réalisée par l'ALENA.

Le Canada a profité de l'ALENA. Le commerce avec les États-Unis continue de croître à mesure que les barrières commerciales sont abaissées. De plus, l'ALENA offre au Canada un meilleur accès au marché mexicain. En 1992, le Canada n'exportait que pour 600 millions de dollars de biens au Mexique et en importait pour moins d'un milliard de dollars. En 1995, ces chiffres avaient respectivement atteint près de 800 millions de dollars et près de 2 milliards de dollars.

Le tableau 13 montre la progression des échanges entre les pays de l'ALENA de 1988 à 1995. Durant cette période, le commerce intra-ALENA est passé de 40 à 47 p. 100 du total des exportations des trois pays. Depuis la ratification de l'ALENA en 1993, les exportations du Canada vers les États-Unis ont crû à un taux annuel moyen de 16 p. 100 et les exportations vers le Mexique, à un taux annuel moyen de 15 p. 100.

Dans une perspective mercantiliste, le Canada n'a pas payé cher son adhésion à l'ALENA. Il a pu conserver l'exemption accordée aux industries culturelles, protéger son agriculture et laisser intact le cadre initial du Pacte de l'automobile.

Malgré leur vaste portée, les dispositions de l'ALENA ne traitent pas de toutes les questions économiques. Ainsi, l'aviation civile n'y figure pas et il en va de même de la fiscalité. En 1995, le Canada et les États-Unis ont négocié un protocole sur l'imposition du revenu afin de mettre à jour l'accord fiscal de 1980. Les retenues fiscales visant les transactions transfrontalières ont été réduites de 10 à 6 p. 100 sur les dividendes des sociétés (si le bénéficiaire détient au moins 10 p. 100 des actions de l'entreprise) et de 15 à 10 p. 100 sur les intérêts. On a supprimé la retenue fiscale sur les redevances relatives aux logiciels, aux brevets et aux échanges de renseignements techniques. La façon d'imposer les gains en capital applicables sur la résidence des Canadiens vivant aux États-Unis et les Américains vivant au Canada a été modifiée de façon à réduire au minimum la double imposition. Une autre modification importante est que les Canadiens fréquentant les casinos américains peuvent maintenant, aux fins de la fiscalité américaine, déduire leurs pertes des gains réalisés (le Canada n'impose pas les revenus provenant des jeux de hasard!).

L'INTÉGRATION ÉCONOMIQUE : LE CAS DE L'ALLEMAGNE ET DES PAYS DU BENELUX

L'EUROPE SE SOUCIE D'INTÉGRATION ÉCONOMIQUE depuis la seconde guerre mondiale. En 1951, le Traité de Paris créait la Communauté européenne du charbon et de l'acier, rapidement suivi du Traité de Rome qui lançait le Marché commun en 1957. Il visait à instaurer une libre circulation des biens, des services, des travailleurs et des capitaux (les « quatre libertés »). Pour réaliser ces ambitieux objectifs, des institutions ont été mises en place, de nombreux accords auxiliaires ont été négociés et d'innombrables directives et jugements ont été émis par la Commission européenne et la Cour européenne de Justice.

L'intégration en Europe du Nord a été particulièrement poussée en raison des frontières communes et des liens linguistiques (le français et l'anglais y sont utilisés comme langues secondes). En 1960, les pays du Benelux et l'Allemagne de l'Ouest avaient atteint un niveau formel d'intégration semblable à celui atteint seulement en 1990 par le Canada et les États-Unis. La population allemande (qui comprend maintenant celle de l'ex-RDA) est environ le triple de celle des pays du Benelux. Cette toile de fond laisse penser que la convergence des économies de l'Allemagne et des pays du Benelux au cours des 30 dernières années pourrait nous donner quelques indications de la convergence future des économies canadienne et américaine (tableau 14).

Si l'on se fie à l'expérience européenne, les échanges internationaux en Amérique du Nord devraient croître plus rapidement que le PIB. En Allemagne, la somme des importations et des exportations est passée de 35 à 55 p. 100 du PIB entre 1965 et 1990. Au Benelux les chiffres correspondants sont de 85 et 115 p. 100. L'importance croissante du commerce extérieur des biens et services ne se limite évidemment pas aux marchés communs. La croissance du ratio échanges/PIB est un phénomène planétaire dû essentiellement à la chute des frais de transport et de communication, à la réduction importante des barrières tarifaires et à la suppression de la plupart des mesures de contingentement depuis la Deuxième Guerre mondiale. L'importance croissante des échanges est au coeur même de la mondialisation. De 1960 à 1980 le ratio échanges/PIB a augmenté plus vite en Europe qu'ailleurs, ce que l'on peut raisonnablement attribuer au Marché commun.

Dans la même veine, il semble probable que le ratio échanges/PIB va augmenter de 15 à 20 p. 100 aux États-Unis et au Canada d'ici 2010, en partie sous l'effet de la libéralisation amenée par L'ALE et l'ALENA. En 1993, les échanges de biens et de services équivalaient à 60 p. 100 du PIB au Canada et à 22 p. 100 du PIB aux États-Unis. Ces chiffres pourraient atteindre 80 p. 100 et 35 p. 100, respectivement.

Cette évolution peut être décrite d'une autre façon : la croissance du ratio échanges/PIB signifie que les importations canadiennes et américaines augmenteront, chaque année, d'un point de pourcentage de plus que le PIB réel.

TABLEAU 14

COMPARAISONS ENTRE L'ALLEMAGNE ET LE BENELUX, DONNÉES DE BASE, 1965-1993

Allemagne[a]		1965	1970	1975	1980	1985[b]	1990	1993
Population	M	59,0	60,7	61,8	61,5	61,0	63,2	80,7
PIB réel, 1987	M $US	631 590	770 368	857 928	1 007 388	1 066 294	1 258 187	1 439 494
PIB réel par habitant, 1987	$US	10 703	12 689	13 876	16 370	17 489	19 899	17 839
Exportations et importations de biens et de services aux entreprises en pourcentage du PIB	%	35,8	40,3	46,5	53,3	61,5	58,4	42,9
Benelux								
Population	M	22,1	23,0	23,8	24,4	24,7	25,3	25,7
PIB réel, 1987	M $US	193 383	247 878	291 527	334 300	350 509	407 520	421 367
Importations (biens et services non finan.)	M $US	16 121	28 492	74 431	168 760	134 952	286 452	285 005
Exportations et importations de biens et de services aux entreprises en pourcentage du PIB	%	85,4	94,6	99,6	113,1	131,4	121,7	112,2

a Ces données concernent la République fédérale d'Allemagne (avant la réunification).

b Les données sur le commerce en pourcentage du PIB pour 1985 sont faussées en raison de la valeur exceptionnellement élevée de la devise américaine cette année-là, ce qui a abaissé le PIB nominal exprimé en dollars US.

Sources : *World Data 1995*, Banque mondiale, 1995; *Statistiques financières internationales*, FMI, juin 1996.

Au total, les importations pourraient croître de 3 à 4 p. 100 l'an même si l'augmentation du PIB n'est que de 2 à 3 p. 100.

Toutefois, des ratios échanges/PIB croissants ne signifient pas nécessairement des parts plus élevées des échanges de partenaires commerciaux partageant une même frontière et utilisant la même langue. Depuis les grandes études économétriques de Frankel et coll.[8], nous savons qu'en 1985, les échanges au sein de la CEE avaient déjà atteint un niveau 50 p. 100 supérieur à ce qu'il aurait été en l'absence du Marché commun. Toutefois l'évolution des échanges entre l'Allemagne, la Belgique et les Pays-Bas ne laisse voir aucune augmentation durable des ratios des échanges entre ces pays.

Ce modèle pourrait prévaloir en Amérique. L'analyse économétrique de Frankel sur le commerce canado-américain ne détectait aucun effet de l'ALE en 1992 mais, à cette date, sa mise en oeuvre ne faisait que débuter et l'ALENA n'avait pas encore été conclu. On pourrait penser que les échanges entre les pays nord-américains seront, en 2005 ou 2010, de 20 à 30 p. 100 plus élevés qu'en l'absence de ces deux traités. L'effet lié à la zone de commerce préférentiel sera vraisemblablement plus faible qu'en Europe puisque les barrières au commerce vers l'extérieur du continent sont moins élevées que celles qui étaient en place en Europe vers 1960. Malgré tout, cet effet devrait être important et mesurable.

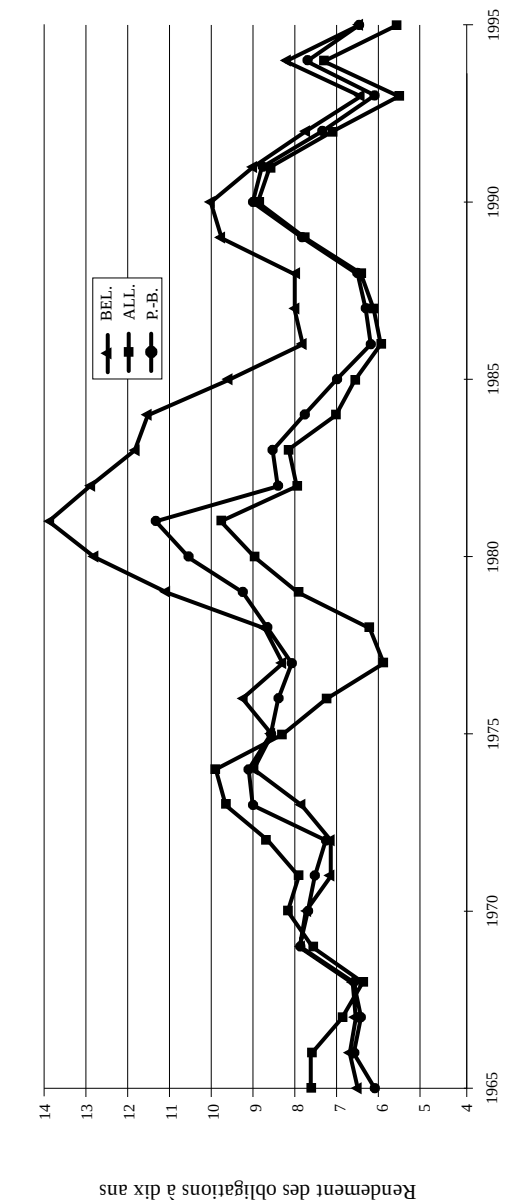
Mais il est moins certain que l'on observera une hausse à long terme de l'importance relative des échanges bilatéraux entre le Canada et les États-Unis. Les parts respectives du commerce extérieur de ces deux pays ont déjà augmenté de plusieurs points de pourcentage depuis 1990 et il se pourrait que l'ajustement soit terminé. Après 1970, les échanges de l'Allemagne avec ses voisins du Sud ont crû aussi sinon plus rapidement qu'avec le Benelux. De même, il est probable que l'importance relative des échanges entre les États-Unis et le Mexique ira en augmentant.

Un autre aspect de l'intégration économique est la corrélation entre les taux d'intérêt des partenaires. Comme il ressort de la figure 11, la corrélation mensuelle des taux d'intérêt à moyen terme entre l'Allemagne et la Belgique et entre l'Allemagne et les Pays-Bas s'est progressivement resserrée au cours des 30 dernières années. Alors qu'elle était de 0,60 en 1960, elle dépasse maintenant 0,95. Est-ce une prédiction de l'intégration financière canado-américaine? Probablement pas puisque les marchés financiers du Canada et des États-Unis sont déjà très étroitement liés. La corrélation entre les taux à dix ans sur les obligations a dépassé 0,90 depuis trente ans (figure 5). De même les taux de corrélation des prix des actions entre l'Allemagne et ses deux voisins ne sont pas plus élevés que ceux observés entre le Canada et les États-Unis (figures 6 et 12).

Depuis le début des années 80, le taux de change entre le florin, le franc belge et le mark allemand a été très stable. Le projet d'Union monétaire européenne va formaliser légalement ce qui existe déjà entre ces pays, à savoir un régime de taux de change pratiquement fixes (figure 13).

FIGURE 11

TAUX D'INTÉRÊT À MOYEN TERME EN ALLEMAGNE, EN BELGIQUE ET AUX PAYS-BAS, 1965-1995
POURCENTAGE



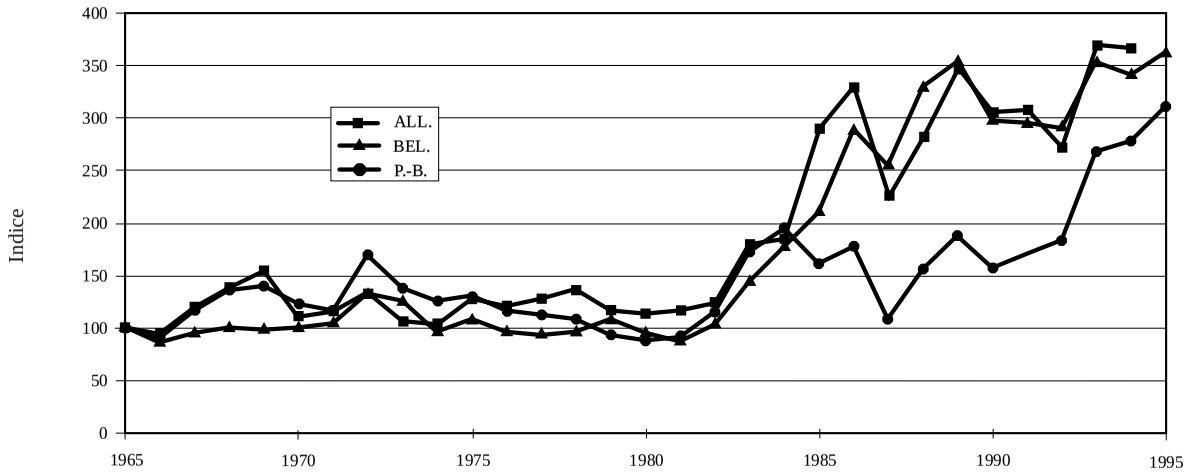
Taux de corrélation (Allemagne c. Belgique et Pays-Bas, données mensuelles)

	1966-1970	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995
Belgique	0,55	0,61	0,77	0,87	0,92	0,98
Pays-Bas	0,50	0,81	0,91	0,98	0,94	0,97

Source : *Statistiques financières internationales*, FMI, 1996.

FIGURE 12

INDICE DES PRIX DES ACTIONS (INDUSTRIELLES) EN ALLEMAGNE, EN BELGIQUE ET AUX PAYS-BAS, 1965-1995



Taux de corrélation (Allemagne c. Belgique et Pays-Bas, indice mensuel, données déclarées)

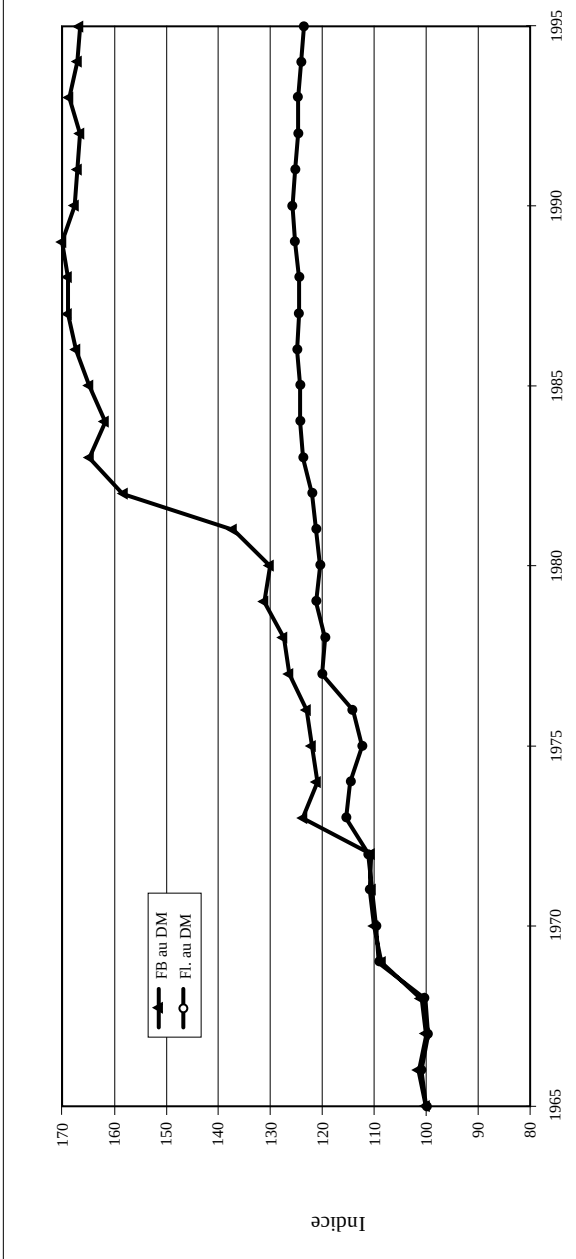
	1966-1970	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995*
Belgique	0,42	0,46	0,43	0,28	0,55	0,70
Pays-Bas	0,51	0,74	0,52	0,22	0,79	0,75

Source: *Statistiques financières internationales*, FMI, 1996.

* Calcul fondé sur les données de janvier 1991 à juin 1995.

FIGURE 13

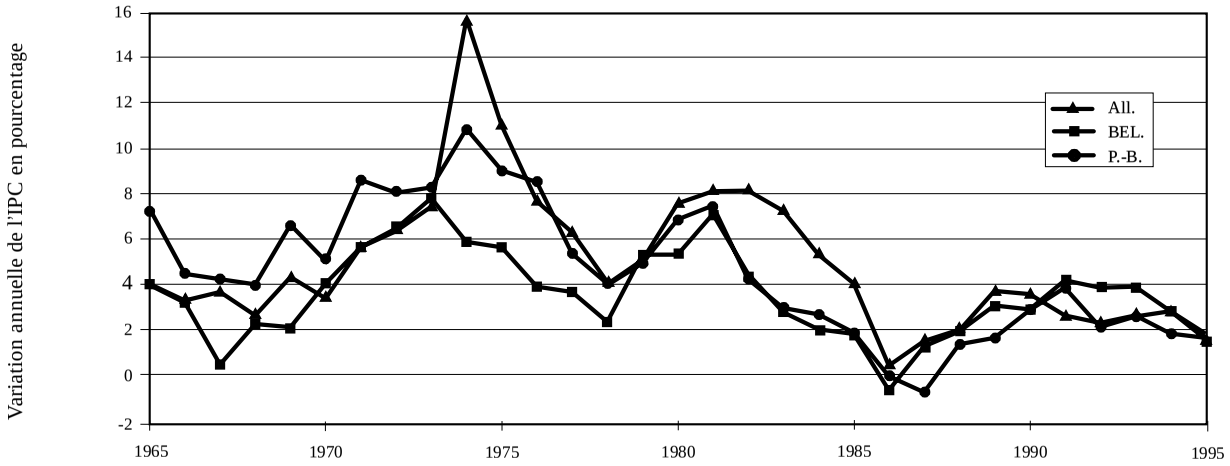
TAUX DE CHANGE ENTRE L'ALLEMAGNE, LA BELGIQUE ET LES PAYS-BAS, 1965-1995
1965 = 100



Source : *Statistiques financières internationales*, FMI, 1996.

FIGURE 14

INFLATION EN ALLEMAGNE, EN BELGIQUE ET AUX PAYS-BAS, 1965-1995



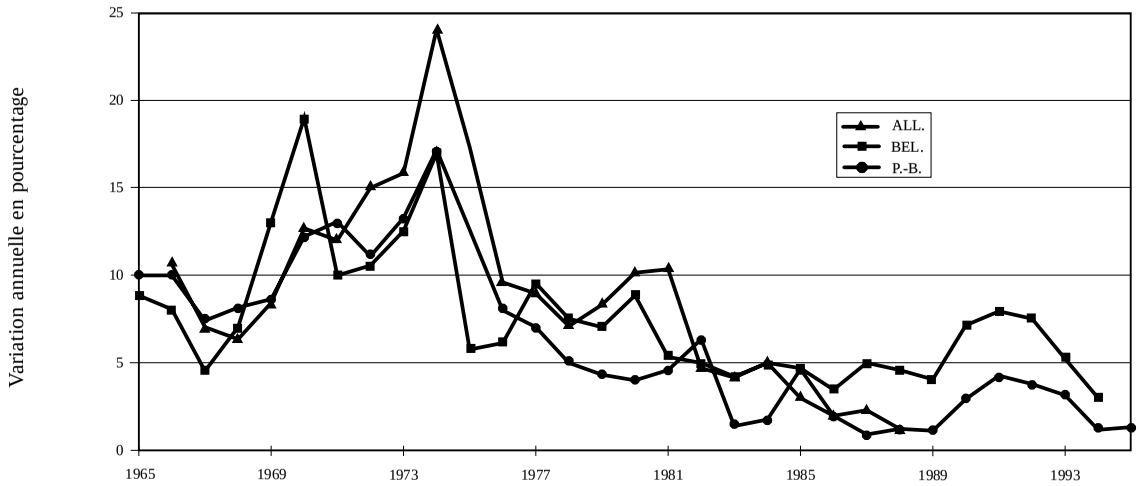
Taux de corrélation (Allemagne c. Belgique et Pays-Bas, données mensuelles)

	1966-1970	1971-1975	1976-1980	1981-1985	1986-1990	1991-1995
Belgique	0,63	0,40	0,45	0,71	0,87	0,63
Pays-Bas	0,15	0,34	0,41	0,94	0,82	0,72

Source : *Statistiques financières internationales*, FMI, juin 1996.

FIGURE 15

SALAIRES EN ALLEMAGNE, EN BELGIQUE ET AUX PAYS-BAS, 1965-1995



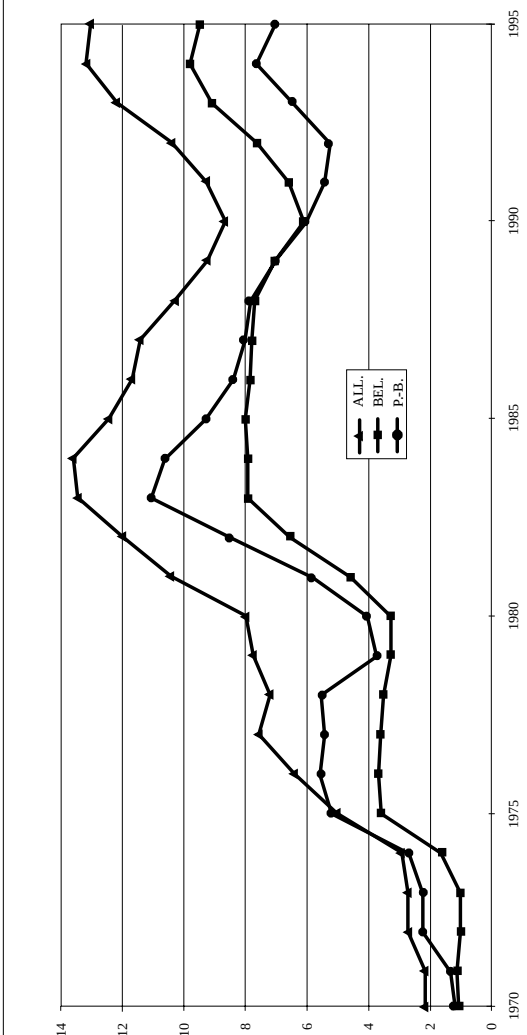
Taux de corrélation (Allemagne c. Belgique et Pays-Bas, données annuelles)

	1966-1988
Belgique	0,72
Pays-Bas	0,89

Source : *Statistiques financières internationales*, FMI, juin 1996.

FIGURE 16

TAUX DE CHÔMAGE EN ALLEMAGNE, EN BELGIQUE ET AUX PAYS-BAS, 1970-1995



Taux de corrélation (Allemagne c. Belgique et Pays-Bas, données annuelles)

	1970-1995
Belgique	0,95
Pays-Bas	0,86

Source : *Perspectives économiques de l'OCDE*, N^os 39 et 59.

TABLEAU 15

RECETTES FISCALES EN ALLEMAGNE, EN BELGIQUE ET AUX PAYS-BAS, 1965-1993
POURCENTAGE DU PIB

	1965	1970	1975	1980	1985	1990	1993
Allemagne							
Impôts sur le revenu et les bénéfices	10,7	10,6	12,4	13,4	13,3	11,9	12,0
Charges sociales	8,7	10,2	12,5	13,2	13,9	13,7	15,1
Sécurité sociale	8,5	10,0	12,2	13,1	13,9	13,7	15,1
Taxe sur les biens et services	10,4	10,5	9,7	10,3	9,8	9,8	10,9
Total	31,6	32,9	36,0	38,2	38,1	36,7	39,0
Belgique							
Impôts sur le revenu et les bénéfices	8,6	11,2	16,4	18,2	19,4	16,8	16,2
Charges sociales	9,8	10,9	13,3	13,5	15,7	15,4	16,3
Impôts fonciers	1,2	1,1	1,0	1,0	0,9	1,2	1,2
Taxe sur les biens et services	11,6	12,5	11,0	11,6	12,0	11,7	12,0
Total	31,2	35,7	41,8	44,4	48,1	45,1	45,7
Pays-Bas							
Impôts sur le revenu et les bénéfices	11,7	12,4	14,9	14,8	11,6	14,4	15,5
Charges sociales	—	—	—	—	—	—	—
Taxe sur les biens et services	9,4	10,3	10,4	11,4	11,3	11,8	12,1
Total	32,7	37,0	42,9	45,0	44,1	44,6	48,0

Source : *Statistiques des recettes publiques des pays membres de l'OCDE*, OCDE, 1995.

À l'opposé, ces 15 dernières années, la valeur du dollar canadien en monnaie américaine a beaucoup fluctué. L'expérience européenne suggère que ces variations pourraient être de moindre ampleur dans l'avenir. Toutefois, les autorités des deux pays n'attachent guère d'importance au taux de change bilatéral comme symbole d'intégration économique. Si ces fluctuations devaient s'atténuer dans l'avenir, ce serait plus en raison de forces économiques fondamentales comme la synchronisation des taux d'inflation que des décisions prises par la Banque du Canada.

Les taux mensuels d'inflation en Allemagne, en Belgique et aux Pays-Bas ne sont pas plus synchronisés qu'entre le Canada et les États-Unis (figures 14 et 7), et la relation au niveau de la variation annuelle des salaires n'est pas plus étroite (figures 15 et 10). Mais les taux de chômage varient de façon beaucoup plus synchronisée en Europe du Nord qu'en Amérique du Nord (figures 16 et 8). Par contre, l'ouverture des marchés des biens et des services va probablement amener une plus grande flexibilité du marché du travail au Canada et rapprocher les taux de chômage des deux pays.

En termes généraux, selon plusieurs variables macro-économiques importantes, la convergence des économies nord-américaines est déjà aussi avancée qu'en Europe. Les deux mesures ou cette convergence pourrait s'accentuer sont le taux de change et les taux de chômage.

La convergence institutionnelle n'est pas une conséquence inévitable d'une forte convergence macro-économique même si celle-ci augmente encore dans l'avenir. Ainsi, au début des années 70, au moment où leur pays se joignait à la Communauté européenne, beaucoup de Danois redoutaient que leur filet de sécurité sociale ne disparaisse. Il n'en a rien été, pas plus que le Danemark n'a été forcé, ces dernières années, d'abaisser ses normes environnementales au niveau de celles de la Grèce ou de l'Espagne. Le Danemark a conservé ses normes environnementales, notamment sur les emballages; plus encore, il s'est fait le défenseur de normes européennes plus sévères pour les procédés industriels.

La fiscalité est l'une des dimensions institutionnelles qui se prête le mieux à la quantification. En 1965, avant que l'intégration économique ne soit très avancée, on observait une grande similitude dans le fardeau fiscal et la structure fiscale de l'Allemagne, de la Belgique et des Pays-Bas. Dans les trois pays, la ponction fiscale totale oscillait entre 31 et 33 p. 100 du PIB, les charges sociales prélèvées sur la masse salariale, entre 9 et 10 p. 100, et les taxes sur les biens et services entre 9 et 12 p. 100. Après 30 ans d'intégration économique intensive touchant tous les marchés, les structures fiscales se ressemblent moins. Le fardeau fiscal total aux Pays-Bas atteint 48 p. 100 du PIB, alors qu'en Allemagne il est de 39 p. 100. L'écart est encore plus marqué entre certaines grandes catégories d'impôt. En d'autres termes, le partenaire le plus petit a été en mesure de poursuivre une politique sociale plus ambitieuse (tableau 15).

Cette expérience montre que les écarts entre les structures fiscales canadiennes et américaines, aux niveaux local, provincial et fédéral, vont durer encore quelques décennies. Non seulement les ratios des recettes publiques au

PIB différeront, mais les taux d'imposition pourraient diverger sensiblement. Au niveau fédéral, le plus haut taux marginal d'impôt sur les bénéfices des sociétés est de 35 p. 100 aux États-Unis, tandis que celui des États se situe entre 1 et 12 p. 100. Au Canada le taux fédéral correspondant est de 35 p. 100 pour le secteur manufacturier et de 44 p. 100 pour les autres secteurs. Les taux provinciaux vont de 9 à 17 p. 100. Ces différences de structure fiscale se situent dans la fourchette observée en Europe. Ainsi, le taux applicable aux bénéfices des sociétés est de 35 p. 100 aux Pays-Bas, de 40 p. 100 en Belgique et de 51 p. 100 en Allemagne.

En d'autres termes, l'expérience européenne suggère que les choix politiques des divers pays peuvent déboucher sur des structures fiscales fort différentes même en présence de marchés complètement libéralisés pour les biens et services.

Cependant, selon des résultats économétriques récents (résumés dans Hufbauer et DeRosa, 1997[9]), les pays qui imposent lourdement les entreprises payent un prix élevé en matière d'investissement. Des études économétriques sur l'investissement étranger direct (IED) laissent entendre qu'une hausse d'un point du taux d'imposition des bénéfices (de 34 à 35 p. 100, par exemple) pourrait faire baisser le stock d'IED jusqu'à 3 p. 100. Entres les États américains, l'effet peut atteindre 10 p. 100. Au fur et à mesure que de tels résultats seront mieux connus et confirmés par l'expérience, les États, les provinces et les pays qui imposent des impôts très élevés seront soumis à des pressions considérables en vue de réduire le fardeau fiscal des entreprises.

CONSÉQUENCES POUR LA COMPÉTITIVITÉ

LES FAITS MONTRENT QU'UN HAUT NIVEAU DE CONVERGENCE a déjà été atteint dans beaucoup de secteurs importants : pour une vaste gamme de produits et de services, pour les taux d'intérêt et les prix des actions, pour l'évolution générale des salaires. Il est possible qu'à l'avenir, les taux de chômage évoluent de concert. En outre, la sensibilité des flux d'investissement à la fiscalité va probablement forcer les gouvernements qui imposent lourdement les bénéfices des sociétés à alléger le fardeau fiscal de ces dernières. Néanmoins, l'expérience européenne indique que des divergences institutionnelles importantes pourront subsister entre le Canada et les États-Unis.

Comment une convergence économique associée à une divergence institutionnelle influera-t-elle sur la compétitivité du Canada en longue période? Comme Paul Krugman l'a très justement affirmé, si la compétitivité des nations a une quelconque signification, elle se situe dans la comparaison du niveau de vie de leurs habitants. À long terme, la performance d'industries particulières et la balance commerciale des pays sont des indicateurs moins importants que l'évolution du revenu par habitant Si ce revenu augmente en Ontario par rapport à celui du Michigan ou de NewYork, il importe peu que les exportations d'automobiles de l'un ou l'autre pays augmentent ou diminuent.

TABLEAU 16

REVENU PAR HABITANT, ÉTATS AMÉRICAINS, 1960 ET 1990

État	1990 Population (milliers)	1990 Revenu par habitant $	1990 Rang	1960 Population (milliers)	1960 Revenu par habitant $	1960 Rang
Mississippi	2 575	12 583	51	2 178	1 240	51
Arkansas	2 351	13 824	50	1 786	1 400	49
Virginie occidentale	1 793	13 943	49	1 860	1 613	44
Utah	1 723	14 103	48	891	2 010	30
Nouveau-Mexique	1 515	14 257	47	951	1 893	34
Louisiane	4 220	14 265	46	3 257	1 658	42
Montana	799	14 768	45	675	2 074	28
Kentucky	3 687	14 782	44	3 038	1 580	46
Alabama	4 040	14 926	43	3 267	1 530	48
Oklahoma	3 146	15 130	42	2 328	1 890	35
Caroline du Sud	3 486	15 175	41	2 383	1 385	50
Dakota du Nord	639	15 336	40	632	1 741	41
Idaho	1 007	15 392	39	667	1 799	38
Dakota du Sud	696	15 661	38	681	1 762	40
Tennessee	4 877	15 952	37	3 567	1 570	47
Arizona	3 665	16 317	36	1 302	2 074	29
Caroline du Nord	6 632	16 330	35	4 556	1 602	45
Iowa	2 777	16 709	34	2 758	1 994	31
Texas	16 986	16 808	33	9 580	1 942	33
Indiana	5 544	16 847	32	4 662	2 188	21
Wyoming	454	16 960	31	330	2 121	25
Maine	1 228	17 101	30	969	1 858	37
Georgie	6 478	17 197	29	3 943	1 648	43
Oregon	2 842	17 312	28	1 769	2 205	19
Vermont	563	17 407	27	390	1 795	39
Nebraska	1 578	17 427	26	1 411	2 126	14
Missouri	5 117	17 432	25	4 320	2 106	26
Wisconsin	4 892	17 437	24	3 952	2 201	20
Ohio	10 847	17 572	23	9 706	2 349	14
Kansas	2 478	17 676	22	2 179	2 157	22
Michigan	9 295	18 268	21	7 823	2 365	12
Minnesota	4 376	18 830	22	3 414	2 080	27
Colorado	3 294	18 883	19	1 754	2 281	16
Floride	12 938	18 906	18	4 952	1 959	32
Pennsylvanie	11 833	18 981	17	11 319	2 271	17
Rhode Island	1 003	19 043	16	859	2 212	18
Washington	4 867	19 396	15	2853	2 348	15
Virginie	6 189	19 615	14	3967	1 865	36
Delaware	666	19 820	13	446	2 915	2
Illinois	11 431	20 191	12	10 081	2 649	9

TABLEAU 16 (SUITE)

État	1990 Population (milliers)	1990 Revenu par habitant $	1990 Rang	1960 Population (milliers)	1960 Revenu par habitant $	1960 Rang
New Hampshire	1 109	20 289	11	607	2 142	23
Nevada	1 202	20 549	10	285	2 807	4
Californie	29 758	20 757	9	15 717	2 730	7
Alaska	550	20 909	8	226	2 655	8
Hawaii	1 108	21 029	7	633	2 370	11
Massachusetts	6 016	22 257	6	5 149	2 466	10
New York	17 991	22 333	5	16 782	2 747	5
Maryland	4 718	22 467	4	3 101	2 354	13
New Jersey	7 730	24 217	3	6 067	2 736	6
District of Columbia	607	24 547	2	764	3 010	1
Connecticut	3 287	25 434	1	2 535	2 840	3

Coefficient de corrélation de Spearman entre le revenu personnel par habitant en 1960 et en 1990 : 0,853.

Pour traiter de cette difficile mais combien pertinente question de la compétitivité, il est utile de jeter un oeil à l'évolution des revenus par habitant entre 1960 et 1990 dans les 50 États américains et le district de Columbia. Le tableau 16 fait ressortir trois éléments. Premièrement, le ratio entre les revenus des trois États les plus riches et celui des trois plus pauvres a baissé quelque peu au cours de ces 30 années, soit de 2,18 à 1,84, ce qui équivaut à un rythme très lent de 0,5 p. 100 par an. Bref, il y a convergence des revenus moyens, mais elle se produit très lentement. Deuxièmement, la corrélation entre les rangs de 1960 et de 1990, telle que mesurée par le coefficient de Spearman, est très élevée : 0,85. Le poids de l'histoire joue ici : généralement on reste perdant ou gagnant. En dernier lieu, signalons quelques montées et dégringolades. L'ascenseur économique n'a pas fonctionné à la même vitesse pour tous les États. Parmi ceux qui ont grimpé d'au moins 10 places au classement, on retrouve le New Hampshire, la Georgie et l'Oregon; durant la même période, le Delaware, le Michigan et le Nouveau-Mexique ont cédé plus de dix places. Le jeu combiné de la chance et des politiques adoptées ont permis à certains États de faire des gains substantiels, tandis que d'autres ont encaissé un cuisant revers.

L'écart du revenu par habitant entre le Canada et les États-Unis s'amenuise lentement, au rythme de 0,4 p. 100 l'an, le ratio de 1,43 observé en 1965 étant tombé à 1,28 en 1990. La convergence progressive des deux économies devrait accélérer cette tendance et permettre au Canada d'atteindre

éventuellement le niveau de revenu américain. Cette tendance pourrait s'accélérer grâce à la chance ou à de bonnes politiques.

Les économistes n'ont rien d'intéressant à dire sur la chance. Cependant, ils sont en mesure de faire des observations pertinentes sur les politiques. Le scénario de convergence sur les marchés et de divergence au niveau des institutions fait ressortir quatre leçons :

- Les entreprises doivent s'aligner sur le leader en matière de qualité et de coûts dans leur domaine, sinon elles risquent de disparaître. Les barrières gouvernementales créant des marchés protégés vont disparaître (par exemple, l'accès limité au corridor aérien entre Montréal et Toronto ou l'obligation d'acheter de l'acier américain pour construire des ponts aux États-Unis). Facteur tout aussi important, le passé ne sera pas garant de l'avenir en matière de loyauté des sociétés clientes ou des grands détaillants. GM et Ford l'ont démontré à l'égard de leurs fournisseurs; Walmart et Du Pont seront aussi féroces; il en ira de même des organismes des États, des provinces et des gouvernements fédéraux. Par conséquent, les entreprises doivent économiser la main-d'oeuvre et maintenir au minimum les coûts de leurs régimes de soins de santé et de retraite. Si le gouvernement impose à toutes les entreprises d'offrir un niveau donné de protection pour les soins médicaux ou de pensions de retraite, ces exigences vont y être compensées par une baisse des salaires ou des valeurs immobilières dans l'espace économique concerné. Il en va tout autrement d'une entreprise, qui comme le faisait anciennement IBM, offre à ses employés des salaires et des avantages sociaux au-delà de la norme courante. Simultanément, les gestionnaires doivent prendre l'initiative d'adopter rapidement de nouveaux procédés de fabrication, de lancer de nouveaux produits et d'imaginer de nouvelles méthodes de distribution. Les gestionnaires qui prendront du retard seront poliment remerciés ou congédiés.

- Les décisions relatives à l'emplacement des entreprises seront influencées au premier chef par la disponibilité et les habitudes de travail de la main-d'oeuvre. Les syndicats qui limitent la flexibilité (répartition des tâches, congédiements, règles d'ancienneté) représenteront une importante force négative. La formation postsecondaire adaptée aux besoins des entreprises aura, par contre, un effet positif notable. De même, de bons réseaux de transport, de bonnes écoles élémentaires et secondaires et un environnement sain offrant des possibilités récréatives attireront les

entreprises parce que ces éléments facilitent l'accès à la main-d'oeuvre.

- Dans le contexte du marché des trente prochaines années, il se pourrait bien que des subventions ciblées et une faible imposition des bénéfices des sociétés constituent des moyens efficaces d'attirer les entreprises. Les codes fiscaux nationaux et internationaux laissent une grande marge de manoeuvre aux administrations – motamment municipales, régionales et provinciales – pour offrir des subventions en toute légalité. En outre ces administrations sont parfaitement libres de modifier le régime fiscal des entreprises. L'expérience européenne montre qu'en la matière, la discipline ne viendra d'en haut que dans les cas les plus spectaculaires. En formulant leurs stratégies en matière de fiscalité ou de subventions, peu de pouvoirs publics – à l'exception des gouvernements nationaux – auront les moyens de s'offrir toute la gamme des pratiques permises. Plutôt, ils devront s'interroger sur l'opportunité de consacrer leurs ressources à des programmes généraux comme l'amélioration des écoles et des parcs, à des programmes industriels très ciblés comme la construction de nouveaux accès routiers à certains sites industriels, ou encore s'ils doivent plutôt offrir des congés fiscaux en échange de nouveaux investissements.

- L'environnement économique pressenti n'obligerait pas les gouvernements à adopter des politiques de dépenses identiques afin de maintenir la compétitivité de leur économie. Certains voudront favoriser l'éducation, d'autres les régimes de retraite. Le contexte économique futur laisse toutefois penser que les gouvernements devraient mettre davantage l'accent sur les taxes sur les biens et services, qui peuvent être compensées à la frontière, ainsi qu'aux impôts proportionnels sur le revenu pour éviter de faire fuir des personnes hautement qualifiées ou des industries très profitables mais aussi très mobiles. Le nouveau contexte va pénaliser particulièrement les États et les provinces qui vont perçoivent de lourdes taxes les bénéfices des sociétés.

L'AVENIR DE LA POLITIQUE COMMERCIALE ET SES CONSÉQUENCES POUR L'INTÉGRATION ÉCONOMIQUE DE L'AMÉRIQUE DU NORD

TOUTE PROSPECTIVE QUANT À L'INTÉGRATION ÉCONOMIQUE nord-américaine doit prendre acte du rôle dominant de la politique commerciale des États-Unis. Ce pays est à l'origine de 71 p. 100 des exportations totales de l'ALENA (en incluant les échanges intra-régionaux); les chiffres correspondants sont de 54 p. 100 pour les exportations totales de l'hémisphère occidental, de 30 p. 100 pour celles de l'APEC et de 12 p. 100 pour celles de l'ensemble du monde. Quand les États-Unis éternuent, leurs partenaires commerciaux attrapent un rhume. Quand les responsables de la politique commerciale américaine hésitent, les nouvelles initiatives cessent.

La campagne présidentielle américaine de 1996 a peu fait état des enjeux de la politique commerciale. À première vue, cette absence d'intérêt pourrait faire craindre que les États-Unis ne soient plus en mesure de poursuivre leur tradition de promouvoir le libre-échange devant les sentiments protectionnistes qui tiraillent leurs deux principaux partis politiques. Les appréhensions liées à la stagnation des salaires et à l'insécurité d'emploi (malgré une situation où l'on s'approche du plein-emploi aux États-Unis) menacent de saper tout soutien à de nouvelles négociations commerciales. Des politiciens de toute allégeance se ont joué sur ces craintes; certains ont ressuscité l'argument de la concurrence déloyale des pays à faibles salaires, notion discréditée lors des pourparlers ayany mené à l'ALENA, mais qui a refait surface au lendemain de la crise mexicaine.

Bien sûr, les Américains devront passer par un débat national déchirant sur ces questions au cours des prochaines années, comme ce fut le cas pour les Canadiens avant la ratification de l'ALE en 1988 (sans référendum toutefois). Les auteurs croient qu'en bout de course, les tenants du libre-échange sortiront vainqueurs, et ce, pour deux raisons.

Premièrement, de nouveaux accords commerciaux favorisent une stratégie d'expansion des exportations, comme le préconisent les deux partis politiques. L'économie américaine dépend moins de l'exportation que l'économie canadienne, mais beaucoup plus d'entreprises et de travailleurs américains en ont besoin pour assurer leur croissance et leurs emplois que ce n'était le cas il n'y a que dix ans. Deuxièmement, les accords commerciaux possibles imposeraient des obligations asymétriques. Comme les barrières tarifaires sont déjà très basses aux États-Unis, les changements que devrait envisager ce pays seront modestes comparés à ceux que devront consentir ses partenaires commerciaux. L'ALENA en est un bel exemple : les négociations visèrent essentiellement à s'entendre sur les changements que le Mexique devait s'engager à faire pour entrer dans le club canado-américain. Très peu de changements furent exigés des États-Unis en contrepartie. Ce genre de calcul mercantiliste est fort prisé des leaders politiques américains qui s'objectent toujours à donner quelque chose sans rien obtenir – mais jamais l'inverse!

Pour ces raisons, les auteurs croient que le Congrès acceptera, à la mi-1998, d'accorder de nouveau au président l'autorité de négocier selon la procédure accélérée, permettant ainsi aux États-Unis de se concentrer sur les négociations régionales et multilatérales, qui sont essentiellement en panne depuis le début de 1996. Ainsi, la politique américaine pourrait suivre le même scénario qu'au cours des deux dernières décennies et continuer d'être un amalgame de mesures législatives intérieures, d'initiatives commerciales au niveau régional et de négociations multilatérales dans le cadre de l'OMC.

Les sections suivantes sont consacrées à un examen des tendances lourdes qui pourraient émerger dans chacun des secteurs étudiés. Bien sûr, prédire les tendances de la politique commerciale américaine comporte autant de risque que de prévoir la température. S'il se peut fort bien que nous ne puissions prédire les brefs orages qui s'abattront sur les relations bilatérales en matière de commerce et d'investissement, nous prévoyons tout de même qu'à long terme, les relations commerciales nord-américaines seront au beau fixe.

Au cours du prochain quart de siècle, les États-Unis et le Canada se sont engagés à éliminer les barrières aux échanges envers les principaux partenaires commerciaux de l'Amérique latine et de l'Asie-Pacifique. Si ces obstacles au commerce sont vraiment levés, la libéralisation des échanges et des investissements offrira des gains appréciables en raison des réformes dans les économies dynamiques de l'Asie de l'Est et de l'Amérique du Sud. En Amérique du Nord, par contre, il ne sera guère nécessaire de changer radicalement la plupart des politiques touchant le secteur manufacturier, à l'exception de l'importante industrie du vêtement. La réforme du secteur agricole tirera de l'arrière dans les deux régions, comme ce fut le cas dans le contexte canado-américain. Pour les économies nord-américaines, les trois principales conséquences de ces engagements sont :

- des pressions accrues en vue d'une adaptation du secteur du vêtement;
- une concurrence plus vive dans les secteurs de la viande et des produits laitiers, de la part de l'Australie et de la Nouvelle-Zélande, et dans celui du sucre, de la part du Brésil et peut-être de Cuba;
- des marchés d'exportation en expansion chez les partenaires commerciaux régionaux en raison de l'accélération de la croissance suscitée par l'augmentation des échanges.

Dans cette perspective, les engagements en matière de libéralisation des échanges semblent plutôt réalistes. En effet, le principal problème d'emploi concerne le secteur du vêtement, où les dirigeants politiques craignent un raz-de-marée d'importations en provenance de Chine. Toutefois, au moment où la Chine sera vraiment en mesure d'assumer toutes les responsabilités du libre-échange dans la zone Asie-Pacifique, le quart de siècle qui borne ces prévisions

sera presqu'écoulé. De plus les auteurs font l'hypothèse que le marché du vêtement sera parmi les derniers à être libéralisé au Canada et aux États-Unis en 2010 et que des conditions de réciprocité pourraient y être rattachées; celles-ci pourraient ouvrir le marché chinois aux importations de textiles tout en conservant certaines mesures de protection pour le secteur du vêtement.

PERSPECTIVES DE LIBRE-ÉCHANGE DANS L'HÉMISPHÈRE AMÉRICAIN

EN DÉCEMBRE 1994, AU SOMMET DES AMÉRIQUES tenu à Miami, les 34 pays démocratiques de l'hémisphère ont annoncé leur intention de négocier la mise en place, d'ici 2005, d'une zone de libre-échange des Amériques. L'objectif est ambitieux, en particulier pour les plus petits pays relativement peu développés et dont les exportations proviennent d'un seul secteur. Heureusement ces pays ont déjà entamé leur propre démarche d'intégration économique au sein d'accords régionaux; le processus est déjà enclenché. Assurer un succès durable à ces initiatives constitue une condition préalable à l'intégration économique au niveau de l'hémisphère.

Mais cette intégration économique de l'hémisphère peut-elle se réaliser au vu des défis politiques et économiques qu'elle imposera à la plupart des gouvernements?

Trois facteurs nous incitent à douter de la viabilité du processus devant mener à un ALEA. Ils sont tous liés à des problèmes de transition qui devraient être réglés au cours des prochaines années :

- La première préoccupation a trait à la difficulté d'accorder l'autorité requise au président des États-Unis de négocier selon la procédure accélérée. Si cette condition n'était pas remplie, l'accès du Chili à l'ALENA serait bloqué, de même que l'extension des avantages de l'ALENA aux pays du bassin des Caraïbes. Cependant, comme nous l'avons indiqué précédemment, il est probable que cette autorité sera accordée en 1998 et que les tensions proctectionnistes aux États-Unis s'atténueront.

- La crise financière mexicaine, survenue 10 jours seulement après le sommet de Miami, a ravivé les inquiétudes quant à la capacité d'effectuer des réformes économiques durables en Amérique latine. Quoique « l'effet tequila » n'ait été ressenti que dans quelques pays latino-américains, il a mis en relief la vulnérabilité de ces pays à des crises, essentiellement en raison des faiblesses de leur secteur bancaire. Heureusement, la Banque mondiale et la Banque inter-américaine de développement ont consacré beaucoup de ressources à aider les banques centrales à renforcer et à contrôler leur secteur bancaire. La crise mexicaine pourrait donc n'avoir été qu'un avertissement coûteux mais salutaire.

- Enfin, des événements politiques ont semé le doute quant à la capacité des partenaires de l'hémisphère à oeuvrer de concert à la création de l'ALEA. De profondes inégalités de revenu existent non seulement entre pays mais à l'intérieur de ceux-ci; elles sont sources de tensions sociales et ont affaibli le soutien dont bénéficient les dirigeants politiques sur le front des grandes réformes économiques. En Colombie, les problèmes liés au trafic de la drogue continuent de peser sur les relations avec les États-Unis et avec d'autres pays, comme le Mexique, qui servent de relais aux expéditions de stupéfiants. Simultanément, des problèmes de frontières gâtent les relations entre le Pérou et l'Équateur et entre la Colombie et le Venezuela. Ces problèmes sont des plus inextricables, mais le processus de négociation de l'ALEA – qui englobe l'environnement et le commerce de la drogue – devrait faciliter les efforts des divers pays en ce domaine.

Somme toute, les inquiétudes évoquées ci-dessus sont contrebalancées par d'autres indicateurs, positifs ceux-là, émanant des pays d'Amérique latine. Trois faits nouveaux, s'ils devaient s'avérer durables, justifieraient l'optimisme :

- Premièrement, les réformes économiques se poursuivent dans tout l'hémisphère, consolidant les bases d'une croissance à moyen et à long terme. Pour en arriver à l'ALEA, les grands pays d'Amérique latine et des Caraïbes devront er leurs propres programmes de réforme.

- Deuxièmement, le mécanisme du sommet des Amériques fonctionne bien. Des rencontres ministérielles ont eu lieu à Denver (juin 1995), à Carthagène, en Colombie (mars 1996), à Belo Horizonte, au Brézil (mai 1997) et une autre est prévue au Costa Rica en 1998. Les ministres du Commerce ont constitué onze groupes de travail pour revoir les domaines actuels et possibles de collaboration entre partenaires commerciaux de l'hémisphère; les travaux consacrés à un mécanisme de règlement des différends devaient débuter dans la foulée de la rencontre prévue au Brézil. Plus important encore, les chefs d'État ont convenu de tenir un deuxième sommet des Amériques en mars 1998, à Santiago, au Chili. On pourrait annoncer à cette occasion quand démarreront les négociations proprement dites en vue de conclure l'ALEA.

- Enfin, le processus d'intégration continue sa progression dans le cadre de plusieurs accords sous-régionaux. Les pays du MERCOSUR renforcent leur union douanière, malgré des difficultés dans

les secteurs de l'automobile et de l'agriculture. Simultanément, ils forgent des liens avec le Chili, la Bolivie et les pays du Groupe des Andes dans le cadre de ce qu'ils appellent « des modalités d'association » qui, de fait, sont des accords de libre-échange portant sur certaines marchandises et la réglementation aux frontières. En outre, les pays d'Amérique centrale ont relancé leur marché commun, tandis que les pays des Caraïbes commencent à mettre en oeuvre les engagements régionaux pris il y a quelques années.

Construire l'ALEA

Quel est le cheminement le plus probable vers l'ALEA? Certains, dont l'ancien ministre canadien du Commerce, Roy MacLaren, favorisent une approche de type « big bang » : tous les pays négocient simultanément un nouvel accord global comme pour le GATT et l'OMC. D'autres soutiennent qu'il ne faut pas réinventer la roue et qu'une zone intégrée de libre-échange ressortira de l'évolution des liens existants et de la convergence entre les groupes sous-régionaux recherchant l'intégration.

Nous préconisons une approche progressive, plus pragmatique, conjuguant la poursuite des efforts d'intégration sous-régionaux (y compris l'expansion de l'ALENA) à des efforts à l'échelle de l'hémisphère pour harmoniser les règles nationales ou sous-régionales qui pourraient faire obstacle à l'ALEA. Vu les différences entre les pays et les groupes sous-régionaux, nous croyons que le processus doit être à géométrie variable plutôt que linéaire.

La croissance de l'ALENA jouera un rôle clef dans l'intégration économique de l'hémisphère puisqu'on trouve chez ses membres 85 p. 100 de la production de l'hémisphère. Les sociétés qui veulent s'établir sur les marchés dominants devront se soumettre aux normes de l'ALENA[10].

Les négociations sur l'accession du Chili à l'ALENA devraient procéder rapidement une fois que le président américain aura obtenu du Congrès le renouvellement de ses pouvoirs de négocier selon la procédure accélérée. L'ALENA pourrait alors s'ouvrir à plusieurs pays d'Amérique centrale et des Caraïbes; la Colombie pourrait aussi devenir membre à condition de régler les tensions politiques issues du trafic des stupéfiants (ce qui semble improbable avant la fin du mandat du président Semper en 1998). En outre, des projets de loi ont été présentés au Congrès américain en vue d'accorder aux 24 pays des Caraïbes un régime de préférences commerciales calqué sur l'ALENA, étant entendu que ces pays vont poser leur candidature à l'ALENA au cours des dix prochaines années. Plusieurs de ces pays pourraient être admis beaucoup plus tôt si les réformes qu'ils ont entreprises se poursuivent avec succès. Après le départ de Fidel Castro, Cuba deviendra certainement une candidate de choix pour l'ALENA. Un calcul élémentaire montre donc que 29 pays pourraient être associés à l'ALENA en 2005[11].

Ces pays peuvent-ils s'engager à respecter les exigences rigoureuses de l'ALENA? Sous plusieurs rapports, ils l'ont déjà fait en signant les Accords de l'Uruguay Round qui comportent plusieurs réformes inspirées de dispositions de l'ALENA. Le principal défi demeure de trouver des façons de parvenir à se conformer à ces dispositions qui vont au-delà de celles de l'OMC (par exemple les accords complémentaires en matière d'investissement, de propriété intellectuelle, de services, d'environnement ou de travail).

Sur le chemin qui mène à l'ALEA, la plus grande inconnue demeure les relations entre MERCOSUR et un ALENA élargi[12]. Ces relations dépendront de la façon dont l'ALENA changera suite à l'adhésion d'autres pays et du cheminement que parcourra MERCOSUR au cours des cinq prochaines années alors que ses membres devront à la fois parachever l'union douanière et négocier des accords de libre-échange avec leurs voisins d'Amérique du Sud.

L'expansion simultanée de l'ALENA et de MERCOSUR signifie que certains pays (dont le Chili et, peut-être, la Colombie) seront parties à des accords commerciaux concurrents réunissant de grands pays d'Amérique du Nord et du Sud. Certains seront parties à plusieurs accords de libre-échange avec des partenaires différents. Il y aura donc probablement des conflits au niveau des calendrier de libéralisation et de la réglementation commerciale[12]. Il pourrait être plus efficace de traiter ce genre de questions dans le cadre de pourparlers au niveau de l'hémisphère en complément du processus d'intégration et des négociations qui se déroulent au sein des groupes sous-régionaux.

Dans cette veine, nous croyons que les groupes de travail liés à l'ALEA pourraient poursuivre plusieurs objectifs distincts :

- Ils peuvent lever les obstacles à l'intégration entre pays et groupes de pays et prévenir l'émergence de nouveaux problèmes, notamment en mettant en lumière les contradictions et en faisant un suivi des progrès accomplis dans les sous-régions.

- Ils peuvent promouvoir des consultations sur des questions particulières qui ne sont pas abordées dans les accords sous-régionaux ou multilatéraux, par exemple les dispositions de l'ALENA qui vont au-delà de celles de l'OMC.

- Ils peuvent servir de forum pour des négociations au niveau hémisphérique sur les procédures douanières et sur les normes, lesquelles pourraient donner lieu à des accords de reconnaissance mutuelle.

PERSPECTIVES DE LIBRE-ÉCHANGE EN ASIE-PACIFIQUE

RÉUNIS À BOGOR, EN INDONÉSIE, EN NOVEMBRE 1994, les 18 pays membres du forum de coopération économique Asie-Pacifique (APEC) s'engageaient à

libéraliser les échanges et l'investissement dans la région d'ici 2010 pour les pays développés et d'ici 2020 pour les pays en développement. Les membres de l'APEC ont fait quelques pas prudents dans cette direction lors de la réunion d'Osaka en novembre 1995. Au sommet de Subic Bay, en novembre 1996, les dirigeants des pays de l'APEC se sont entendus pour faire avancer le projet d'Accord sur l'information technologique (ATI), lequel a été paraphé à la réunion ministérielle de Singapour en décembre 1996.

La démarche de l'APEC diffère de celle de l'ALEA. Les pays de l'APEC se sont entendus pour atteindre l'objectif du libre-échange à une date donnée mais n'ont précisé les modalités de mise en oeuvre des réformes nationales. Ils ont opté pour une démarche souple, au cas par cas, qu'ils ont appelé « l'unilatéralisme concerté ». Chaque pays décide indépendamment de ce qu'il libéralise, quand et comment. Le tout est soumis à deux contraintes : le respect des dates cibles déjà fixées et la comparabilité des réformes entre pays ayant atteint le même stade de développement. De fait, les réformes unilatérales vont se faire « en consultation ». En outre, l'APEC peut promouvoir des initiatives de libéralisation multilatérale dans d'autres secteurs comme les services financiers, l'aviation civile et les produits chimiques.

Malgré tout, il est difficile d'imaginer que les réformes de l'APEC puissent aller plus loin ou plus vite que celles inhérentes aux obligations prévues à l'ALENA. Les normes canado-américains en la matière constituent vraisemblablement un seuil maximum à atteindre pour l'APEC. Comme en font foi les premiers pourparlers sur la réglementation de l'investissement, les résultats des efforts de régulation conjointe vont probablement demeurer bien en deçà du modèle de l'ALENA.

Bref, nous n'attendons pas des négociations entre les gouvernements de l'APEC qu'elles servent de catalyseur à l'intégration économique nord-américaine. Ce seront plutôt les défis de la concurrence sur les marchés asiatiques en expansion qui commanderont la restructuration de l'industrie nord-américaine. Les échanges avec l'Asie du Sud-Est vont croître fortement, entraînant un développement rapide de la côte ouest en Amérique du Nord.

PERSPECTIVES DE LIBRE-ÉCHANGE À L'ÉCHELLE MONDIALE

SI LES INITIATIVES RÉGIONALES DE LIBÉRALISATION se poursuivent, il est probable qu'elles finissent par se fonder dans les négociations menées sous l'égide de l'OMC en vue d'un libre-échange planétaire[13]. Le principe agissant d'un tel scénario est simple : la crainte.

Nous sommes d'avis que la crainte d'être exclu des grands marchés est en va inciter la Communauté européenne à réviser sa politique consistant à accorder la priorité à l'expansion régionale en Europe. En effet, une telle politique accentue les pressions en vue de maintenir ou de hausser subtilement les barrières aux échanges à l'encontre des autres pays, notamment ceux qui concurrencent l'Europe de l'Est ou les pays méditerranéens dans le secteur agricole

et celui des produits manufacturés à faible intensité technologique. Si l'UE maintient son orientation pro-européenne, elle se retrouvera exclue des initiatives de libéralisation qui englobent à l'heure actuelles les économies les plus dynamiques de l'Asie de l'Est et d'Amérique latine. Pour pallier à ce danger l'Union européenne a tenté de lier ses efforts régionaux à ceux qui se déroulent en Asie (lors de la rencontre Europe-Asie) et à ceux de MERCOSUR; quelques hauts responsables en matière de politique commerciale ont préconisé un lien entre l'UE et les États-Unis dans le cadre d'une zone de libre-échange transatlantique (ZLETA). Toutes ces initiatives comportent plus de réthorique politique que de contenu économique et semblent condamnées à l'échec en raison de la réticence de l'Union européenne d'inscrire l'agriculture au programme des négociations sur le libre-échange[14].

Comme le nouvel OMC offre un forum pour la tenue de négociations permanentes, nous prévoyons que des négociations multilatérales s'amorceront bientôt, selon l'ordre du jour qui découle des accords de l'Uruguay Round et auquel viendront s'ajouter les questions discutées à Singapour et lors des rencontres ministérielles subséquentes. La réunion ministérielle de Singapour a été très importante pour la définition des priorités immédiates. Nous ne prévoyons pas de négociations globales tout azimut, sur le modèle des « rondes » passées du GATT. Plutôt, le processus de négociation continue et de rencontres ministérielles à tous les deux ans se prêterait à une approche modifiée, selon le principe du « round up »[15]. Ainsi, à chaque deux ans environ, les membres de l'OMC établiraient la liste des questions qu'ils jugent suffisamment avancées au sein du forum de l'OMC. La liste comprendrait suffisamment d'éléments pour permettre des compromis au niveau des secteurs et des enjeux. Les pourparlers se poursuivraient sur les autres sujets et de nouvelles questions pourraient être amenées à la table de négociation en tout temps. Le processus consisterait essentiellement en rondes de négociations consécutives qui s'emboîteraient les unes dans les autres.

La question fondamentale que soulèvent ces éventuelles négociations de l'OMC est de savoir si elles peuvent conduire au même niveau d'intégration économique que celui observé en Europe et qui s'annonce pour l'Amérique du Nord. Le caractère distinctif des négociations de l'OMC est qu'elles mettront en balance les normes européennes et celles d'autres régions. Dans certains domaines, la norme canado-américaine n'est peut-être pas la plus avancée et les politiques nord-américaines pourraient être relevées à la norme européenne. Il y a trois domaines où cela pourrait se produire : l'adoption de normes universelles en matière de politique de concurrence, l'adoption d'un système fondé sur l'origine des marchandises pour l'application des taxes indirectes au passage des frontières et la reconnaissance mutuelle des normes, des essais et des marques de certification des produits.

CONCLUSION

AU COURS DES 25 PROCHAINES ANNÉES, l'intégration économique nord-américaine s'accentuera sensiblement :

- La frontière canado-américaine deviendra aussi discrète que la frontière germano-hollandaise l'est aujourd'hui. Les obstacles frontaliers aux échanges vont passer à l'histoire : le recours aux mesures antidumping — déjà en déclin — disparaîtra au profit d'une concurrence au niveau de la réglementation et de subventions à l'investissement.
- Le commerce extérieur jouera un rôle de plus en plus grand dans les deux économies et les échanges bilatéraux continueront leur progression rapide.
- Les échanges avec l'Asie vont accaparer une part beaucoup plus grande des exportations et des importations du Canada et des États-Unis accélérant ainsi l'expansion des ports de la côte ouest.
- Quelle que soit l'issue de la question québécoise, les auteurs prévoient que l'expansion des pouvoirs des provinces et des États se poursuivra aux dépens de ceux des gouvernements fédéraux. Dans les deux pays, la direction de l'intégration économique sera davantage tributaire des provinces et des États que dans le passé. La dévolution des pouvoirs va réduire l'assiette fiscale des administrations centrales et continuer d'exercer une contrainte sur les dépenses sociales.

NOTES

1 U.S. Department of Transportation, Office of International Aviation, *The Impact of the New U.S.–Canada Aviation Agreement at Its First Anniversary*, Washington (D.C.), mars 1996.

2 Reuters, interview avec Don Woodley; David Tanaka, « Who's on First? Compaq? », *The Computer Paper*, juin 1995.

3 D'après des données de Statistiques Canada.

4 Statistiques de l'ALENA, Secrétariat de l'ALENA, décembre 1995.

5 Patrick Messerlin, « Competition Policy and Anti-dumping Reform », paru dans *The World Trading System: Challenges Ahead*, publié sous la direction de Jeffrey J. Schott, Institute for International Economics, Washington (D.C.), 1996.

6 Thomas O. Bayard et Kimberly Ann Elliott, *Reciprocity and Retaliation in U.S. Trade Policy*, Institute for International Economics, Washington (D.C.), 1994, p. 58.

7 Paul Wonnacott, « The Auto Sector », paru dans *The Canada–United States Free Trade Agreement: The Global Impact*, publié sous la direction de Jeffrey J. Schott et Murray G. Smith, Institute for International Economics, Washington (D.C.), 1988.

8 Jeffrey A. Frankel, *Regional Trading Blocs*, Institute for International Economics, Washington (D.C.), juillet 1997; Jeffrey A. Frankel et Srang Jin Wei, « Open Regionalism in a World of Continental Trading Blocs », *NBER Working Papers*, septembre 1995; Jeffrey A. Frankel et Srang Jin Wei, « Regional Trading Arrangements: Natural or Super-Natural? », *Berkeley Working Papers*, janvier 1996.

9 Gary C. Hufbauer et Dean A. DeRosa, « Costs and Benefits of the Export Source Rule, 1998–2002 », février 1997.

10 Toutefois, les pays membres de l'Association européenne de libre-échange ont adopté les normes de la CE bien avant d'avoir négocié leur adhésion à la CE.

11 Le gouvernement de Barbados a récemment annoncé qu'il ne solliciterait pas l'adhésion à l'ALENA mais attendrait plutôt la ratification del'ALEA. Mais il a réaffirmé du même souffle son intérêt envers la parité avec l'ALENA, qui dépend de l'accession graduelle à l'ALENA.

12 Le sujet a été étudié en détail par l'économiste canadien Ron Wonnacott.

13 Pour une analyse de ce scénario, voir C. Fred Bergsten, « Globalizing Free Trade », *Foreign Affairs*, vol. 75, nº 3 (mai/juin), p. 105-120.

14 Pour une brève critique du projet de zone de libre-échange transatlantique, voir Jeffrey J. Schott, « Reflections on TAFTA », paru dans *Towards an Open Transatlantic Marketplace*, publié sous la direction de Bruce Stokes, Council on Foreign Relations, New York, 1995.

15 Pour un examen plus détaillé de cette question, voir Jeffrey J. Schott, *WTO 2000: Setting the Course for World Trade*, Institute for International Economics, Washington (D.C.), septembre 1996.

Publications de recherche d'Industrie Canada

COLLECTION DOCUMENTS DE TRAVAIL

N° 1 L'intégration économique de l'Amérique du Nord : les tendances de l'investissement étranger direct et les 1 000 entreprises les plus grandes, Industrie Canada, personnel de la Direction de l'analyse de la politique micro-économique, notamment John Knubley, Marc Legault et P. Someshwar Rao, 1994.

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COLLECTION DOCUMENTS DE DISCUSSION

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III. RELEVER LE DÉFI

LA RÉACTION DES ENTREPRISES — L'INNOVATION À L'ÈRE DE L'INFORMATION

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LE CANADA AU 21e SIÈCLE

III. RELEVER LE DÉFI

LA RÉACTION DES ENTREPRISES — L'INNOVATION À L'ÈRE DE L'INFORMATION

Par Randall Morck, Université de l'Alberta, et
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PRÉFACE

À L'APPROCHE DU NOUVEAU MILLÉNAIRE, les Canadiens assistent à une transformation radicale des paramètres de l'économie. La tendance à la mondialisation des marchés et à l'intégration de plus en plus poussée de l'activité économique entre les nations s'accentue. Les progrès spectaculaires de l'informatique et des communications facilitent ce mouvement de mondialisation et changent fondamentalement le milieu de travail et le mode de vie des Canadiens. Du même coup, et comme conséquence première de la révolution de l'information, les activités axées sur le savoir occupent une place sans cesse plus grande dans notre économie et celle des autres pays industrialisés.

Cette mutation fondamentale de l'économie nous incite à faire une comparaison avec la révolution industrielle du 19e siècle. Comme à cette époque, les grands changements structurels engendrent des incertitudes. Les entreprises et les travailleurs luttent pour se tailler une place dans ce nouvel ordre économique. Les Canadiens se demandent si les ressources matérielles, humaines et institutionnelles de leur pays constituent une assise suffisamment solide pour garantir leur prospérité future. Beaucoup estiment que les perspectives qui s'offrent au Canada sont beaucoup moins sûres qu'à l'époque où les richesses naturelles jouaient un rôle clé dans l'édification de l'économie du pays.

Afin d'explorer plus à fond les possibilités et les défis que laissent entrevoir ces développements à moyen et à long terme, la Direction de l'analyse de la politique micro-économique d'Industrie Canada a invité un groupe de spécialistes à présenter leur « vision » du Canada au 21e siècle dans un certain nombre de domaines importants. Chaque auteur devait s'attaquer à deux tâches redoutables : d'abord dégager les grandes tendances historiques en vue d'élaborer des scénarios illustrant comment les choses évolueront vraisemblablement au cours des dix à quinze prochaines années dans le domaine qui lui avait été assigné, puis examiner les conséquences à moyen terme de cette évolution pour l'économie canadienne.

Les essais qui découlent de cet exercice sont en voie de publication sous le thème général « Le Canada au 21e siècle ». La collection englobe onze documents traitant des perspectives qui s'offrent au Canada à moyen terme dans différents domaines. Ces documents sont répartis en trois volets. Le premier, *Mise en situation*, est consacré aux tendances fondamentales qui façonneront le contexte économique à moyen terme au Canada. Le second volet, *Ressources et technologie*, traite de l'évolution de certains facteurs importants sur le plan de la création de la richesse au Canada, ainsi que des mesures requises pour leur donner un solide fondement en vue d'assurer la prospérité du pays. Le troisième et dernier volet, *Relever le défi*, scrute les réactions des particuliers, des entreprises et des gouvernements aux défis qui se présenteront à moyen terme et propose certains éléments de solution en vue d'orienter le pays sur la bonne voie.

S'inscrivant dans le troisième et dernier volet, *Relever le défi*, cette étude des professeurs Randall Morck, de l'Université de l'Alberta, et Bernard Yeung, de l'Université du Michigan, est consacrée à la réaction des entreprises aux tendances de fond qui dictent l'évolution économique : le rythme de l'innovation — qui va en s'accélérant —, l'émergence d'une économie mondiale de libre marché et le vieillissement de la population canadienne. Dans ce nouveau contexte, les entreprises doivent renforcer leur capacité de recueillir et de traiter l'information afin de pouvoir innover.

Les auteurs font valoir la nécessité pour les organisations d'offrir des stimulants semblables à ceux du marché afin d'atteindre la même efficience dans la production et le traitement de l'information. Les politiques devraient être axées uniquement sur les problèmes de marché importants que l'État peut utilement tenter de résoudre. Un de ces problèmes est la concurrence insuffisante dans certains segments du secteur bancaire et financier, qui explique en partie les difficultés de financement des petites entreprises. Un autre problème auquel les gouvernements pourraient s'attaquer est celui des déficiences des marchés de l'éducation, de la formation et de la R-D fondamentale qui gênent l'innovation et justifient un régime de subventions publiques. De façon plus générale, les auteurs signalent que le gouvernement lui-même est devenu une entreprise concurrentielle : il doit offrir des biens publics de bonne valeur, à des taux d'impôt concurrentiels, au risque de voir partir pour l'étranger les capitaux, les idées et la main-d'oeuvre qualifiée.

SOMMAIRE

DANS LES COURS DE PRÉVISION, les étudiants au baccalauréat en économique apprennent habituellement à tracer des tendances pour les variables qui les intéressent et ils utilisent ensuite les données statistiques en les extrapolant dans l'avenir. Cette procédure a l'avantage de n'exiger pratiquement aucun travail de compréhension des choses que l'on cherche ainsi à prédire. Elle mène également à des erreurs spectaculaires. Nous croyons que la clé qui permet de faire des prévisions informées au sujet de l'avenir réside dans la compréhension de certains éléments fondamentaux de l'économique. Nous croyons qu'une théorie économique appelée l'école autrichienne, récemment réhabilitée en partie après presqu'un siècle sous la forme de la théorie de la croissance endogène, est la clé permettant de comprendre la situation dans laquelle nous nous trouvons actuellement.

Il est intéressant de prédire que le monde est à l'aube d'une ère entièrement nouvelle, mais habituellement, le monde ne coopère pas. Dans dix ans, les entreprises et les emplois ne seront probablement pas très différents de ce qu'ils sont aujourd'hui. Cependant, il y a quelques changements qui auront probablement un impact. Nous croyons que les plus importants sont l'accélération du rythme de l'innovation, la mondialisation et l'évolution démographique de la population canadienne. Ces trois changements ne sont pas sans liens.

L'immigration est probablement la seule façon de prévenir le désastre démographique qui attend le Canada à mesure que sa population vieillit. Cela nous amène à faire ce que nous considérons comme des prédictions relativement sûres à un horizon de dix ans pour le Canada : la population canadienne sera plus diversifiée que celle des autres pays occidentaux avancés et cette diversité lui conférera un avantage concurrentiel de taille pour forger des liens économiques avec les nouveaux pays riches d'Asie et d'ailleurs.

Par conséquent, la mondialisation pourrait être une très bonne chose pour le Canada. Nous sommes peut-être mieux placés pour profiter du déplacement du centre de gravité économique mondial hors de la zone Nord-Atlantique. La politique actuelle du Canada, qui vise à promouvoir le libre-échange à l'échelle mondiale, est donc sensée. Mais l'accélération du rythme de l'innovation est une raison encore plus convaincante pour que le Canada préconise le libre-échange.

Les innovations ont des propriétés économiques particulières. Lorsqu'une entreprise dépense des fonds en R-D pour mettre au point un procédé ou un produit nouveau, elle touche un rendement plus élevé si l'innovation peut être commercialisée à grande échelle. Nous croyons qu'il deviendra de plus en plus évident que la concurrence réelle dans une économie mondiale de libre marché sera la concurrence sur le plan de l'innovation. Pour devenir des innovateurs concurrentiels, les entreprises canadiennes doivent

pouvoir réaliser des rendements élevés sur leurs innovations. Et cela exige qu'elles aient accès au marché le plus étendu possible — le marché mondial.

À notre avis, le gouvernement a un rôle essentiel à jouer pour promouvoir le dynamisme économique du Canada au cours de la prochaine décennie, mais ce rôle est passablement différent de celui qu'il a assumé au cours de la plus grande partie du 20e siècle. L'État est en voie de devenir une entreprise concurrentielle. Les gouvernements qui ne réussiront pas à offrir une infrastructure publique — matérielle et immatérielle — de haute qualité à des taux d'imposition concurrentiels perdront du capital, de la main-d'oeuvre spécialisée et, par conséquent, des connaissances, au profit d'autres économies. Un élément critique de cette infrastructure est, selon nous, un système juridique bien adapté, fiable et équitable qui protège les droits de propriété réelle et intellectuelle. Un aspect essentiel du système juridique est une législation en matière de régie d'entreprise qui favorise l'investissement en renforçant la confiance des investisseurs à l'égard des sociétés. L'éducation, l'ordre public et les filets de sécurité sociale sont d'autres éléments fondamentaux de cette infrastructure. Par contre, quelle que soit la valeur de la cause défendue, les subventions aux entreprises ne le sont pas.

Nous concluons par une brève description de la tâche qui attend les entreprises dans l'avenir et par une prévision qui, selon nous, a toutes les chances de se réaliser si les autres ne se concrétisent pas.

LES PRÉVISIONS PASSÉES

L'avenir n'est plus ce qu'il était.
— Paul Valéry (1871-1945).

QU'EST-IL ADVENU DES PROPULSEURS INDIVIDUELS, des chiens-robots, des visiophones, des colonies sur Mars et de la semaine de travail de 15 heures qui, en 1965, semblaient poindre à l'horizon? Pourquoi les prédictions faites dans les années 60 par les rédacteurs de *Popular Mechanics* ont-elles passé complètement à côté de l'ordinateur personnel, du télécopieur et de l'Internet? L'hiver planétaire que les scientifiques se sont empressés de prédire comme étant inévitable si Saddam Hussein mettait à feu les champs pétrolifères koweitiens ne s'est jamais réalisé, ce qui a probablement dégoûté le dictateur égaré. Les spécialistes des sciences physiques semblent avoir beaucoup de difficulté à prédire l'avenir et la science économique est beaucoup moins exacte que la physique. Pourquoi, alors, devrions-nous accorder de l'attention aux divagations d'un économiste?

Étonnamment, beaucoup d'éminents économistes ont réussi assez bien à prédire l'avenir des décennies à l'avance. Thorstein Veblen, Friederich August von Hayek et, même, Karl Marx ont fait des prévisions singulièrement éclairées des choses à venir[1]. Bien entendu, les professionnels de la prévision économique sont souvent comparés à des singes qui lancent des dards[2]. Quel est l'astuce? Qu'est-ce qui permet de faire des prévisions justes? Nous croyons que quelques principes fondamentaux interviennent ici.

L'HISTOIRE NE PEUT S'EXTRAPOLER À PARTIR DE TENDANCES

> *En 176 ans, le Mississipi inférieur a rétréci de 242 milles. Cela représente un peu plus d'un mille et un tiers en moyenne par année. Par conséquent, toute personne raisonnée, qui n'est ni aveugle ni idiote, peut voir que durant la période silurienne de l'oolithique inférieur, c'est-à-dire il y a tout juste un million d'années en novembre prochain, le Mississipi inférieur mesurait plus d'un million trois cent mille milles et s'étendait au delà du Golfe du Mexique tel une canne à pêche. Et, du même coup, n'importe qui peut voir que dans 742 ans, le Mississipi inférieur ne mesurera plus qu'un mille et trois quarts et les villes du Caire et de la Nouvelle-Orléans auront raccordé leurs rues et vivront confortablement, admimistrées par un même maire et un même conseil municipal. La science a quelque chose de fascinant : on peut faire de telles conjectures avec un investissement aussi limité au niveau des faits.*
> — Mark Twain, *Life on the Mississipi,* 1863.

DANS LES COURS DE PRÉVISIONS ÉCONOMIQUES, les étudiants au baccalauréat apprennent habituellement à tracer des tendances pour les variables qui les intéressent, et ils utilisent ensuite les données statistiques en les extrapolant

dans l'avenir. Cette procédure a l'avantage de n'exiger pratiquement aucun travail de compréhension des choses que l'on cherche ainsi à prédire. Elle mène également à des erreurs spectaculaires.

En 1968, un groupe de scientifiques du MIT, qui s'appelait le Club de Rome, a fait de sombres prédictions au sujet de pénuries imminentes à l'échelle mondiale pour presque tous les métaux et combustibles. Ils ont projeté les taux de croissance exponentiels observés dans les années 60 au niveau de l'utilisation des matières premières pour en venir à la conclusion que les réserves mondiales d'aluminium, de cuivre, d'or, de molybdène, de gaz naturel et de zinc seraient bientôt épuisées. Leur rapport, intitulé *Les limites de la croissance*, est à l'origine du mouvement écologiste moderne[3].

Les prédictions du Club de Rome se sont avérées complètement fausses (du moins jusqu'à maintenant). L'exploration a permis d'accroître considérablement les réserves disponibles; les hausses de prix ont contribué à réduire la demande, à favoriser les innovations axées sur une plus grande efficience et la mise au point de substituts et elles ont rendu le recyclage profitable. Les extrapolations des scientifiques du MIT à partir des tendances de l'époque n'étaient pas justifiées et ne tenaient pas compte de la façon dont l'offre et la demande allaient changer au fil de l'évolution des prix et de l'accumulation des connaissances. Dans les années 90, peu d'économistes prévoient des pénuries de matières premières qui pourraient gêner la croissance économique dans l'avenir prévisible.

COMPRENDRE LE SYSTÈME

> *Aux yeux de la majorité de l'intelligentsia, le socialisme était le successeur apparent de la tradition libérale; par conséquent, il n'est pas étonnant que, pour ces gens, toute notion voulant que le socialisme mène à l'opposé de la liberté puisse avoir été inconcevable*.
>
> — Friedrich August von Hayek, *The Road to Serfdom*, 1944, p. 27.

VON HAYEK, PRIX NOBEL D'ÉCONOMIQUE, a prédit le caractère totalitaire des économies communistes à une époque où, partout, des intellectuels étaient séduits par le marxisme. Il est arrivé à cette conclusion en tentant de comprendre comment fonctionnerait une économie communiste. Si les décisions économiques sont prises à partir du centre, comment le gouvernement central peut-il savoir quoi produire sans disposer d'un appareil de collecte de l'information (c'est-à-dire de surveillance) considérable? Comment peut-il s'assurer que ses décisions seront appliquées sans une présence policière considérable dans tous les aspects de la vie? Von Hayek a prédit que les économies communistes ne pourraient survivre et qu'éventuellement, elles s'écrouleraient, en proie au chaos. Premièrement, elles ne disposaient d'aucun mécanisme pour récompenser la créativité, l'innovation ou l'initiative et, ainsi, elles cesseraient de croître; deuxièmement, le problème posé par la collecte de l'information et

la coordination des activités économiques ne ferait qu'empirer avec le temps. Il a vu juste sur les deux plans[4].

Contrairement au Club de Rome ou au gratin de la classe intellectuelle occidentale du 20e siècle qui appuyait le communisme (ainsi que le national-socialisme), von Hayek a beaucoup réfléchi au système économique qu'il étudiait. Il a pris pour acquis la nature humaine et les principes fondamentaux de l'économique et s'est demandé à quoi aboutiraient ces éléments dans un tel système. Nous croyons que le contraste observé entre la pensée de von Hayek et celle du Club de Rome est au coeur des problèmes que soulève la prévision économique.

Von Hayek était l'un des principaux membres de l'école autrichienne, qui réunissait un groupe d'économistes dont les noms surgissent dès que l'on se met à faire des comparaisons du taux de succès des prédictions à long terme[5]. Par conséquent, nous consacrerons plusieurs pages à présenter un aperçu de cette école de pensée et des leçons que l'on peut en tirer pour expliquer la situation actuelle. Bien que la philosophie économique de l'école autrichienne ait été importante à la fin du 19e siècle et au début du 20e siècle, elle s'est mal harmonisée avec l'approche mathématique qui a caractérisé la théorie économique de la période d'après-guerre. Ainsi, jusqu'à récemment, alors qu'elle a refait surface sous le nom de théorie de la croissance endogène, elle n'a été considérée comme étant guère plus qu'une curiosité intellectuelle. L'école de pensée autrichienne ne remplace pas la théorie micro-économique ou macro-économique traditionnelle mais, de plus en plus, on reconnaît qu'elle fournit les pièces manquantes à leur vision de la réalité.

PRINCIPES ÉCONOMIQUES FONDAMENTAUX

L'économie a trait à l'offre et à la demande et non uniquement à l'offre

> *Avant que l'homme puisse se rendre sur la lune, votre courrier sera livré en quelques heures de New York en Californie, en Angleterre, en Inde ou en Australie par des missiles guidés… Nous sommes tout près d'entrer dans l'ère du courrier livré par fusée.*
>
> — A. Summerfield, Postmaster General des États-Unis, 1959.

La livraison du courrier par fusée, les propulseurs individuels, les chiens-robots, les visiophones et les colonies sur Mars étaient des technologies « à portée de la main » dans les années 60. Technologiquement, elles sont toutes réalisables aujourd'hui et pourraient « exister ». Alors où sont-elles?

L'armée américaine était le plus important client potentiel des propulseurs individuels dans les années 60, mais elle a rapidement réalisé que ces dispositifs exposaient les militaires au feu des francs tireurs, qu'ils consommaient beaucoup trop de carburant et qu'ils étaient difficiles à manoeuvrer. Un effort de R-D supplémentaire aurait probablement permis de surmonter les deux derniers obstacles,

mais le premier était insurmontable. Les autopropulseurs ont donc disparu pour des raisons non pas technologiques mais économiques : la demande s'est tarie.

Les visiophones ont été mis à l'essai mais les consommateurs n'ont pas aimé l'invasion de la vie privée qui résultait de l'installation d'une caméra dans la cuisine. Il est possible, techniquement, d'acheminer des images sur les lignes téléphoniques, mais aucun fabricant ne tente d'imposer le visiophone. Étant donné le manque d'intérêt des consommateurs, cette technologie est injustifiée sur le plan économique. Les chiens-robots et les colonies sur Mars pourraient encore apparaître, mais les consommateurs ne les ont pas réclamés jusqu'ici. Nous restons dans l'expectative en ce qui a trait à la semaine de travail de 15 heures et la possibilité d'un hiver nucléaire. Nous espérons sincèrement que la demande pour un service de livraison rapide du courrier ne justifiera jamais la mise en oeuvre, par Poste Canada, d'un programme qui supposerait de bombarder les villes avec des missiles guidés.

Dans tous ces cas, l'offre ne constituait pas un problème insurmontable. La technologie de production de ces biens existe et pourrait probablement être raffinée considérablement si la demande se manifestait. Le problème est que les gens n'en veulent pas; la demande est inexistante. Étant donné que l'objet de la production est de répondre à une demande, il n'y a donc pas de production.

La source de la valeur est subjective

> *La valeur est le plus invincible et le plus impalpable des fantômes, elle va et vient sans discernement, alors que la matière visible et dense demeure comme elle a toujours été.*
>
> — W. Stanley Jevons, *Investigations in Currency and Finance*, 1884, partie 2, chapitre 4.

Aristote affirmait que les biens avaient un « prix juste » objectif, déterminé par des principes moraux[6]. Il a fallu à l'humanité plus de deux millénaires pour se défaire de cette aberration et la notion de « prix moral » continue de réapparaître à l'occasion. Si l'hiver nucléaire devait survenir et que les économistes modernes devaient choisir une connaissance à transmettre aux survivants de l'apocalypse, ce serait sans aucun doute la notion selon laquelle la valeur est subjective. Il est insensé d'affirmer que trois talents constituent un prix « juste » objectivement déterminé pour une miche de pain, mais non quatre talents.

Jusqu'à Adam Smith, les philosophes ont discouru longuement sur la question de la valeur. Selon une vision théologique populaire, la valeur correspondait au « besoin » : un médicament avait de la valeur parce que les gens en avaient besoin. Mais qu'en est-il de l'eau, un bien absolument essentiel qui est pratiquement gratuit? L'eau se trouve en abondance, mais les médicaments sont rares. Est-ce la « rareté » qui détermine la valeur? Mais il y a abondance de terres utiles et pourtant, les poulets à deux têtes sont rares, mais peu recherchés.

Un des triomphes de la science économique du 19e siècle est d'avoir remis de l'ordre dans ce fouillis. La valeur est déterminée par le poids relatif de l'offre et de la demande. Une forte demande et une offre relativement faible entraînent une hausse des prix. L'eau est en forte demande mais l'offre est également abondante et l'offre de poulets à deux têtes est peut-être limitée, mais la demande est invisible.

La demande d'un bien dépend du nombre d'agents qui peuvent s'en servir pour satisfaire leurs « désirs » et le « désir » est une notion subjective. L'offre d'un bien dépend de la mesure dans laquelle on peut le produire. En retour, cela dépend de toute une combinaison de raretés naturelles au niveau des matières premières et des connaissances au sujet des procédés de production. La connaissance est également une notion subjective et, souvent, elle a beaucoup plus d'importance que la rareté naturelle.

La valeur crée l'offre

> *La justice consiste à permettre aux gens de mettre en pratique leurs compétences inégales en vue de satisfaire leurs intérêts particuliers*.
>
> — Maxime de Confucius.

Lorsque la demande dépasse l'offre, les prix augmentent. La recherche de façons d'accroître l'offre devient alors une entreprise lucrative. La découverte de nouvelles matières premières, l'expansion des installations de production et (ce qui est le plus important) la mise au point d'innovations visant à accroître l'efficience productive deviennent plus profitables lorsque les prix augmentent, du moins si les gens sont libres de conserver les gains économiques découlant de ces activités. Lorsque l'offre dépasse la demande, les prix chutent et les activités de ce genre semblent non rentables. Ce « mécanisme du marché » est le fondement étonnamment simple des économies de marché.

UNE EXPÉRIENCE RATÉE

> *La psychologie ne peut permettre l'expérimentation avec des humains et il n'y a pas de mécanisme utilisable à cette fin. Il est d'autant plus important alors de faire preuve de prudence dans l'utilisation des mathématiques*.
>
> — Johann Friedrich Herbart, *Lehbuch zur Psychologie*, 1816.

COMME LA PSYCHOLOGIE HUMAINE ET L'ASTRONOMIE, la science économique est une science d'observation. Nous ne pouvons mettre à l'essai des théories en ayant recours à des expériences contrôlées. Il est impossible et, probablement, contraire à l'éthique de tenter d'assujettir la moitié de la population à un régime économique expérimental tout en utilisant l'autre moitié comme groupe de contrôle. Il est par conséquent heureux que l'histoire ait réalisé une telle expérience pour nous, sous la forme du communisme international.

L'application du communisme à une moitié de l'Allemagne, de la Corée, de la Chine et de l'ancien empire austro-hongrois, et la présence du capitalisme dans l'autre moitié constituent une expérience contrôlée et répétée dans la meilleure tradition des sciences naturelles. La conclusion est incontournable : les mécanismes du marché comme ceux que nous avons décrits ont une importance critique.

L'objectif sous-jacent du communisme international était de changer la nature humaine — de créer un « nouvel homme socialiste » [sic], qui ferait preuve d'altruisme plutôt que d'égoïsme. Les travailleurs altruistes seraient heureux de trimer pour le bien de leurs camarades sans penser à leur propre rétribution. Si les régimes communistes avaient réussi à implanter un tel changement, ils auraient bien pu survivre et prospérer. Leur échec spectaculaire laisse penser que la nature humaine est, sinon immuable, du moins plutôt difficile à changer. Les lois de l'économique doivent s'adapter à la nature humaine, en tenant compte de toutes ses lacunes et imperfections.

LA NATURE HUMAINE

> *Pour réussir, trouvez le bon climat, sur la bonne terre, et vivez en harmonie avec les gens*.
>
> — Confucius.

UNE BONNE COMPRÉHENSION DE LA NATURE HUMAINE est essentielle à une bonne économie, à un bon gouvernement et à une bonne gestion. La nature humaine est-elle sujette à des régularités prévisibles? Toute la psychologie repose sur cette prémisse. Ceci étant, quelles sont les régularités de la nature humaine qui peuvent aider les spécialistes à faire des prédictions?

L'intérêt personnel

> *En 1960, le travail sera limité à trois heures par jour.*
>
> — John Langdon-Davies, *A Short History of the Future*, 1936.

La plupart des animaux, y compris les humains, semblent posséder au plus profond d'eux-mêmes divers mécanismes de survie. On peut faire valoir que ces instincts guident une bonne partie du comportement humain, notamment lorsque des décisions doivent être prises rapidement. Du point de vue de l'économiste, les plus importants de ces instincts sont l'appât du gain et l'aversion pour le risque.

Comme beaucoup d'autres animaux, les humains sont portés à accumuler. L'appât du gain a accru les chances de survie de nos ancêtres de l'ère paléolithique et, ainsi, ce trait est une partie inaltérable de la nature humaine. Pourquoi cela est-il important pour faire des prévisions? L'avarice est le gouffre dans lequel est disparue la semaine de travail de 15 heures. Depuis 1950, le PIB

réel par habitant s'est multiplié un peu moins de quatre fois. Si, en 1996, une personne était à l'aise avec le revenu moyen qui prévalait en 1950, elle aurait pu l'obtenir en travaillant quatre fois moins qu'elle aurait dû le faire à l'époque : la semaine de 15 heures. Peu de personnes ont saisi cette occasion. La nature humaine fait en sorte que nous voulons la richesse davantage que le loisir, ce qui signifie que nous continuons à travailler.

Un second aspect de la nature humaine qui a manifestement ses racines dans l'instinct biologique de la préservation est l'aversion pour le risque. S'il y a une façon sécuritaire et une façon risquée de parvenir à la même fin, toutes choses étant égales par ailleurs, les êtres humains préféreront la voie sécuritaire. Cela a de profondes conséquences pour ce qui est de prédire, par exemple, le comportement des investisseurs.

On peut faire valoir que l'auto-conservation engendre certains comportements plutôt complexes. Les gens aspirent aussi à posséder des choses immatérielles telles que le pouvoir, le statut et la reconnaissance, peut-être davantage que la richesse matérielle. Mais cette stratégie demeure fondée sur l'intérêt personnel. Ces biens immatériels permettent à ceux qui les possèdent d'utiliser les ressources d'autres personnes pour satisfaire leurs propres désirs. L'auto-conservation peut également entraîner un arbitrage entre l'intérêt personnel à court terme et à long terme. Nos ancêtres de l'ère paléolithique devaient pouvoir sacrifier la consommation à court terme (disons, manger des restes encore appétissants) au profit de la survie à long terme (éviter un prédateur qui pourrait se trouver dans le voisinage).

Des animaux sociaux

> *Ne parle jamais à la Société de façon irrévérencieuse, Algernon. Seuls les gens qui ne peuvent y entrer font cela.*
>
> — Oscar Wilde (1854-1900), *The Importance of Being Earnest*.

Un comportement intéressé n'est pas nécessairement un comportement égoïste. De nombreuses espèces ont élaboré un étonnant comportement coopératif pour accroître leurs chances de survie[7]. Les être humains entrent dans cette catégorie. Un comportement non coopératif qui augmente instantanément la satisfaction mais menace la survie à long terme ne durera pas — parce que, dans le cas contraire, l'espèce elle-même ne durera pas. Des expériences économiques menées principalement auprès d'étudiants de premier niveau, indiquent qu'une tendance à coopérer est inhérente à la nature humaine. Les simulations informatiques montrent que la forme de coopération la plus efficace est l'interaction « donnant donnant ». Les gens se rappellent de ceux qui leur ont fait des faveurs et de ceux qui les ont roulés et ils agissent en conséquence par la suite. Cette propension à échanger des faveurs, conjuguée à l'appât du gain, est considérée par de nombreux économistes comme un élément

central de l'explication d'une bonne partie de l'interaction qui se déroule entre les politiciens et les lobbyistes professionnels.

Notre instinct de coopération nous amène à élaborer et à respecter des règles sociales, des règlements et des institutions. Les contrevenants sont punis, bannis de la société (et, ainsi, exposés aux prédateurs) ou encore éliminés. De bonnes règles améliorent les chances de survie et les sociétés qui sont régies par de mauvaises règles périclitent. Notre instinct de survie nous incite à nous joindre à des sociétés qui possèdent de bonnes règles et à déserter celles qui en ont de mauvaises. Ce fait a des conséquences profondes pour les rapports entre le gouvernement et le secteur privé dans l'économie mondiale.

Le conditionnement

> *Nous sommes tous contrôlés par le monde dans lequel nous vivons et une partie de ce monde a été et continuera d'être érigée par les hommes. La question qui se pose est : Sommes-nous contrôlés par des accidents, des tyrans ou par nous-mêmes dans un modèle culturel affectif?*
>
> — B. F. Skinner, *Cumulative Record*, 1972.

Le conditionnement est une caractéristique répandue chez les animaux, y compris les êtres humains[8]. Nous sommes conditionnés par le contexte économique et social où nous nous trouvons. Nous apprenons ce qui apporte des récompenses et ce qui déclenche une punition. Pour l'essentiel, la société récompense les comportements qui procurent un plus grand bienfait collectif. Dans les usines étatisées des économies communistes, où l'initiative et le travail personnel n'étaient pas récompensés, les travailleurs avaient adopté comme éthique le principe suivant : « Ils prétendent nous rémunérer et nous prétendons travailler ». Le vol au travail était répandu parce qu'il n'était pas puni et se trouvait rétribué sur le marché noir. À mesure que la présence policière s'est faite plus discrète dans les pays communistes, le vol au travail est devenu si endémique que les réformateurs le décrivaient comme étant une « privatisation spontanée »[9]. Pourtant, ces mêmes travailleurs, placés dans le contexte d'une entreprise gérée selon le modèle occidental, peuvent devenir des employés ou des entrepreneurs honnêtes, travailleurs et créateurs.

Le conditionnement transforme les comportements répandus en habitudes, normes, préceptes et vertus internalisés. Une attitude coopérative, le sacrifice de soi, l'honnêteté, le souci de prendre soin des autres, etc., tous ces comportements deviennent des vertus et des normes internalisées après une période suffisamment longue de « donnant donnant ».

L'importance du conditionnement dans le comportement humain a aussi un inconvénient : elle nous incite à conserver nos vieilles manières. De nombreux gestionnaires se méfient des innovations radicales, tout comme de nombreux fonctionnaires craignent la déréglementation. Lorsqu'ils sont placés devant des problèmes, les gestionnaires conditionnés à recourir à l'aide gou-

vernementale pourront détourner des ressources destinées à la modernisation pour les affecter au lobbying. Un élément clé du succès du capitalisme est qu'il a su créer un environnement où au moins certaines personnes deviennent conditionnées à participer au changement et à s'en accommoder.

La dissonance cognitive

> *Connais-toi toi-même*.
> — Inscription dans l'*Oracle de Delphi*, vers 700 av. J.-C.

Les psychologues appellent la tension que ressent une personne entre sa propre vie et la notion qu'elle se fait d'une vie vertueuse la « dissonance cognitive » et ils croient que les gens s'efforcent de minimiser celle-ci[10]. C'est pourquoi de nombreux héritiers riches croient fermement que l'intelligence a un fondement génétique et c'est ce qui explique aussi pourquoi les gens sont prêts à croire la propagande en temps de guerre. Nous voulons croire que nous sommes du bon côté, notamment si ce que nous faisons est le moindrement perturbant. La dissonance cognitive dissimule notre intérêt personnel en altruisme, du moins à nos propres yeux. La dissonance cognitive nous permet de présenter des arguments ingénieux et extrêmement sincères pour justifier ce que nous préconisons, même lorsque cela semble manifestement servir nos propres intérêts. Cela a de profondes conséquences pour ce qui est de l'attrait des idéologies.

> *Nous considérons ces éléments de l'économique, ainsi que les principes de la nature humaine sur lesquels ils sont fondés, comme étant essentiellement immuables — du moins à un horizon temporel autre que paléolithique. Par conséquent, ils constituent un base raisonnable pour tenter de prédire l'avenir.*

LE POINT DE DÉPART : MODES PASSAGÈRES OU FAITS?

Méfiez-vous des entreprises qui nécessitent de nouveaux vêtements.
— Henry David Thoreau (1817-1862).

LES STRATÉGIES D'ENTREPRISE sont comme les vêtements d'adolescent. En dépit de la permanence relative de la nature humaine fondamentale et du fondement de la valeur, les modes vont et viennent avec une rapidité déconcertante et les innovations sont adoptées avec peu de logique ou de buts pratiques apparents. La diversification, la réduction des effectifs, la réingénierie, la gestion de la qualité totale, les stocks « juste à temps », les cercles de qualité et la philosophie zen ont tous eu leur heure de gloire dans *Business Week* pour ensuite disparaître. Il y a remarquablement peu de preuves que ces parcelles de sagesse védique améliorent les bénéfices, la valeur ou la productivité[11]. Aussi réfléchis qu'ils soient, ces mantras ont peu de chance d'avoir des effets durables.

Le point de départ de toute tentative sérieuse en vue de comprendre la réaction probable des entreprises aux changements structurels qui se produisent dans l'économie est de faire la distinction entre les changements sous-jacents qui ont une importance réelle et les modes.

Nous sommes bombardés de prédictions annonçant l'arrivée d'une ère entièrement nouvelle. Il est amusant d'être radical, mais le monde ne collabore habituellement pas. Nous trouvons exagérées les prédictions radicales au sujet de la disparition des emplois ou des entreprises tels que nous les connaissons et de l'avènement du bureau à la maison relié par fibre optique. En 2006, les sociétés ne seront probablement pas très différentes de ce qu'elles sont aujourd'hui. Les sièges sociaux, la proximité physique des employés et le travail de neuf à cinq demeureront la norme. Les personnes qui possèdent un MBA continueront d'obtenir des emplois et les entreprises continueront de faire du lobbying auprès des autorités pour obtenir des faveurs politiques. Cependant, sur cette toile de fond de continuité, il y a probablement quelques changements notables.

Nous croyons que le changement le plus important sera le rôle accru joué par l'innovation. L'ère de l'information est arrivée. Même si la technologie informatique a accru de façon exponentielle notre capacité de recueillir et de traiter l'information, ce n'est pas là l'aspect le plus important de l'ère de l'information[12]. Le changement véritable est que, partout, les entreprises se livrent farouchement concurrence pour être les premières à intégrer de nouvelles informations dans les procédés de production, les systèmes de distribution[13] et les biens. La figure 1 montre que le nombre de nouveaux brevets accordés chaque année augmente rapidement, tandis que la figure 2 illustre comment les dépenses des entreprises canadiennes en R-D ont augmenté à un rythme comparable dans un effort pour ne pas se laisser distancer par la concurrence. Selon ces statistiques, l'ère de l'information est une réalité incontournable.

FIGURE 1

BREVETS ACCORDÉS AUX ÉTATS-UNIS, 1790-1993

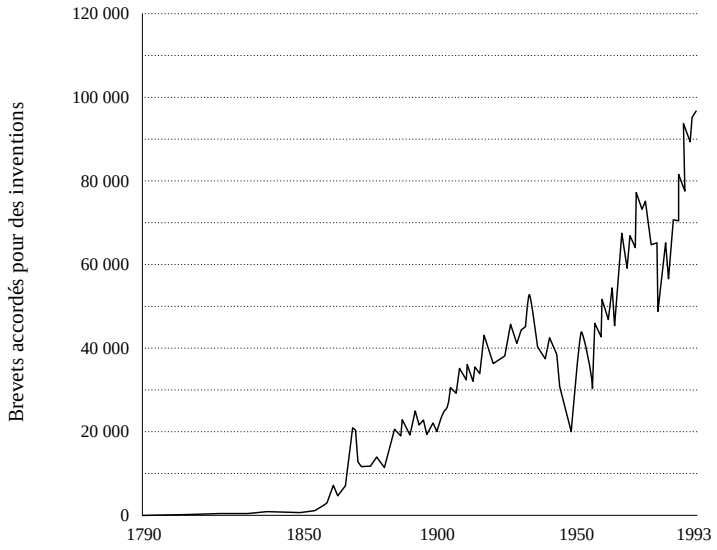
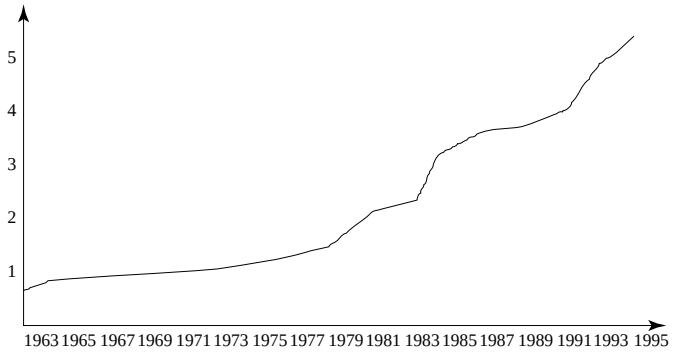


FIGURE 2

DÉPENSES DE R-D DES ENTREPRISES CANADIENNES, 1963-1995
MILLIARDS DE DOLLARS DE 1985



Source : Statistique Canada, publication n° 88-202 au catalogue.

La connaissance au sujet de l'utilisation des innovations est relativement rare et en forte demande. Cette *valeur accrue de la connaissance*, plutôt que des innovations particulières telles que l'Internet, est la raison pour laquelle il est sensé, du point de vue économique de parler de l'ère de l'information.

Pourtant, la performance des entreprises dans les pays développés, mesurée par la productivité ou les ratios comptables, n'a pas augmenté de façon spectaculaire et on peut penser qu'une des raisons qui explique cette situation est que la concurrence au niveau des prix s'est également intensifiée.

Cela nous amène au second changement qui revêt une importance réelle : le système économique mondial auquel le Canada appartient est en évolution. Le socialisme est mort et le monde a adopté le libre marché et le libéralisme, comme il l'avait fait à la fin du 19e siècle. Les barrières au commerce international et à l'investissement sont à leur point le plus bas depuis le début du 20e siècle. De nouvelles puissances économiques comme la Chine, l'Inde, l'Indonésie et la Russie sont parvenues à divers stades d'intégration à l'économie mondiale. De nombreuses sociétés font résolument face à la concurrence à l'échelle mondiale, bien que d'autres la craignent. Le phénomène de la mondialisation est réel et il touchera certainement les entreprises canadiennes de même qu'il limitera les formes d'interaction que les gouvernements canadiens pourront avoir avec celles-ci.

Le troisième changement réel qui, selon nous, influera sur les entreprises canadiennes au cours des dix prochaines années est l'évolution démographique au Canada. Une population vieillissante, l'immigration asiatique en Colombie-Britannique, en Alberta et en Ontario, un bassin décroissant de jeunes Canadiens nés au pays — tous ces facteurs auront vraisemblablement des conséquences économiques réelles.

L'AVENIR DE L'ENTREPRISE

Le succès d'un général repose sur des dizaines de milliers de corps.
— Ancien proverbe chinois.

POUR PROJETER L'AVENIR DU MONDE DES ENTREPRISES dans le contexte des changements que nous avons décrits, nous avons besoin d'un cadre qui saisit l'essence du comportement des entreprises.

À quel genre de conditionnement les gestionnaires d'entreprise sont-ils soumis? Les lois sur la régie d'entreprise et les formules de rémunération des gestionnaires incitent ces derniers à mettre davantage l'accent sur l'accroissement de la valeur des actions. Comme toute autre valeur, la valeur des actions augmente lorsque la demande dépasse l'offre. Par conséquent, les gestionnaires sont incités à rendre les actions de leurs entreprises plus attrayantes aux yeux des investisseurs. Étant donné que l'investisseur moyen est motivé par l'appât du gain et l'aversion pour le risque, les gestionnaires doivent trouver des moyens d'augmenter les rendements offerts aux investisseurs sans pour autant accroître le risque auquel les expose la propriété des actions de l'entreprise.

Comment les gestionnaires peuvent-ils faire cela? Ils doivent trouver des moyens d'accroître les bénéfices de l'entreprise sans prendre de risques indus. Dans une économie concurrentielle, il est difficile de faire plus de bénéfices que les entreprises rivales. Les entreprises concurrentes obtiennent des matières premières, des travailleurs et le financement de base à des coûts comparables et ils vendent leurs produits à des prix concurrentiels. La concurrence entre ces entreprises devrait entraîner une diminution des prix jusqu'à ce que leurs bénéfices parviennent tout juste à couvrir leurs coûts et à offrir un rendement concurrentiel aux actionnaires[14]. Où un gestionnaire d'entreprise peut-il trouver un bénéfice supplémentaire dans un tel contexte?

Bien que les entreprises canadiennes puissent chercher différentes solutions, nous croyons que la meilleure stratégie consiste à trouver des « avances » axées sur la connaissance, dont certaines peuvent être protégées légalement par des brevets, des droits d'auteur et des marques de commerce — des droits de propriété immatérielle. Les éléments d'actif immatériels sont les connaissances uniques que possède une entreprise (ou une personne) lui permettant de satisfaire aux désirs des consommateurs à un coût moindre. En demandant un prix légèrement inférieur à celui de ses concurrentes, mais toujours supérieur à ses coûts, une entreprise innovatrice qui possède de tels éléments d'actif peut littéralement accaparer tous les clients de ses rivales tout en réalisant de bons bénéfices. Elle peut ainsi se mériter les éloges des actionnaires, bonifier la rémunération de ses gestionnaires et combler le trésor public de recettes fiscales.

> Prédiction : Les avantages uniques sur le plan des connaissances deviendront un élément de plus en plus important pour détenir une « avance » concurrentielle sur les entreprises rivales.

L'envers de l'innovation est la désuétude. Les compétences désuètes n'ont aucune valeur économique. En théorie, chaque innovation couronnée de succès peut entraîner la disparition de nombreuses entreprises si les nouvelles idées font défaut. Les rivales d'une entreprise innovatrice ont maintenant perdu toute leur clientèle et ne peuvent abaisser leur prix sans subir de pertes. Elles sont condamnées à péricliter et, éventuellement, à faire faillite à moins qu'elles ne parviennent à mettre au point des innovations concurrentes ou à obtenir des fonds de l'extérieur, par exemple une aide financière ou des marchés garantis par voie de législation.

> Prédiction : Les entreprises qui n'acquièrent pas d'avantages particuliers sur le plan des connaissances subiront de plus en plus la pression économique de leurs concurrents, fournisseurs, clients, créanciers et actionnaires. Le nombre d'entreprises qui subiront l'échec augmentera.

Les investisseurs canadiens, les gestionnaires d'entreprise et les responsables politiques doivent apprendre à accepter que des échecs surviennent. Ils doivent être conditionnés à voir les avantages qu'il y a à éviter l'échec et à imiter le succès. Ce n'est qu'en laissant disparaître les entreprises mal gérées qu'une bonne régie d'entreprise pourra éventuellement prévaloir. C'est la façon dont l'évolution forge nos institutions économiques. Bien que cela puisse sembler paradoxal, un faible taux d'échec parmi les entreprises peut être en réalité un signe inquiétant. Cela indiquerait que le gouvernement intervient pour protéger des entreprises mal gérées et, ainsi, qu'il freine le progrès de l'économie canadienne vers un meilleur système de régie.

Une entreprise innovatrice qui possède une « avance » fondée sur la connaissance ne peut se reposer sur ses lauriers. Si une entreprise rivale met au point une innovation différente, elle pourrait soudainement perdre sa clientèle. La pression exercée par l'intérêt personnel des gestionnaires et des actionnaires de l'entreprise devrait contribuer à intensifier la concurrence sur le plan de l'innovation[15].

> Prédiction : Les entreprises qui mettent au point des innovations profitables devront investir une part importante de leurs bénéfices dans le développement d'autres innovations.

Cette conceptualisation de la source de l'avantage concurrentiel est particulièrement pertinente au moment où nous entrons dans l'ère de l'information et que nous observons une libéralisation économique à l'échelle de la planète. Compte tenu de l'importance économique des « avances » sur le plan de l'information, les innovations dans la façon de traiter l'information sont particulièrement lucratives. La demande de moyens de traitement de l'information est demeurée forte à mesure que les coûts ont chuté et que l'offre a augmenté.

La recherche informatisée a révolutionné des domaines aussi divers que le mappage génomique et le marketing. Le projet de cartographie du génome humain, qui s'étend sur plusieurs années, comporte des coûts de plusieurs milliards de dollars et est très en avance sur le calendrier prévu étant donné que la puissance de traitement informatique a rendu désuètes les anciennes techniques d'épissage de l'ADN. Les entreprises de cartes de crédit telles American Express peuvent utiliser des ordinateurs pour classer leurs clients selon leurs habitudes d'achat et ensuite cibler leur publicité avec plus de précision qu'il était possible auparavant.

L'innovation appelle l'innovation, dans une spirale ascendante qui, à l'heure actuelle, semble n'avoir aucune limite pratique[16]. Les progrès réalisés dans la fabrication des postes de radio et des téléviseurs ont donné naissance aux ordinateurs. La mise en réseau des ordinateurs et le développement des moyens de télécommunications permettent la mise au point de nouvelles approches en matière de vente au détail, de conception de produits, de méthodes comptables, de contrôle financier et de services bancaires.

À l'exemple de jumeaux siamois, l'innovation et la libéralisation des échanges sont inséparables et se renforcent mutuellement. L'accès aux marchés étrangers permet à des entreprises canadiennes d'appliquer des innovations à la production à l'échelle mondiale. Cela engendre plus de bénéfices et favorise encore davantage l'innovation. En outre, l'accès qu'ont les entreprises étrangères au marché canadien signifie que les innovations étrangères arriveront plus rapidement au Canada, forçant les entreprises canadiennes à innover, ou alors à obtenir de l'aide financière ou à disparaître. Une plus grande présence multinationale incite les entreprises nationales à accroître leurs dépenses de R-D[17]. Les entreprises canadiennes qui ont innové avec succès laissent littéralement de l'argent sur la table si elles n'appliquent pas ces innovations à l'étranger.

> Prédiction : La mondialisation favorisera l'innovation et l'innovation favorisera la mondialisation.

Cette symbiose entre mondialisation et innovation est le moteur de notre époque. Le besoin d'avoir accès à d'importants marchés pour justifier les coûts initiaux de l'innovation favorise la mondialisation de la technologie. La domination technologique des États-Unis au 20e siècle est disparue et nous croyons que cela est la conséquence la plus importante des changements fondamentaux que nous examinons[18].

Bien entendu, toutes les entreprises ne connaîtront pas le succès en matière d'innovation.

> Prédiction : Les entreprises qui ne parviennent pas à innover seront menacées par la concurrence étrangère même en l'absence de

concurrents sur le marché intérieur. Elles auront donc naturellement intérêt à s'opposer à la libéralisation des échanges.

La situation du Canada n'est pas unique. Partout, les entreprises qui ne parviennent pas à innover seront exposées aux mêmes conséquences dans cette course mondiale à l'innovation. Encore une fois, la dissonance cognitive pourra inciter les protectionnistes à déguiser leurs arguments en plaidoyers invoquant la charité à l'égard des pauvres travailleurs, de la culture nationale et ainsi de suite. Évidemment, les défenseurs du libre-échange pourront être eux-mêmes motivés par leurs intérêts personnels et la dissonance cognitive. Cependant, nous ferons valoir que la position favorable au libre-échange est plus défendable.

Les entreprises canadiennes qui mettent au point des innovations précieuses auront une vision passablement différente du monde. Les entrepreneurs, peut-être plus spécialement les immigrants, demanderont plus de liberté économique et se prononceront en particulier pour le libre-échange. À mesure que la population vieillira et que les baby-boomers à la retraite seront préoccupés davantage par la possibilité d'obtenir des biens à bon marché que par la sécurité d'emploi, ils seront peut-être plus ouverts que jamais à l'idée du libre-échange; cependant, nous croyons qu'il sera plus difficile de résister au lobbying des gestionnaires d'entreprise. Les défenseurs des intérêts des personnes plus âgées seront vraisemblablement portés à demander des pensions plus élevées que des importations à moindre coût. Si le libre-échange ne ressort pas comme un enjeu important pour le pouvoir gris, la capacité d'investir à l'étranger les fonds accumulés dans les REER sera vraisemblablement l'enjeu principal.

Prédiction : Les entreprises innovatrices et les consommateurs bénéficieront du libre-échange.

Nous croyons que les pressions économiques qui s'exercent en faveur de l'innovation sont pratiquement irrésistibles. Les entreprises canadiennes devront innover au risque de disparaître. Par conséquent, on observera une vive concurrence pour s'attirer les services de gens qui peuvent produire des idées innovatrices. Cependant, les employés sont libres de quitter une entreprise à tout moment. Ainsi, les sociétés hésiteront à investir beaucoup dans la formation ou l'éducation des travailleurs étant donné que leurs rivales pourraient profiter de leur investissement en s'accaparant leur main-d'oeuvre.

Prédiction : Les entreprises auront besoin d'employés hautement scolarisés mais elles hésiteront à défrayer leur éducation.

LA THÉORIE ÉCONOMIQUE DE L'ÉCOLE AUTRICHIENNE — NOTIONS ÉLÉMENTAIRES

DANS LE CHAPITRE PRÉCÉDENT, nous avons fait certaines prédictions au sujet de la façon dont les entreprises évolueront et nous nous sommes demandés comment elles pourraient réagir. Notre prochaine tâche est d'envisager comment ces changements se répercuteront sur d'autres parties de l'économie et comment les gouvernements pourront intervenir. Pour ce faire, nous devons imposer au lecteur quelques pages de notions économiques. Nous le faisons parce que nous croyons fortement que l'État doit d'abord adopter une nouvelle perspective économique et que la perspective appropriée est celle où l'on superpose à l'interprétation économique classique les principes de l'école autrichienne.

Les manuels d'économie classiques modélisent l'entreprise à l'aide d'une « fonction de production ». Pour une entreprise donnée *i*, la formule est la suivante :

$$Q_{it} = F_i\,(K_{it}, L_{it})$$

Ici Q_{it} est la production de l'entreprise au cours de l'année t et K_{it} et L_{it} sont, respectivement, le capital et le travail requis pour produire Q_{it}[19]. Puisque la production d'une économie est la somme des Q_{it} de toutes les entreprises, l'approche centrée sur la fonction de production a amené les économistes à supposer que l'économie croissait à un taux correspondant à la croissance du capital et du travail. De fait, il n'en est pas ainsi. Les données antérieures pour une économie occidentale engendrent un diagramme semblable à celui présenté à la figure 3. Le PIB réel augmente beaucoup plus rapidement que celui que permettent de prédire les taux de croissance du capital et du travail, transformés par les fonctions de production.

La vision du milieu des entreprises présentée précédemment laisse entrevoir la réponse. Il est clair que deux variables devraient venir s'ajouter à cette formule :

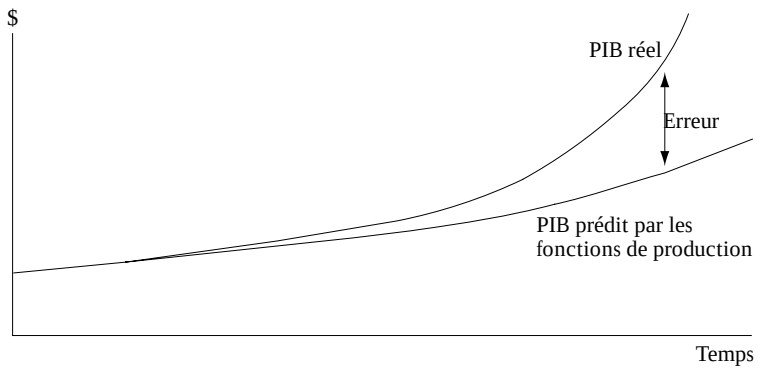
$$Q_{it} = F_i\,(K_{it}, L_{it}, R_{it}, P_t)$$

Ici, R_{it} représente les innovations que possède une entreprise à la période t, et P_t est le stock d'information publiquement accessible. Étant donné que l'information publique d'aujourd'hui représente les secrets d'hier, P_t est la somme de toutes les innovations passées des entreprises.

Cette représentation change la dynamique de la fonction de production. Maintenant, les « idées » ont de l'importance; elles n'en avaient pas dans la représentation précédente. Les entreprises qui développent et mettent en application des idées profitables croissent plus rapidement que celles qui ne le font

FIGURE 3

PIB PRÉDIT PAR LES FONCTIONS DE PRODUCTION ET PIB RÉEL



pas, même lorsque leur capital et leur main-d'oeuvre croissent à des taux identiques. Le capital et la main-d'oeuvre dans les entreprises — et dans les pays — qui développent des idées pourront gagner davantage parce que ces entreprises et ces pays sont en mesure de produire davantage avec la même combinaison de capital et de main-d'oeuvre. En raison de cette accumulation d'idées individuelles dans le réservoir des connaissances d'une économie (le terme qui vient à l'esprit est « retombées »), les mesures tant de la croissance des entreprises que de la croissance de l'économie en général sont plus importantes dans les économies où l'on retrouve de telles idées que dans les économies où elles sont absentes. C'est ce que les économistes appellent la théorie de la *croissance endogène*[20].

L'intuition fondamentale de cette approche est que la clé d'une croissance économique plus rapide est la « création » d'idées. Autrement dit, les gouvernements devraient chercher à promouvoir un contexte qui récompense la production et l'application d'idées utiles. Une économie qui ne parvient pas à faire cela prendra de plus en plus de retard.

La vraie surprise est que les économistes universitaires, qui sont payés avant tout pour réfléchir et développer de nouvelles idées, ont mis tant de temps à découvrir l'importance économique de leurs idées. Cela n'aurait rien de controversé pour un entrepreneur. Notre économie est fondée sur des idées qui se sont concrétisées dans le béton et l'acier. De fait, la profession des économistes a été sauvée par l'école autrichienne qui, dès 1870, s'est livrée à une réflexion profonde au sujet de l'innovation et qui a élaboré certaines intuitions perspicaces. La notion de retombées et les concepts sous-jacents à la théorie de la croissance endogène sont des représentations modernes de ces intuitions.

Par conséquent, un bref tour d'horizon de la théorie économique de l'école autrichienne s'impose afin de repérer d'autres intuitions qui pourraient être appliquées à la situation actuelle.

Les principes fondamentaux de l'école autrichienne qui sont pertinents à la situation que nous vivons en cette fin du 20e siècle sont assez simples.

LA PROSPÉRITÉ EST FONDÉE DAVANTAGE SUR L'INNOVATION QUE SUR LE CAPITAL ET LA MAIN-D'OEUVRE À BON MARCHÉ

> *Le secret des affaires est de connaître quelque chose que personne d'autre ne connaît*.
>
> — Aristote Onassis (1906-1975).

PEU DE GENS ACCORDENT ENCORE BEAUCOUP DE CRÉDIT à une idée défendue par Karl Marx, à savoir que le succès des économies capitalistes repose sur l'exploitation de la main-d'oeuvre. Néanmoins, l'idée selon laquelle on peut prospérer en abaissant le coût du capital par des stimulants à l'épargne, des subventions aux entreprises, etc., persiste.

La meilleure façon de voir pourquoi cette idée peut être trompeuse est d'examiner ce que les entreprises décident de faire avec le capital qu'elles recueillent et comment les économistes spécialisés dans le financement des entreprises analysent leurs décisions. Un investissement en capital réalisé par une entreprise peut prendre la forme d'un prélèvement de 100 000 dollars sur les bénéfices actuels pouvant être versés aux actionnaires (en dividendes) qui serviront ensuite à l'achat d'une nouvelle machine. La machine produit des biens qui seront vendus à un bénéfice total de 14 000 dollars par année pendant dix ans, après quoi la machine devra être remplacée. L'analyste financier tente d'estimer combien paierait un investisseur pour une rente équivalente de dix ans qui procure un rendement annuel de 14 000 dollars. Si la valeur estimative d'un rendement annuel de 14 000 dollars pendant dix ans est de 150 000 dollars et que l'entreprise peut obtenir un tel rendement pour ses actionnaires en faisant un investissement de 100 000 dollars dans l'achat d'une nouvelle machine, alors celle-ci apparaît comme une bonne affaire. Agissant dans l'intérêt des actionnaires, comme l'exige une bonne régie d'entreprise, elle procédera à l'investissement. Si la valeur de la rente ainsi calculée est inférieure à 100 000 dollars, l'analyste financier rejettera l'investissement comme étant financièrement non viable.

Les économistes financiers appellent cela un calcul de « valeur actualisée nette » (VAN). La valeur actualisée nette de la machine est représentée comme suit :

> *VAN = valeur marchande du flux futur de bénéfices provenant de la machine moins le coût de celle-ci*.

L'expression « valeur actualisée nette » est utilisée parce que les économistes financiers emploient une technique mathématique appelée le calcul de la valeur actualisée pour estimer la valeur marchande des bénéfices futurs d'un projet d'investissement.

Dans *Das Kapital*, Karl Marx soulignait avec justesse que dans une économie concurrentielle statique, les valeurs actualisées nettes (qu'il appelait les « valeurs de surplus ») devraient être égales à zéro. Poursuivant notre exemple, si de nombreuses entreprises en concurrence achètent la même machine, elles tenteront mutuellement de s'enlever les clients en abaissant le prix du bien fabriqué à l'aide de cette machine, réduisant ainsi leur bénéfice par unité vendue. Ce manège peut se poursuivre jusqu'à ce que la valeur marchande du flux des bénéfices futurs tombe à 100 000 dollars. Marx faisait valoir que la concurrence ferait baisser toutes les valeurs actualisées nettes jusqu'à zéro et que la seule façon pour les entreprises de continuer à prospérer serait de réduire la rémunération des travailleurs. C'est la fameuse « exploitation des masses » qui était au centre de la pensée de Marx.

De fait, les valeurs actualisées nettes ne sont pas tombées à zéro et le point faible de l'argument de Marx a été mis au jour par l'illustre économiste autrichien Joseph Schumpeter dans les années 30. Schumpeter a fait remarquer qu'une entreprise qui possède un brevet à l'égard d'une machine n'a pas de concurrent et, par conséquent, n'a pas à abaisser le prix de sa production pour conserver ses clients. Même en l'absence d'un brevet, si le mode de fonctionnement de la machine n'est pas connu des concurrents, les bénéfices de l'entreprise ne sont pas menacés — du moins jusqu'à ce que son secret ait été percé. C'est ce que nous avons appelé plus haut les « moyens immatériels fondés sur l'information ».

Schumpeter s'est rendu compte que Marx avait mal compris le rôle de l'innovation dans une économie capitaliste. Les nouvelles technologies, les nouvelles façons d'approcher les clients et les nouvelles idées sont en général à l'origine de valeurs actualisées nettes positives. La machine engendre de la valeur pour l'entreprise qui la possède parce qu'elle intègre une innovation — c'est-à-dire de l'information au sujet de la façon de produire et de vendre le bien, à laquelle personne d'autre n'a accès.

Les partisans de stratégies industrielles nationales, de programmes de subventions gouvernementales, d'allégements fiscaux à l'investissement et d'autres régimes visant à fournir aux entreprises du financement à bon marché font tous la même erreur que Karl Marx. Le financement subventionné (c'est-à-dire l'exploitation des épargnants ou des contribuables) n'est pas davantage le moteur de la prospérité que ne l'est la main-d'oeuvre exploitée. De fait, dans un contexte de concurrence à l'échelle planétaire, les subventions aux entreprises profitent aux consommateurs étrangers et sont une cause de mécontentement pour les contribuables d'une économie.

Dans la vision des économistes autrichiens, l'information et sa manifestation — l'innovation — sont les véritables sources de la valeur. Il en a toujours

été ainsi. Mais dans les économies capitalistes avancées, cela est devenu si apparent que les profanes parlent maintenant de l'économie de l'information.

LA VÉRITABLE CONCURRENCE DANS UNE ÉCONOMIE CAPITALISTE EST LA CONCURRENCE SUR LE PLAN DE L'INNOVATION

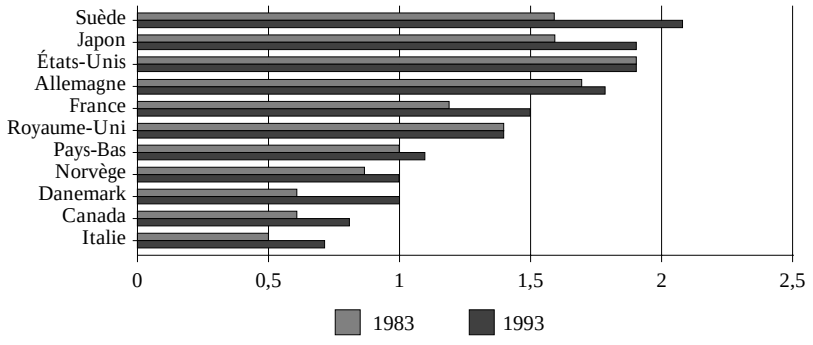
> *La raison pour laquelle beaucoup de gens ne reconnaissent pas une occasion est que celle-ci se promène habituellement en combinaison de travail et a des allures de dur labeur.*
>
> — Thomas Edison (1847-1931).

L'INNOVATION COÛTE CHER. Les dépenses les plus évidentes sont celles qui vont à la R-D. Les dépenses totales en R-D des entreprises canadiennes sont passées de 176 millions de dollars en 1963 à 7 milliards de dollars en 1995. Les dépenses totales en R-D des entreprises, des gouvernements, des universités et des institutions au Canada approchent aujourd'hui 12 milliards de dollars annuellement. En dépit de cette croissance, le Canada fait piètre figure parmi les pays industrialisés pour ce qui est des dépenses consacrées à la R-D (voir la figure 4).

Bien entendu, la qualité de l'innovation compte au moins autant que la quantité d'argent dépensé. Néanmoins, l'écart en matière de R-D pourrait engendrer d'énormes problèmes parce que l'innovation est dévastatrice pour ceux qui n'innovent pas. La première entreprise qui applique de nouveaux renseignements pour mettre au point une innovation peut obtenir un droit de propriété à l'égard de ces renseignements grâce aux lois sur les brevets, le droit d'auteur ou le secret commercial. Cela lui donne un rendement économique

FIGURE 4

DÉPENSES DE R-D EN POURCENTAGE DU PIB



Source : OCDE.

formidable ainsi qu'un redoutable avantage sur ses anciens concurrents. Si l'innovation est suffisamment importante, elle peut modifier le paysage économique en faisant disparaître des industries entières, comme l'ordinateur personnel a pratiquement fait disparaître l'industrie du dactylographe mécanique. Joseph Schumpeter appelait ce lien entre l'innovation et la désuétude la « destruction créatrice ». La destruction créatrice est la principale forme de concurrence dans une économie axée sur l'information.

L'importance de l'école de pensée autrichienne en économique et, en particulier, de la notion de « destruction créatrice » a quelque chose d'embarrassant pour la théorie économique où l'objet de la concurrence est de faire évoluer les prix vers le niveau auquel l'offre et la demande sont en équilibre parfait. L'innovation, les brevets et la désuétude sont relégués à un rôle secondaire.

À l'aide de la théorie micro-économique classique, les économistes ont exhorté les gouvernements à nationaliser ou à réglementer les entreprises dont les politiques de prix pouvaient ne pas correspondre à ce que prédisait la théorie de la concurrence. Les barèmes de prix des compagnies de téléphone, des entreprises d'électricité et d'autres sociétés de services publics étaient établis par les autorités et, souvent, ces entreprises opéraient dans un contexte de « prix coûtant majoré ».

Du point de vue de la théorie économique autrichienne, ces politiques sont non seulement mal avisées, mais pernicieuses. En fixant les taux de bénéfice, le gouvernement a étouffé l'incitation à innover au sein de ces industries pendant des décennies. Les innovations visant à abaisser les coûts ont peu de sens dans un contexte de prix coûtant majoré. Dans une entreprise d'État, l'innovation et la perturbation subséquente de la routine établie sont souvent mal accueillies. C'est certainement ce qui s'est produit dans les pays socialistes de l'ancien Bloc de l'Est et les investisseurs occidentaux sont confrontés à des usines qui continuent d'employer la technologie en place à l'avènement du socialisme. En Chine, les usines continuent de produire des locomotives à vapeur alimentées au charbon. La propriété publique et la réglementation ont transformé ces entreprises en véritables musées. En rétrospective, il est clair que le faible taux d'innovation observé en Union soviétique dans tous les domaines sauf l'armement (où il y avait une course concurrentielle à la R-D avec les rivaux étrangers) a contribué beaucoup plus à son effondrement que ne l'a fait un régime de prix inefficient.

Bien que les sociétés d'État et les entreprises réglementées dans les économies occidentales n'aient jamais été aussi isolées, d'un point de vue économique, que les fabriques de moteurs chinoises, les mêmes problèmes y sont évidents. Les téléphones et les turbines ont changé beaucoup moins entre les années 20 et 70 que les voitures, les avions ou l'enregistrement de la musique.

Cela ne veut pas dire que la façon dont les entreprises établissent les prix n'a pas d'importance. Toutefois, cette question est de plus en plus secondaire dans une économie axée sur l'information. À mesure que de nouveaux ren-

seignements et leur application à la mise au point d'innovations revêtent une plus grande importance, les principes économiques de l'école autrichienne devraient continuer à prendre de l'importance et les conseils normatifs de la science économique classique seront vraisemblablement de plus en plus remis en question.

LE SUCCÈS DU CAPITALISME RÉSIDE DANS LA CAPACITÉ DE RÉUNIR DES GENS QUI ONT DES IDÉES ET DES GENS QUI ONT DES MOYENS

> *Je fais humblement valoir que les succursales bancaires… signifieront le début de la fin du système capitaliste*.
>
> — John Flynn, *The Dangers of Branch Banking*, 1933.

EN DÉPIT DE CES SOMBRES PRÉDICTIONS, les États américains qui ont accepté les réseaux de succursales bancaires inter-États ont par la suite enregistré une croissance du revenu par habitant statistiquement plus élevée que les autres États et ce phénomène semble être attribuable à la meilleure qualité plutôt qu'au volume plus important des prêts consentis[21]. Dans les pays du tiers monde, il est connu qu'un système financier plus évolué favorise une croissance supérieure[22]. Pourquoi en est-il ainsi?

Il arrive souvent que les gens qui ont des moyens financiers ont peu de bonnes idées sur la façon de dépenser leurs fonds et que les gens qui ont de bonnes idées n'ont pas les moyens de les mettre en application. Dans la terminologie des entreprises, les riches manquent souvent de bonnes idées d'affaires tandis que les entrepreneurs débutent souvent sans le sou.

La réalisation maîtresse des économies capitalistes modernes est qu'elle a créé un contexte où les riches cèdent librement des fonds à des entrepreneurs sans rendement garanti et où les entrepreneurs qui réussissent remboursent réellement leurs bailleurs de fonds. Pour quelqu'un qui vit dans une économie pré-capitaliste et pour les visiteurs en provenance des anciennes économies socialistes ou des économies du tiers monde, cette situation semble non seulement remarquable mais difficile à croire. Pourquoi les dirigeants de ces entreprises ne disparaissent-ils tout simplement pas avec les fonds?

La réponse est que le capitalisme a favorisé l'apparition d'un niveau de confiance jamais observé auparavant. Cela étonne la plupart des économistes qui considèrent que les choses telles que l'éthique et la confiance relèvent de disciplines « moins rigoureuses ». Pourtant, la confiance et l'éthique sont à la base des fonctions les plus essentielles du capitalisme.

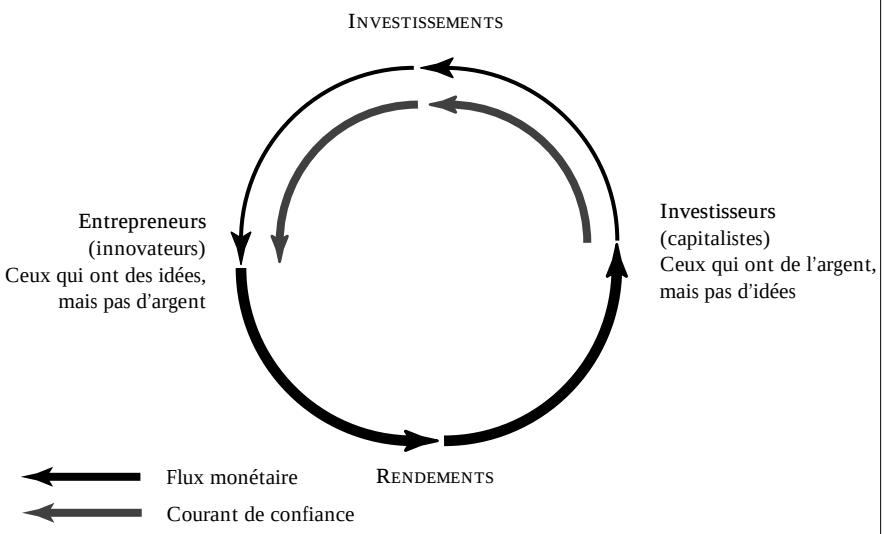
Dans les économies pré-industrielles, on ne faisait pas confiance aux étrangers. La confiance n'était accordée qu'aux membres de la famille et aux connaissances de longue date. La taille des entreprises était limitée par les fonds qu'un entrepreneur pouvait recueillir auprès de ses parents ou de ses proches amis. La plus grande partie de l'activité économique était le fait d'entreprises

familiales et les transactions financières avec les étrangers n'étaient acceptables qu'après que se soit établie une relation à long terme. Les gourous du monde des affaires ont récemment insisté sur l'importance des rapports dans les transactions commerciales en Asie et ailleurs, présentant ces coutumes comme étant attribuables à des différences culturelles. De fait, ce sont des différences historiques. Les relations ont eu une importance capitale dans les transactions d'affaires en Occident jusqu'à l'époque moderne.

Dans les pays capitalistes modernes, la confiance ne découle pas d'une moralité plus élevée. Elle est attribuable à un système juridique et politique crédible et raisonnablement efficient et, en particulier, à des lois sur les valeurs mobilières, la faillite, les contrats et les responsabilités fiduciaires. Ces éléments de notre système juridique et d'autres se sont développés en réponse au besoin explicite de forcer les étrangers à être dignes de confiance. Les lois donnent aux investisseurs des recours contre les fraudeurs et cela les incite davantage à confier leurs épargnes à des gens qu'ils ne connaissent pas très bien. Il en résulte que les entrepreneurs légitimes ont accès à des capitaux. Bref, les économies capitalistes sont constituées de manière à ce que les intérêts personnels des gens les incitent à agir de façon honorable (à éviter la punition)

FIGURE 5

FLUX DE CAPITAL ET DE CONFIANCE DANS UNE ÉCONOMIE CAPITALISTE
LES INVESTISSEURS CONFIENT DES FONDS AUX ENTREPRENEURS ET LEUR FONT CONFIANCE; EN RETOUR, LES ENTREPRENEURS DONNENT AUX INVESTISSEURS UN RENDEMENT SUR LEURS PLACEMENTS



et, ainsi, à devenir conditionnés à agir de cette façon. La figure 5 illustre le rôle capital de la confiance dans le processus métabolique le plus fondamental d'une économie capitaliste.

La vitalité des rapports de confiance et des flux monétaires est une mesure primaire du dynamisme d'une économie capitaliste. Lorsque la confiance règne au niveau des entreprises, des marchés financiers et des institutions financières, y compris dans les réseaux de succursales bancaires, il semble que le fonctionnement du capitalisme s'en trouve amélioré. C'est la raison pour laquelle une bonne régie d'entreprise est devenue une priorité dans le contexte de nombreuses politiques de réglementation.

LE COÛT DE L'INNOVATION CONTINUE EST L'INSTABILITÉ

> *Chaque acte de création est d'abord et avant tout un acte de destruction*.
> — Pablo Picasso (1881-1973).

JOSEPH SCHUMPETER APPELAIT « DESTRUCTION CRÉATRICE » le cycle d'innovation qui sous-tend la prospérité des économies capitalistes parce que la destruction économique provoquée par les innovations est un élément aussi important et essentiel que la créativité qui les a engendrées. Les entreprises créatrices maintiennent ou accroissent leurs bénéfices, tandis que les bénéfices des entreprises stagnantes chutent et que, comme il se doit, le principe de la survie du plus fort prévaut dans le monde des affaires.

Un taux élevé d'innovation exige logiquement un taux élevé de désuétude du matériel, des entreprises, des industries et de la formation. Dans le jargon des économistes, les taux de dépréciation augmentent en réaction aux innovations. Cela signifie que les machines doivent être mises au rancart avant d'avoir épuisé leur utilité, que les entreprises peuvent faire faillite en dépit d'une gestion responsable et que des industries peuvent péricliter en dépit d'une saine concurrence. Ce qui est encore plus inquiétant, les investissements faits par les gens dans l'acquisition de compétences, dans une carrière et en éducation peuvent être anéantis pratiquement du jour au lendemain.

Cela pourrait ouvrir une avenue prometteuse aux gouvernements durant la décennie à venir. Est-il possible de donner aux gens plus de sécurité sans détruire le moteur que représente la destruction créatrice? Oui, mais cela doit se faire prudemment et nous reviendrons sur cette question plus en détail dans la suite. Des politiques gouvernementales mal avisées pourraient ici tuer la poule génétiquement manipulée qui pond des oeufs en silicone.

La liberté d'action du gouvernement est limitée dans une économie mondiale de type autrichien

> *Il n'y aura, à toute fin pratique, aucune infraction.*
> — Col. Daniel Porter, agent responsable de l'application de la Prohibition, 1920.

Les politiques gouvernementales ne reconnaissent pas la réalité de la nature humaine et les lois de l'économique ne peuvent prévaloir. Dans une économie mondiale où la marge de manoeuvre des gouvernements nationaux est limitée, il y a beaucoup à gagner à aider les gens à échapper à l'emprise de leur gouvernement — comme les Bronfman, les Kennedy et d'autres l'ont montré au cours des années 20.

Nous croyons que l'économie mondiale est en voie de devenir une économie de type autrichien. Les entreprises sont en concurrence avec leurs rivales à l'échelle planétaire pour innover et les pays sont en concurrence pour accueillir les entreprises les plus innovatrices. Les gouvernements des pays riches voient de plus en plus les industries de haute technologie comme une façon de maintenir le niveau de vie de leur population dans un monde où la main-d'oeuvre non spécialisée coûte très peu. La Suisse est un centre de recherche pharmaceutique, la Hollande un centre d'excellence en électronique et les gouvernements tentent partout de se définir un créneau de haute technologie.

Cependant, la même perspective autrichienne du cadre économique qui fait ressortir l'innovation comme étant le moteur de la croissance nous apprend aussi que les gouvernements ont une marge de manoeuvre très limitée pour ce qui est d'influencer le cours des choses. La vision autrichienne des principes économiques du secteur public a engendré un certain nombre de préceptes, dont la « théorie des choix publics », qui met en relief l'influence exercée par les lobbyistes et la dynamique des intérêts personnels des responsables politiques et des fonctionnaires. En deux mots, cette vision affirme que les responsables politiques, les fonctionnaires et les lobbyistes partagent la même nature humaine que les autres personnes et que les gouvernements devraient être conçus en ayant cela à l'esprit. Aux fins qui nous intéressent ici, nous n'avons retenu que quelques éléments essentiels pour un gouvernement dans une économie de type autrichien.

Principes fondamentaux de la politique publique dans une économie de type autrichien

1. Les politiques gouvernementales devraient partir de l'hypothèse que les responsables politiques, les fonctionnaires et les gens partagent la même nature humaine. Ce sont des être sociaux motivés par leurs propres intérêts.

2. Les gouvernements sont pressés de trouver des façons de stimuler l'innovation. Les subventions à la R-D (ou des substituts politiquement moins vulnérables) seront de plus en plus populaires mais, probablement, non souhaitables.

3. On devrait résister à la tentation d'adopter des politiques visant à corriger des « prix non concurrentiels ». L'établissement des prix dans le contexte d'audiences réglementaires n'engendre aucune incitation à innover dans les entreprises réglementées. Des coûts moins élevés réduiraient tout simplement la base sur laquelle s'appuie la formule du prix coûtant majoré ou mener à des tarifs moins élevés dans l'avenir.

4. Tout projet de politique gouvernementale doit être évalué en fonction des effets sur l'incitation à innover.

5. Les lois et les pratiques en matière de régie d'entreprise, qui définissent le niveau de confiance sur les marchés financiers, sont importantes.

6. Un taux d'innovation plus élevé suppose nécessairement un taux de désuétude plus élevé. Cela engendre de l'instabilité économique, laquelle comporte des coûts économiques réels.

7. Dans une économie mondiale, un pays de taille limitée comme le Canada ne peut avoir une politique d'innovation qui diffère sensiblement de celles de ses partenaires commerciaux.

Le point le plus important est probablement le premier. Les responsables politiques et les fonctionnaires sont des êtres sociaux motivés par leurs intérêts, comme le reste d'entre nous. Ils veulent accumuler de la richesse et comprennent la nécessité d'échanger des faveurs. Les responsables politiques ont besoin de fonds au moment des élections et en d'autres temps. Une façon de s'assurer qu'ils obtiennent ce dont ils ont besoin est d'accorder d'importants montants à même les fonds publics à des bailleurs de fonds éventuels ou en adoptant des législations favorables qui permettront à leurs partisans d'encaisser d'importants bénéfices. Ces derniers recyclent alors les fonds ainsi reçus en contributions privées lors des campagnes électorales, etc.

Les économistes appellent les particuliers qui déforment ainsi les politiques publiques des « coureurs de rentes politiques » et les avantages qu'ils retirent des « rentes politiques »[23]. Il existe des preuves empiriques irréfutables démontrant l'existence de ces comportements à une échelle telle qu'ils ont des répercussions au niveau macro-économique. On sait que la recherche de rentes fausse la politique commerciale, la gestion des caisses de retraite publiques et pratiquement tous les autres aspects de la gestion du secteur public. Une fonction publique indépendante et dévouée, des politiciens généralement honnêtes

et la liberté de presse peuvent limiter la portée de ce phénomène au Canada, mais ils ne le suppriment pas entièrement.

La recherche de rentes politiques cause le plus de dommage lorsque les gestionnaires des entreprises deviennent conditionnés à recevoir de l'aide financière. Ce conditionnement peut ensuite les inciter à réagir aux pressions de la concurrence en intensifiant leurs efforts de lobbying plutôt qu'en innovant davantage.

L'INFORMATION, UN BIEN COMPORTANT UN PRIX

LES GOUVERNEMENTS PEUVENT-ILS favoriser ou décourager l'innovation? Les innovations sont des renseignements métamorphosés en acier et en plastique. Pour comprendre les principes économiques qui régissent l'innovation, il est nécessaire de comprendre les principes économiques de l'information.

La valeur de l'information, et celle des innovations qui en découlent, ne peut être déterminée en appliquant les mêmes raisonnements économiques que ceux qui régissent la valeur des biens ordinaires. Il en est ainsi parce que l'information possède deux caractéristiques particulières.

L'INFORMATION EST DIFFICILE À ÉCHANGER

> *Une chose qu'il vaut la peine de posséder est une chose pour laquelle il vaut la peine de tricher.*
>
> — W. C. Fields (1879-1946).

« J'AI UNE BRILLANTE IDÉE QUI VAUDRA DES MILLIONS DE DOLLARS à votre entreprise et je suis prêt à vous la vendre seulement un million de dollars », déclare le concepteur. « J'attends d'abord que vous m'expliquiez en quoi consiste cette idée », rétorque le PDG. « Voilà, vous n'avez qu'à . . . », explique le concepteur. « Brillant! », s'exclame le PDG. « Bien, parlons maintenant du million de dollars que vous me devez », reprend le concepteur. « Ah », répond le PDG, « par hasard, j'ai eu exactement la même idée — c'est étonnant comment les découvertes simultanées se produisent constamment de nos jours, n'est-ce pas? »

Un acheteur ne peut examiner un élément d'information avant de l'acheter, de la même façon que l'on peut examiner une voiture usagée ou un appareil électronique. Une personne ne peut évaluer la valeur d'une information sans en faire l'acquisition. Mais une fois que l'acheteur est en possession de l'information, le vendeur en a perdu le contrôle et n'a plus de droit légal à une remise dans de nombreuses circonstances. L'information n'a aucun poids, les coûts de transport sont minimes et, par conséquent, il est très difficile de la conserver à un endroit. Tout cela signifie que l'information est un bien très difficile à vendre ou à acheter. Cette « lacune du marché » soustrait le commerce de l'information, ou l'information qui vient s'intégrer aux innovations, du cadre habituel qui régit les autres transactions économiques.

Les lois sur les brevets et le droit d'auteur rendent certaines formes d'information aliénables dans diverses circonstances mais elles ne constituent aucunement une panacée. Premièrement, la contrefaçon des brevets et des droits d'auteur dans de nombreuses régions du monde en développement, notamment en Chine, alimente une croissance économique rapide. Il est très peu probable que ces pays appliqueront les conventions internationales en matière de brevet et de droit d'auteur, sauf à l'occasion, lorsqu'elles auront besoin d'influencer les États-Unis ou un autre pays occidental. Deuxièmement, la

rétro-ingénierie permet à des rivaux de disséquer des innovations et de concevoir d'autres méthodes de fabrication pour contourner les brevets. Et, enfin, de nombreuses formes d'innovation (plan de commercialisation du concepteur dans l'exemple qui précède) ne peuvent être brevetées ni protégées par un droit d'auteur.

Souvent, les entreprises mettent au point des moyens ingénieux pour contrer cette lacune du marché. À titre d'exemple, Coca-Cola garde jalousement le secret qui entoure la formulation de son produit, tandis que Microsoft intègre de plus en plus ses innovations, c'est-à-dire des logiciels, à des offres intégrées à un produit plus palpable, un ordinateur. Les stratégies de commercialisation et de protection du secret peuvent atténuer, mais non solutionner, le problème qui se pose ici.

L'INFORMATION POSSÈDE DE NOMBREUSES PROPRIÉTÉS D'UN BIEN PUBLIC

> *Ce qu'il y a de merveilleux au sujet des logiciels est que vous n'avez qu'à les acheter une seule fois; vous pouvez ensuite les copier aussi souvent que vous le voulez*.
>
> — « Homme d'affaires » russe, conversation privée, 1995.

Les étudiants qui assistent à un cours d'introduction à l'économique apprennent à faire la différence entre les biens privés et les biens publics. Les biens privés, par exemple les pommes et les pizzas, ne peuvent être consommés qu'une seule fois. En outre, les biens privés ne peuvent être consommés à la dérobée : si vous mangez un morceau de pizza, la preuve de votre acte existe sous la forme d'une pointe manquant au mets recouvert de fromage. Le processus de la consommation d'un bien privé détruit celui-ci.

La consommation ne détruit pas les biens publics de sorte qu'ils peuvent être consommés de façon répétée par différentes personnes. Ils peuvent aussi être consommés sans laisser de trace. L'utilisation que je fais d'une bibliothèque publique ne vous empêche pas de l'utiliser ni ne change suffisamment la bibliothèque pour que vous puissiez dire que je l'ai ou non utilisée. D'autres biens publics, par exemple l'éclairage des rues, les routes et les parcs sont régis par les mêmes principes[24].

La fourniture de biens publics est habituellement la plus efficiente lorsqu'elle vise un très grand nombre d'utilisateurs. Une petite ville ne peut se permettre d'avoir une bibliothèque aussi grande qu'un grand centre urbain. La petite ville compte moins d'utilisateurs pour en partager le coût. Les économistes appellent cela les « rendements d'échelle croissants ». Plus de gens consomment le bien public, plus grande est sa valeur pour l'économie.

L'information est habituellement un bien public. Si j'obtiens un élément d'information, cela n'a pas pour effet de le détruire. Les plans existent toujours et peuvent être copiés par quelqu'un d'autre.

Étant donné que l'information est un bien public, elle doit comporter également des rendements d'échelle croissants. Un élément d'information utile à de nombreuses personnes a plus de valeur sociale qu'un élément d'information utile uniquement à quelques-uns. Une innovation qui améliore l'efficience de chaque aciérie en Amérique du Nord a plus de valeur qu'une innovation qui améliorerait l'efficience de seulement quelques aciéries dans la même proportion.

ASPECTS ÉCONOMIQUES DE L'INFORMATION ET DE L'INNOVATION

> *Une absurde constante est la folle ronde des petits esprits, adulés par de petits hommes d'État, philosophes et devins*.
>
> — Ralph Waldo Emerson, 1841.

L'ÉCONOMIE DE L'INFORMATION EST UN TISSU DE CONTRADICTION. Étant donné que l'information est un bien public, autant de personnes que possible devraient alors l'utiliser. Mais l'information est difficile à acheter et à vendre et, ainsi, les innovateurs veulent en garder le secret. L'objet des lois sur les brevets, sur le droit d'auteur et les autres droits de propriété intellectuelle est de convertir l'information d'un bien public (sa forme naturelle) en un bien privé. Les droits de propriété intellectuelle limitent l'utilisation d'un élément d'information à son titulaire légal. Celui-ci peut vendre ou accorder l'accès à l'information et la loi est là pour appuyer son pouvoir et lui permettre d'exiger un dédommagement. C'est là que se situe le dilemme sur le plan des politiques : *des droits de propriété intellectuelle rigoureux contribuent à accroître les rendements de l'innovateur mais réduisent l'utilisation de l'innovation; des droits de propriété intellectuelle peu rigoureux réduisent les rendements de l'innovateur mais accroissent l'utilisation de l'innovation*.

Une protection rigoureuse des droits de propriété intellectuelle signifie que les innovateurs réaliseront des bénéfices importants et sûrs et les lois de l'économique prédisent qu'il en résultera plus d'innovations. Manifestement, cela n'est vrai que dans une certaine mesure. Si les innovations sont trop bien protégées, les innovateurs qui ont eu du succès seront moins incités à investir dans d'autres innovations.

Une façon de transcender cette contradiction est d'avoir des entreprises de très grande taille. C'est la logique qui sous-tend l'argument selon lequel les entreprises canadiennes doivent avoir une grande taille pour soutenir la concurrence dans l'économie mondiale. Les grandes entreprises peuvent appliquer rapidement les innovations à des opérations à grande échelle. Elles peuvent aussi habituellement utiliser les bénéfices qu'elles réalisent sur des investissements antérieurs pour financer de nouveaux investissements en R-D. Enfin, elles ont plus de ressources pour protéger leurs droits de propriété intellectuelle devant les tribunaux.

En dépit de cette solution logiquement attrayante, de nombreux chercheurs estiment que les grandes entreprises bureaucratiques ne constituent

pas un contexte propice au travail des innovateurs. Cela est attribuable en partie à la gestion hiérarchique des grandes entreprises et à l'accent mis sur les tâches routinières qui découragent l'innovation, comme la planification centrale l'a fait dans les économies dirigées. L'innovation est une entreprise individualiste qui s'insère mal dans les organigrammes des entreprises. Un PDG bien connu a comparé la tâche de gérer des chercheurs à celle d'élever un troupeau de chats. Par contre, le cadre plus souple et informel des petites entreprises peut être propice à l'éclosion de nouvelles idées. En outre, même si les grandes entreprises sont mieux en mesure de défendre leurs droits de propriété intellectuelle, il en va autrement des innovateurs qui y travaillent. Un employé, dont la récompense pour avoir mis au point une innovation est une prime de 2 p. 100, est moins incité à faire preuve de créativité qu'un entrepreneur qui conserve la propriété entière de l'innovation. Par conséquent, il y a de bonnes raisons, en théorie, de ne pas prendre pour acquis que les grandes entreprises agiront comme des innovateurs radicaux.

LA POLITIQUE PUBLIQUE DANS L'ÉCONOMIE DE L'INFORMATION

NOUS AVONS DÉCRIT CERTAINS DES CHANGEMENTS que nous pouvons anticiper dans le monde des affaires et nous avons imposé au lecteur quelques pages pour décrire les principes économiques de l'école autrichienne, ainsi qu'une analyse des propriétés économiques particulières de l'information. Nous sommes maintenant prêts à examiner certaines des prescriptions populaires de la politique publique et, espérons-le, à établir une distinction entre la pénicilline et l'huile de serpent.

FINANCER LES INITIATIVES DES PETITES ENTREPRISES

> *Si vous avez une petite taille, vous avez besoin d'être bon!*
> — Billie Jean King (1943-).

UNE HYPOTHÈSE TENACE DE LA POLITIQUE PUBLIQUE est que l'État devrait subventionner les petites entreprises pour favoriser l'innovation. Dans le chapitre précédent, nous avons démontré comment les grandes et les petites entreprises possèdent à la fois des avantages et des désavantages en tant que foyers d'innovation. Notre scepticisme est motivé par la caractéristique fondamentale numéro un de la politique publique : la nature humaine.

Les gestionnaires de petites sociétés font souvent valoir que leurs entreprises ont de la difficulté à obtenir du financement au Canada. La raison pour laquelle le financement provenant du secteur privé est coûteux pour les petites entreprises innovatrices est que les investisseurs ne peuvent, dans bien des cas, faire la distinction entre les bons et les mauvais innovateurs ou même entre les innovateurs honnêtes et les fraudeurs. Ce type de financement expose les capitaux des investisseurs à des risques élevés. Étant donné que les investisseurs prennent un risque, les projets hautement risqués doivent offrir des rendements très élevés pour les intéresser. Supposons, par exemple, que neuf entreprises de haute technologie sur dix connaissent l'échec et, ainsi, n'offrent aucun rendement. Pour que le rendement moyen sur l'ensemble des dix projets atteigne le niveau relativement modeste de 15 p. 100, l'unique projet qui débouche sur une réussite doit produire un rendement de 150 p. 100. Au début, le fonds de capital de risque exigera un taux de rendement projeté de 150 p. 100 pour l'ensemble des projets qu'il finance, mais il ne s'attend à réaliser qu'un rendement de 15 p. 100 après l'échec de 90 p. 100 des projets. Cela donne aux entreprises l'impression que la politique de financement est beaucoup trop restrictive.

Le manque d'information constitue ici un problème fondamental qui est à l'origine du faible niveau de confiance et de la perception d'un risque élevé. Les investisseurs ne peuvent départager les bons innovateurs des mauvais ou même les innovateurs honnêtes des escrocs. À notre avis, les gouvernements ne possèdent aucun avantage particulier qui leur permettrait de réussir là où les

investisseurs privés, comme les banques, les fonds de capital de risque, etc., échouent.

Si l'on met de côté les inventeurs dingues et les arnaqueurs, la grande majorité des petites entreprises ne produisent aucune innovation viable, ce qui signifie qu'une politique générale de subventions à l'intention des petites entreprises n'est pas justifiée. Imposer les particuliers et les gros employeurs afin de subventionner les boutiquiers, les restaurateurs et les autres propriétaires de petites entreprises ne favorise aucunement l'émergence d'innovations importantes à l'échelle macro-économique. Étant donné qu'une telle politique engendre également de la fraude et l'octroi d'un soutien financier à des innovations inutiles, cette approche semble peu avisée sur le plan économique. Elle pourrait séduire des politiciens qui désirent obtenir l'appui du milieu des petites entreprises, mais elle ne servirait aucune fin vraiment utile.

Plutôt, la meilleure façon pour le gouvernement d'aider les petites entreprises qui ont des innovations valables à croître rapidement est de promouvoir des institutions et des marchés financiers plus concurrentiels, efficients et innovateurs. Dans une économie de type autrichien, nous avons vu que le secteur du financement joue un rôle particulièrement important parce qu'il permet de mettre en présence les gens qui possèdent des capitaux et ceux qui ont des idées.

Des lois crédibles et bien appliquées dans le domaine des valeurs mobilières, des règles de divulgation effectives et un solide système de régie pour les petites et les grandes entreprises constituent autant de façons de favoriser un tel rapprochement. Étant donné que les petites entreprises sont souvent financées à l'aide de prêts, la protection des droits des créanciers représente un élément fondamental d'une bonne législation en matière de régie d'entreprise dans ce contexte.

Mais la concurrence est peut-être encore plus importante. Les fonds de capital de risque privés représentent un important secteur d'activité aux États-Unis mais non au Canada. Nos institutions financières ne voient aucune raison d'étendre leurs activités à un domaine aussi risqué lorsque les bénéfices qu'elles peuvent réaliser auprès des investisseurs captifs leur assurent une rétribution suffisante. Les fonds communs de placement au Canada peuvent imposer des frais de gestion plus élevés qu'aux États-Unis et d'autres restrictions coûteuses tout en continuant de prospérer. Pour de nombreux observateurs, les banques canadiennes sont un modèle de sécurité corporative tranquille — trop grosses pour connaître l'échec et exploitant ce fait au maximum. Permettre aux Canadiens d'investir leurs économies et la richesse accumulée dans les caisses de retraite à l'étranger sans pénalité fiscale ou autre pourrait peut-être injecter le dynamisme qui fait défaut aux marchés financiers canadiens, tout en profitant aux petites entreprises et aux investisseurs canadiens. Le coût d'un secteur financier léthargique est simplement trop élevé pour laisser la situation actuelle perdurer.

Prédiction : Les groupes d'entreprises exerceront des pressions sur les autorités pour qu'elles accordent des subventions aux petites entreprises. Le gouvernement devrait résister à ces pressions. Si les petites entreprises viables ne peuvent lever des fonds, le véritable problème est que les secteurs bancaire et financier ont besoin d'une plus grande concurrence.

LA POLITIQUE EN MATIÈRE DE R-D INDUSTRIELLE

Les déclarations d'impôt sur le revenu indiqueraient qu'il y a des richesses insoupçonnées au Canada.

— Bob Edwards, éditeur, *The Calgary Eye Opener*, 1920.

SI LES PETITES ENTREPRISES NE CONSTITUENT PAS UN CAS SPÉCIAL, le gouvernement ne devrait-il pas subventionner toutes les entreprises qui font de la R-D? Encore une fois, les options qui s'offrent au gouvernement pour appuyer la R-D sont limitées, d'abord en raison de la réticence croissante des Canadiens à verser des impôts plus élevés et, de plus, en raison de l'intégration croissante au niveau mondial. Le premier effet est assez simple. La politique industrielle signifie généralement que l'on prélève des impôts auprès des consommateurs, des investisseurs et de certaines entreprises pour subventionner d'autres entreprises. Prélever des impôts plus élevés auprès des particuliers n'est pas une solution intéressante sur le plan politique de sorte que la politique industrielle doit s'appuyer sur les impôts perçus auprès des entreprises. Dans une économie mondiale, les entreprises peuvent aller s'établir là où les impôts sont moins élevés. Le déplacement peut se faire directement, c'est-à-dire que l'entreprise déménage à un endroit où le régime fiscal est plus intéressant; le déplacement peut aussi se faire indirectement, c'est-à-dire qu'une entreprise canadienne peut perdre une partie de son chiffre d'affaires aux mains d'entreprises étrangères dont les coûts fiscaux sont moins élevés. La mondialisation restreint la capacité des gouvernements de pratiquer de telles politiques.

À l'ère de l'information, les gouvernements ne sont plus des monopoles qui peuvent déplacer les courbes d'offre et de demande à leur guise pour rajuster l'économie. Les gouvernements évoluent sur un marché concurrentiel en offrant le meilleur assortiment de biens publics en contrepartie des impôts les moins élevés possibles. Il importe de signaler qu'un gouvernement concurrentiel ne signifie pas un gouvernement de petite taille, pas plus que des voitures concurrentielles signifient de petites voitures. L'État de l'Arkansas a des impôts moins élevés et moins de services publics que le Minnesota; pourtant, les entreprises du Minnesota ne se précipitent pas pour déménager à Little Rock. On peut supposer que les services de meilleure qualité offerts au Minnesota valent les impôts qui y sont perçus.

Une politique industrielle justifie-t-elle des impôts plus élevés? Les données à cet égard sont clairement négatives. Dans tous les pays, y compris le

Japon, les politiques industrielles ont été en grande partie inefficaces et ont incité à la corruption[25]. Les entreprises visées par ces politiques sont souvent devenues très innovatrices — mais seulement dans leurs efforts pour obtenir davantage de fonds gouvernementaux.

De fait, certains économistes soutiennent que l'innovation dont on a fait preuve pour tenter d'obtenir des fonds du gouvernement peut freiner l'innovation réelle[26]. Évidemment, les innovateurs vont là où ils pensent pouvoir réaliser un bénéfice. Si le fait de présenter une nouvelle proposition en vue d'obtenir une subvention gouvernementale est plus lucratif que de construire une nouvelle usine, l'entrepreneur tentera d'obtenir la subvention et oubliera l'usine.

Plusieurs arguments plus subtils en faveur de l'intervention de l'État pour promouvoir la R-D se fondent sur diverses facettes de la théorie économique. L'argument le plus robuste à cet égard, qui a longtemps été un élément central du courant dominant de la pensée économique, préconise un rôle clé pour l'État dans le domaine de l'éducation et de la formation des travailleurs spécialisés et des chercheurs dont a besoin une économie axée sur le savoir. Il est peu probable que les entreprises prennent à leur charge la formation des travailleurs lorsqu'elles ne sont pas sûres que ces travailleurs demeureront à leur emploi. Personne au sein de l'entreprise A veut avoir à expliquer que l'innovation spectaculaire de sa rivale, l'entreprise B, est imputable à la formation impeccable que l'entreprise A a donné à son ancien employé. Cependant, des arguments théoriques justifient l'octroi de subventions aux écoles, aux collèges et aux universités ou de bons de formation aux étudiants. Mais ce ne sont pas des arguments militant en faveur de l'octroi de subventions aux entreprises qui font de la R-D.

Un autre ensemble d'arguments théoriques fait ressortir la distinction entre la recherche fondamentale et la recherche qui pourrait avoir des applications commerciales. La recherche fondamentale est souvent le préalable nécessaire à des travaux appliqués. *Cependant, la recherche fondamentale ne produit habituellement que de maigres rendements financiers*. C'est là un argument invoqué pour verser des subventions à la recherche réalisée dans les universités et les établissements de recherche. Encore une fois, cet argument ne justifie pas le versement de subventions aux entreprises. Il en est ainsi parce que l'intérêt public est habituellement servi en assurant une diffusion aussi large que possible des résultats de la recherche fondamentale. La valeur de la recherche fondamentale pour la société est moindre lorsque celle-ci appartient à une seule entreprise.

Un autre ensemble d'arguments théoriques suppose que les actionnaires ont un horizon temporel limité, ce qui réduit la capacité d'une entreprise de réaliser des investissements à long terme comme ceux que nécessite la R-D. Des études empiriques réalisées à l'aide de données américaines au niveau de l'entreprise ont montré que les actionnaires accordaient une valeur positive aux investissements à long terme[27]. Lorsque des entreprises annoncent dans les médias qu'elles haussent leurs dépenses de R-D, cela a habituellement un effet

favorable sur le prix de leurs actions[28]. Il est à noter que ces études portent uniquement sur des annonces d'investissement en R-D parues dans des articles de presse qui ne renferment aucun autre renseignement au sujet de l'entreprise, par exemple des subventions provenant du ministère de la Défense, des changements apportés à la stratégie de commercialisation, etc. D'autres études américaines montrent que les antécédents d'une entreprise au chapitre des dépenses de R-D sont en corrélation étroite avec un ratio *q* élevé (qui représente, approximativement, le rapport valeur marchande/valeur comptable)[29]. Cela est vrai tant dans les industries qui reçoivent des subventions du ministère de la Défense que dans les autres industries. Bref, les actionnaires aux États-Unis sont favorables aux dépenses de R-D et aimeraient qu'il y en ait davantage. Ainsi, les modèles économiques théoriques qui accordent un rôle au gouvernement sur la base d'un biais défavorable à court terme des marchés financiers ont un fondement empirique douteux. Au mieux, on pourrait faire valoir que la législation sur les brevets limite la viabilité des investissements à long terme en R-D en mettant fin aux droits de propriété que possèdent les entreprises sur leurs innovations après 20 ans (la durée d'un brevet considérée comme la norme internationale en vertu de l'OMC). Les travaux de R-D qui n'entraîneraient pas de gain financier avant une telle échéance seraient évidemment moins intéressants pour les entreprises et pourraient ainsi nécessiter l'appui de l'État.

Un autre ensemble d'arguments est fondé moins sur la théorie économique que sur l'interprétation que l'on fait de la culture d'un pays tels que le Japon; ces arguments préconisent l'intervention du gouvernement pour orchestrer la croissance économique au moyen d'une « politique industrielle ». Dans le monde occidental, les gouvernements sont notoirement faibles quand vient le temps de sélectionner des gagnants. Même le Japon, qui s'est déjà singularisé par la collaboration étroite qui y régnait entre l'industrie et le gouvernement, ne résiste pas à un examen plus attentif des faits. Dans la première étude économétrique détaillée sur la politique industrielle du Japon, Beason et Weinstein (1995) ont examiné attentivement les décisions du gouvernement japonais en matière de subventions; les auteurs arrivent à la conclusion que la plupart des subventions ont été accordées à des entreprises perdantes et que le rendement des bénéficiaires de ces subventions a en réalité diminué après qu'elles aient reçu ces fonds[30]. La réputation que le Japon s'est acquise pour avoir administré une politique industrielle efficace est davantage attribuable à la diffusion de renseignements sélectifs par le gouvernement japonais pour des raisons politiques et à la naïveté de certains universitaires occidentaux. Les modèles économiques théoriques qui préconisent une planification stratégique de la part de l'État reposent également sur des fondements empiriques douteux.

D'autres théories économiques proposent un rôle pour les grappes d'entreprises effectuant de la R-D. L'intuition qui sous-tend ces théories est qu'une concentration de compétences spécialisées est requise pour que les entreprises de haute technologie soient viables. Les entreprises de R-D sont risquées et le coût du déplacement de spécialistes et de leur famille sur de longues distances

pour aller vers d'autres emplois est élevé pour toutes les parties impliquées. Les travailleurs spécialisés en R-D sont attirés vers les grappes d'entreprises semblables parce que l'échec d'un employeur est alors moins catastrophique en raison de la présence d'autres employeurs éventuels à proximité. De nouvelles entreprises sont attirées vers ces grappes parce qu'il est alors plus facile d'embaucher des travailleurs spécialisés. Les personnes qui se côtoient échangent, mettent en commun leurs idées et s'inspirent mutuellement. Les économistes appellent cette boucle de rétroaction positive de la croissance économique une « retombée ». Des données empiriques indiquent que de tels effets existent et ont une certaine importance économique, du moins à certaines étapes et pour certaines industries[31].

Enfin, nous ne devrions pas écarter du revers de la main l'argument voulant que si tous les autres le font, nous devrions le faire également. En dépit de la faiblesse remarquable des arguments en faveur de l'octroi de subventions gouvernementales à la R-D dans les entreprises, de telles subventions sont monnaie courante. Si le Canada veut attirer et conserver sur son sol des entreprises innovatrices, il doit traiter les entreprises qui ont un ratio élevé de dépenses de R-D aussi bien que le font les autres pays avec qui il est en concurrence. Même si nous disposons d'un bon système d'enseignement, d'une bonne infrastructure et de bonnes politiques budgétaires et monétaires, un programme de subventions à la R-D pourrait s'avérer nécessaire. Cependant, une meilleure approche consisterait à tenter de faire interdire entièrement ce genre de programmes de subventions en vertu des conventions commerciales internationales. Malheureusement, il est peu probable qu'un accord international puisse être conclu sur ce point dans un avenir rapproché. De fait, même les accords les plus récents conclus dans le cadre de l'Uruguay Round du GATT permettent encore l'octroi de subventions à des fins de « développement économique », un prétexte derrière lequel les gouvernements peuvent facilement dissimuler diverses formes de subventions à la R-D.

Dans la perspective du modèle économique autrichien, il n'est pas improbable que des subventions à la R-D soient inscrites à de nombreux programmes politiques parce que les gestionnaires d'entreprise et les politiciens les considèrent comme une façon politiquement acceptable d'échanger mutuellement des faveurs. Les responsables politiques peuvent verser une subvention à la R-D aujourd'hui et l'entreprise peut verser une contribution politique plus modeste (mais fort nécessaire) plus tard. Même si ce genre d'argument peut paraître un peu étriqué aux yeux du profane, il conserve une certaine crédibilité parmi les économistes spécialisés en finances publiques[32]. Bien entendu, les anecdotes au sujet, entre autres, d'actionnaires myopes ou de petites entreprises innovatrices, contribuent pour beaucoup à atténuer la dissonance cognitive de chacun.

Une autre possibilité est que les subventions à la R-D deviennent des politiques de « harcèlement », alors que différentes sphères de compétence tentent de s'arracher mutuellement des entreprises qui réalisent des travaux de

R-D. Le fait d'attirer de nombreuses entreprises de haute technologie contribue certainement à hausser le prestige d'un responsable politique, mais s'il ne s'agit pas de « nouvelles » entreprises de haute technologie, le sacrifice consenti par le contribuable n'a aucune valeur pour l'ensemble de l'économie mondiale. Si d'autres sphères de compétence rétorquent en offrant des subventions encore plus alléchantes et réussissent à reprendre les entreprises de haute technologie qu'elles avaient perdues, il n'y a même aucun avantage sur le plan local. Il n'est manifestement pas dans l'intérêt du Canada de promouvoir une telle forme de concurrence. Nous ne pourrions remporter la bataille. Nos contribuables sont moins dociles que ceux de certains pays européens et notre assiette fiscale est beaucoup plus restreinte que celle de nos principaux partenaires commerciaux.

> Prédiction : Les démarches entreprises par les sociétés et les groupes d'intérêts du secteur privé auprès des gouvernements pour qu'ils versent des subventions directes à la R-D iront en s'intensifiant au cours de la prochaine décennie. Les gouvernements devraient résister à ces pressions, sauf dans les cas suivants :

1. Le gouvernement peut promouvoir l'innovation en subventionnant l'éducation et la formation, des activités que les sociétés hésitent manifestement à prendre à leur charge étant donné que les employés qui en profitent peuvent par la suite quitter l'entreprise. Les fonds devraient être versés aux personnes et non aux sociétés ou aux établissements d'enseignement. Le gouvernement devrait inciter les établissements d'enseignement à améliorer leur système de régie.

2. Des politiques visant à promouvoir la formation de « grappes » pourraient se défendre. Encore une fois, l'accent devrait être mis sur l'octroi de subventions à la formation générale et spécialisée dans certains domaines et viser les particuliers, plutôt que de prendre la forme de subventions versées aux entreprises.

3. On peut également défendre l'octroi par le gouvernement d'un soutien financier à la recherche fondamentale. Dans un contexte budgétaire plus difficile, il serait avisé de passer en revue les procédures actuelles d'attribution des fonds afin d'élaborer des formules plus précises et efficaces de répartition du soutien gouvernemental.

LA POLITIQUE DE R-D DANS LE SECTEUR PUBLIC

> *L'argent est le lait maternel de la politique*.
> — Tip O'Neill, ancien président de la Chambre des représentants des États-Unis.

ÉTANT DONNÉ QUE L'INFORMATION ET L'INNOVATION possèdent certains traits des biens publics, ne devraient-elles pas être produites à l'aide de fonds publics? Pourquoi l'État ne peut-il financer la recherche pour ensuite céder sous licence à des entreprises canadiennes les innovations qui en résultent en contrepartie de redevances minimales?

Le premier problème que soulève cette approche est qu'elle dissocie l'innovation des signaux du marché qui encouragent l'innovation là où elle est nécessaire et la découragent ailleurs. Les marchés libres sont des mécanismes de traitement de l'information étonnamment efficaces. Les principes classiques de l'économie mettent l'accent sur les rôles joués par les marchés pour assurer l'équilibre de l'offre et de la demande à des niveaux efficients.

Selon le modèle économique autrichien, le rôle de traitement de l'information le plus important joué par les prix sur le marché est d'orienter l'innovation. Si le cuivre est rare mais en demande, le prix plus élevé qui en résulte rendra rentable une innovation servant à affiner des minerais de plus faible teneur ou encore de nouveaux produits de remplacement pour le cuivre. L'innovation financée par des fonds privés recherche des créneaux rentables et, par conséquent, s'efforce de répondre aux besoins du public. La recherche financée par l'État peut aboutir à une innovation qui porte sur l'affinage du cuivre, à une innovation qui fait augmenter la demande de cuivre ou encore à une innovation qui ne fait ni l'un ni l'autre.

Le second problème qui se pose est que les chercheurs, les responsables politiques et les fonctionnaires sont, comme le reste d'entre nous, des êtres sociaux qui ont leurs propres intérêts. La R-D appliquée soutenue par l'État peut devenir une caisse politique occulte par excellence. L'asymétrie d'information qui fait qu'il est difficile de distinguer les bons innovateurs des mauvais et qui entrave le financement de la R-D par le secteur privé devient maintenant un avantage, du moins pour les initiés. Les responsables politiques peuvent ainsi orienter des fonds vers leurs partisans, et qui pourrait dire qu'il ne s'agit pas de bons innovateurs? Bref, une politique industrielle à grande échelle laisse beaucoup trop de place à des comportements opportunistes.

L'une des réussites les plus importantes des gouvernements au 20e siècle est l'éducation publique universelle. Ce rôle assumé par le gouvernement n'est pas sérieusement remis en question même par les plus ardents défenseurs du libre marché. Nous croyons qu'une réforme de l'éducation dans les années à venir devra aborder explicitement le problème des droits acquis et des comportements opportunistes au sein de l'*establisment* de l'éducation publique. Des programmes de bons de formation ont été mis à l'essai avec succès à Edmonton

et dans d'autres villes et semblent offrir la possibilité de résoudre ces problèmes efficacement. Peut-être faudrait-il utiliser plus largement les programmes de bons de formation dans les écoles publiques et paroissiales et, même, envisager des programmes semblables pour l'enseignement supérieur.

> Prédiction : Les nouveaux programmes gouvernementaux seront scrutés de plus en plus attentivement pour leur vulnérabilité aux comportements opportunistes.

1. Le financement public de l'éducation, de la formation et de la recherche fondamentale se poursuivra, mais les pressions monteront pour qu'on limite les possibilités de comportement opportuniste de la part des groupes d'intérêts.

2. Le financement public à grande échelle de la R-D appliquée sera trop vulnérable aux comportements opportunistes pour avoir l'appui des politiciens honnêtes et trop évident pour obtenir l'appui des politiciens corrompus.

Il doit y avoir des raisons valables, sur le plan de l'éthique, pour que le gouvernement cherche à promouvoir une utilisation plus étendue d'une nouvelle technologie par rapport à ce que permettraient les forces du marché. Ainsi, il peut y avoir un avantage social à fabriquer des copies génériques des médicaments brevetés disponibles sur le marché. Une autre façon d'utiliser les fonds gouvernementaux à cette fin serait de racheter les brevets auprès des innovateurs à leur prix commercial pour ensuite rendre la technologie librement disponible. Cette approche permet de rétribuer l'innovateur tout en assurant une utilisation répandue de la technologie. Elle engendre certains risques de patronage si les brevets sont achetés à des prix gonflés mais cette pratique est plus transparente que les programmes de subventions habituels et, ainsi, moins vulnérable aux abus.

LA POLITIQUE BUDGÉTAIRE

> *La production d'un trop grand nombre de choses utiles se traduit par un trop grand nombre de gens inutiles*.
>
> — Karl Marx, *Economic and Philosophic Manuscripts*, 1844.

LES MODÈLES ÉCONOMIQUES CLASSIQUES PRÉSENTENT la politique budgétaire comme un arbitrage entre l'égalité et l'efficience. Les impôts faussent les prix et, par voie de conséquence, la répartition des biens, mais si le gouvernement redistribue cet argent, il contribue à améliorer l'égalité grâce à des programmes d'aide sociale. La politique fiscale et les dépenses gouvernementales doivent traduire les préférences des électeurs dans le contexte de cet arbitrage[33].

Dans un modèle économique autrichien, cette vision passe à côté de l'essentiel. L'arbitrage ne se fait pas entre l'efficience et l'égalité mais entre l'innovation et la stabilité. Les revenus élevés vont aux innovateurs; ceux qui ont de faibles revenus sont ceux qui se retrouvent en désuétude, les perdants du processus de destruction créatrice. L'égalité soutenue par des impôts élevés et progressifs est essentiellement une expropriation partielle des rendements que touchent les innovateurs (sur leur propriété intellectuelle) pour dédommager ceux dont les compétences ou d'autres investissements sont rendus désuets par l'innovation[34]. C'est là une façon indirecte d'affaiblir les droits de propriété intellectuelle.

Comme les spécialistes de la macro-économie l'ont appris, la politique budgétaire n'est pas vraiment une variable tout à fait discrétionnaire. Les dépenses gouvernementales et les taux d'imposition sont souvent des boomerangs politiques. Proportionnellement, le Canada est le pays industrialisé qui a eu le plus important boom des naissances au cours de la période d'après-guerre[35]. À mesure que la génération du boom des naissances avance en âge, le Canada pourrait en subir des répercussions. Lorsqu'ils étaient adolescents et au début de la vingtaine, les membres de la génération du boom des naissances payaient peu d'impôt, voire aucun, parce qu'ils occupaient des emplois de premier niveau ou fréquentaient l'université; ils avaient tendance à adopter des vues de gauche. Lorsqu'ils ont commencé à payer des impôts, leurs positions se sont déplacées vers la droite. La dissonance cognitive pourrait inciter les enfants de cette génération à redécouvrir les valeurs des années 60 au moment où ils approchent de la retraite et il serait dans leur intérêt économique qu'ils le fassent. Ce déplacement pourrait précipiter l'avènement d'une période d'impôts élevés et de dépenses élevées, ce qui compromettrait la capacité des entreprises canadiennes d'innover à un taux concurrentiel à l'échelle mondiale.

> Prédiction : La gauche politique sera en faveur de niveaux élevés d'imposition et d'emplois dans le secteur public ou d'un soutien à ceux que l'innovation a rendu désuets. Cette approche pourrait causer une certaine consternation parmi les tenants de la gauche alors qu'ils préconiseront une plus grande stabilité.

1. Un petit pays ne pourra fixer un « taux d'innovation socialement optimal » dans le cadre de sa politique publique, pas plus qu'il ne peut fixer les variables macro-économiques classiques comme les taux d'intérêt. Si l'on veut que l'économie du Canada soit généralement concurrentielle, son taux d'innovation doit se comparer à celui des autres pays.

2. Si des impôts élevés sur le revenu incitent les innovateurs à quitter le Canada ou contribuent à abaisser le taux d'innovation du pays en réduisant les rendements que touchent les innovateurs, il pourrait en résulter des coûts élevés à plus long terme.

Plus le Canada est en mesure de résister à la tentation de punir les gagnants et de récompenser les perdants, plus sa croissance sera rapide. Si la redistribution du revenu est importante sur le plan politique, il faudrait trouver un moyen d'en exclure les innovateurs. Il faudrait peut-être envisager de recourir davantage à des impôts sur la consommation, sur la richesse ou sur les successions. Ces impôts peuvent aussi avoir des effets négatifs, mais ils sont moins directement ciblés sur les innovateurs qu'un impôt sur le revenu fortement progressif. À tout le moins, il faudrait étudier sérieusement ces solutions de rechange[36].

Les tenants de la droite, qui sont plutôt conservateurs, et les tenants de la gauche pourraient devenir d'étranges partenaires préconisant des impôts élevés sur le revenu. Pourtant, les conservateurs de vieille souche considèrent que des impôts élevés sur le revenu — des entreprises comme des particuliers — sont une façon de préserver leur position. (Mais, ils s'opposent vigoureusement aux impôts sur la richesse et les successions.) Abaisser le taux d'innovation constitue pour eux une façon de maintenir la valeur de leurs éléments d'actif ainsi que leur position sociale et politique.

Un examen de toutes les conséquences associées à la politique budgétaire dans le contexte du modèle économique autrichien déborde les limites de la présente étude. Notre intention ici est tout simplement de montrer que ces questions doivent être abordées dans une perspective nouvelle à l'heure de l'information.

LA POLITIQUE MONÉTAIRE

> *La meilleure façon de détruire le système capitaliste est de débaucher la monnaie*.
> — John Maynard Keynes, *Essays in Persuasion*, 1931.

DANS LES ÉCONOMIES INDUSTRIELLES AVANCÉES, l'objet de la politique monétaire aujourd'hui est d'éviter l'inflation. Avant 1979, la politique monétaire constituait un moyen d'éviter les déficits budgétaires. Lorsque les gouvernements dépensaient plus qu'ils ne percevaient en recettes, ils imprimaient tout simplement assez d'argent pour combler la différence. Les spécialistes de la macroéconomie de l'école keynésienne appelaient cela une politique monétaire « accommodante ». Il en résultait, évidemment, de l'inflation. Lorsque les préoccupations du public au sujet de l'inflation ont pris de l'importante, la politique monétaire accommodante a été remplacée par l'approche actuelle et l'époque des déficits budgétaires a débuté.

Pourrait-on assister au retour d'une politique monétaire accommodante et de l'inflation? De nombreux responsables politiques s'impatientent devant la discipline budgétaire excessive et croient également que le public a la mémoire courte. On assistera sans aucun doute à des appels en faveur de politiques monétaires plus accommodantes et, de façon générale, à des politiques monétaires plus souples.

Un taux d'échec élevé parmi les entreprises est forcément un sous-produit d'un taux d'innovation élevé. Les faillites d'entreprises peuvent être interprétées ou représentées faussement comme étant l'indicateur d'une demande globale affaiblie. Les faillites d'entreprises dans le contexte d'une économie autrichienne sont, de fait, le reflet d'une demande affaiblie mais seulement pour les produits des entreprises qui n'ont pas réussi à innover suffisamment. La stimulation monétaire ne résoudra pas ce problème.

Incidemment, une politique monétaire inflationniste pourrait empirer les choses. Lorsque les entreprises évaluent de nouvelles dépenses en capital (comme la construction de nouvelles usines), elles font des prévisions au sujet des prix de leurs facteurs de production et de leurs produits sur l'ensemble du cycle de vie utile attendu des nouveaux éléments d'actif. Une inflation élevée vient compliquer ce processus. L'inflation est, en théorie, une augmentation uniforme de l'ensemble des prix et des salaires mais, en pratique, il en va tout autrement. Certains prix et salaires augmentent rapidement tandis que d'autres reculent, pour reprendre de plus belle et rattraper les premiers quelques années plus tard. L'instabilité des prix relatifs, venant s'ajouter aux distorsions d'ordre fiscal engendrées par l'inflation, rend très difficile les prévisions de prix.

Une bonne régie d'entreprise signifie que les sociétés doivent agir dans l'intérêt de leurs actionnaires. Les actionnaires sont heureux d'ajouter des investissements à risque élevé à leur portefeuille s'ils sont en mesure de toucher des rendements élevés. Cependant, l'inflation vient accroître le risque associé aux investissements des entreprises mais ne change pas tellement les rendements réels[37]. À tout considérer, les dépenses en capital sont plus risquées sans pour autant être plus rentables dans les économies où l'on observe un taux d'inflation élevé. C'est pourquoi l'investissement des entreprises diminue dans les périodes de forte inflation. Une telle situation ne ferait que compromettre encore davantage la position concurrentielle du Canada.

> Prédiction : Le soutien politique en faveur d'une politique de faible inflation demeurera élevé. Les consommateurs craignent l'inflation. La génération du boom des naissances, qui voit approcher l'âge de la retraite, a investi énormément sur le marché boursier. Une inflation élevée entraîne une diminution du prix des actions, ce qui risque de provoquer un mécontentement au moment d'une élection. Les innovateurs et les entreprises innovatrices n'aiment pas l'inflation parce qu'il leur est alors plus difficile de faire des prévisions. Les rendements découlant de l'utilisation future d'une innovation deviennent plus incertains et, pour cette raison, les entreprises sont moins disposées à investir dans des innovations. Les gouvernements subissent des pressions en vue d'abaisser les impôts et d'accroître les dépenses et, ainsi, d'enregistrer des déficits budgétaires; par conséquent, ils verront d'un oeil de plus en plus favorable la possibilité de monétiser ces déficits grâce à un accès d'inflation. Tout accès d'inflation

devrait être suffisamment important pour réduire sensiblement la valeur des créances de l'État mais assez bref pour se terminer tôt durant le mandat d'un gouvernement. Compte tenu de la structure de la Banque du Canada, une telle situation semble peu probable.

Notons à nouveau que la politique monétaire n'est habituellement pas interprétée dans l'optique de l'incidence qu'elle a sur l'innovation. Nous ne prétendons pas que notre interprétation est définitive; nous voulons tout simplement faire ressortir la nécessité de réfléchir davantage au lien qui pourrait exister.

LA POLITIQUE COMMERCIALE

Elle a passé comme du champagne!
— Sarcasme des protectionnistes à l'égard de la réciprocité, 1854.

DE NOMBREUX CANADIENS ONT DU MAL À ACCEPTER l'idée du libre-échange. Nous pensons que cela s'explique par le fait que les Canadiens, notamment ceux qui se présentent comme progressifs, sont en réalité profondément conservateurs : ils n'aiment pas le changement et l'instabilité qui l'accompagnent. Le lien fondamental entre le commerce et l'innovation (dont nous avons traité plus tôt dans cette étude) pourrait expliquer partiellement pourquoi le libre-échange soulève un débat aussi litigieux. Le libre-échange favorise l'innovation tandis que le protectionnisme favorise la stabilité. Le nationalisme demeure une notion étrangère à la plupart des Canadiens. Nous faisons valoir que le nationalisme n'est pas le véritable enjeu du débat sur le libre-échange. Plutôt, c'est un argument commode auquel les défenseurs de certains droits acquis peuvent raccrocher leur dissonance cognitive, trompant au passage quelques âmes illusionnées.

Cette approche contribue malheureusement à obscurcir une question fondamentale. Quel est l'arbitrage approprié entre l'innovation et la stabilité? Y a-t-il un niveau « optimal » de protection? Ces problèmes difficiles à résoudre et (jusqu'à maintenant) peu étudiés n'en demeurent pas moins importants. En dépit du peu de connaissances acquises par les économistes sur ces questions, les États-Unis ont fait de la collaboration internationale dans l'application des droits de propriété intellectuelle un élément clé du récent accord de l'OMC.

Prédiction : La plus grande partie des représentations faites par le secteur des entreprises sur des questions commerciales proviendra d'entreprises non innovatrices qui cherchent à se protéger. Les représentations auprès des responsables politiques sont pour elles l'investissement qui offre le rendement le plus élevé. Les entreprises innovatrices pourront faire une meilleure utilisation de leurs fonds, par exemple en R-D et en agrandissant leurs usines.

LA POLITIQUE SOCIALE

> *Voici donc la Grande Société. Le temps est venu — et plus tôt qu'on le pense — où il n'y aura plus de pauvreté dans ce pays.*
> — Lyndon B. Johnson, 1965.

AU FIL DES ANNÉES, LES GOUVERNEMENTS ONT ACQUIS une certaine humilité. Cependant, il se pose clairement des problèmes de politiques sociales dans une économie de l'information. L'envers d'un taux élevé d'innovation est un taux de désuétude élevé. Les travailleurs des entreprises non innovatrices subiront les contrecoups des échecs de leurs gestionnaires lorsque l'entreprise pour laquelle ils travaillent fera faillite. Nous avons fait valoir plus tôt qu'il était dangereux pour l'État de venir à la rescousse de ces entreprises parce que cela contribue à réduire le rendement sur l'innovation en empêchant les innovateurs d'acquérir une plus grande part du marché[38]; cela pourrait aussi conditionner les gestionnaires à s'attendre à voir intervenir le gouvernement pour les tirer d'affaire.

Il est d'importance critique que l'État ne se porte pas à la rescousse des entreprises ni de leurs gestionnaires. La politique sociale devrait plutôt être axée sur les travailleurs touchés. Si la façon la plus efficace et la moins coûteuse de les aider est de maintenir leur employeur à flot, cela devrait se faire dans le cadre d'une procédure de faillite. Les gestionnaires et les actionnaires de l'entreprise devraient être écartés de la scène pour laisser les créanciers prendre le contrôle de la société. Si la liquidation de l'entreprise est plus intéressante pour les créanciers mais que le gouvernement souhaite maintenir l'entreprise en exploitation, il devrait obliger les créanciers à vendre l'entreprise comme entité exploitée pour ensuite les dédommager des pertes qu'ils auront subies.

> Prédiction : Les innovations feront disparaître des emplois. Les travailleurs trouveront que les compétences dans lesquelles ils ont fortement investi perdent soudainement leur valeur économique. Les appels au gouvernement pour qu'il dédommage ces travailleurs pourraient être irrésistibles sur le plan de l'éthique. Ces dédommagements devraient être directement versés aux travailleurs et non aux entreprises ou à leurs dirigeants.

Les liens entre la politique sociale et l'innovation sont manifestement importants et mériteraient d'être étudiés beaucoup plus à fond qu'ils ne l'ont été jusqu'à maintenant. Nous croyons que la politique sociale au cours des années à venir deviendra un corollaire de plus en plus important et inséparable de l'innovation.

LES ENTREPRISES CANADIENNES DANS L'ÉCONOMIE MONDIALE DE L'INFORMATION

L'HUILE DE SERPENT

Guérit la paralysie, les crampes, la constipation et la calvitie.
— Réclame pour le tonique miracle Carlton's & Fs, 1895.

DE NOMBREUX GESTIONNAIRES D'ENTREPRISE sont dangereusement enclins à la routine. Ils ont été conditionnés à penser que les techniques de gestion sur lesquelles ils ont compté dans le passé sont optimales et ont peu réfléchi aux raisons pour lesquelles ces techniques ont donné de bons résultats et sur ce qui pourrait arriver si les circonstances changeaient. Les entreprises dirigées par de tels gestionnaires seront exposées à des pressions énormes. Les gestionnaires pourraient évidemment paniquer et rechercher des solutions à court terme.

> Prédiction : Les gestionnaires désespérés des entreprises canadiennes qui n'innovent pas investiront des millions de dollars dans la mise en oeuvre d'idées non éprouvées provenant de gourous de la gestion dans l'espoir de trouver une cure miracle.

LA CULTURE D'ENTREPRISE

Sans liberté, il n'y a pas d'art.
— Albert Camus, interview paru dans *Demain*, 21 février 1957.

LES LOIS DE L'ÉCONOMIQUE, qui sont fondées sur les principes du comportement humain que nous avons décrits au début de l'étude, sont suffisamment claires quant à la façon de redresser une société en difficulté : trouver une façon de produire quelque chose que les consommateurs veulent à un coût moins élevé que toute autre entreprise! Il est difficile d'y parvenir et cela prend de l'argent; il pourrait aussi être nécessaire d'apporter des changements hiérarchiques dans la façon dont l'entreprise est dirigée; par conséquent, cette voie est politiquement peu populaire au sein de nombreuses entreprises. Comme nous l'avons affirmé, la décennie que nous traversons a été bonne pour les gourous.

Le seul véritable avantage sur lequel peut compter une entreprise dans une économie de l'information est sa capacité de recueillir, de traiter et d'intégrer continuellement l'information en vue de créer des innovations. Cela exige l'effort combiné de chaque partie constituante de l'entreprise : la recherche, la commercialisation, les finances, les travailleurs affectés à la production, etc. Comment? N'oublions pas le pouvoir de l'intérêt personnel et la tendance innée à la collaboration. Lorsqu'une entreprise est dirigée à la manière d'une économie centralisée, on peut prédire qu'elle échouera dans la course à

l'innovation, tout comme von Hayek a prédit la déconfiture des économies contrôlées. Selon la pensée actuelle, une entreprise devrait avoir une structure organisationnelle qui récompense les gens pour leur initiative, qui protège les droits de propriété individuels et qui applique des règles de comportement propices à une collaboration efficace. Bref, plus une entreprise reproduit les principes généraux d'une économie de marché, meilleures sont ses chances de prospérer dans l'économie du savoir. Le raisonnement théorique est qu'un libre marché représente un mécanisme efficient de traitement et de production de l'information en vue de satisfaire les besoins des consommateurs et que précisément les mêmes termes décrivent une entreprise qui connaît la réussite à l'ère de l'information.

Personne ne sait précisément comment cela se produit. Les entreprises expérimentent avec la responsabilisation des employés, les ateliers continus visant à faciliter l'échange d'idées et de renseignements, les mesures d'encouragement à l'esprit d'entreprise et d'autres approches. Certaines entreprises sont même allées jusqu'à se transformer littéralement en une économie de marché. Elles se sont tournées vers le franchisage : elles permettent aux employés de former leurs propres filiales pour accomplir le travail qu'ils faisaient auparavant pour la société mère.

Jusqu'à maintenant, il n'existe aucune preuve empirique démontrant la supériorité d'une approche sur les autres pour une entreprise d'un type donné. Si le système de régie idéal demeure inconnu, il est certain que les entreprises qui ont du succès n'ont pas les attitudes que l'on retrouve dans une économie dirigée parce que de telles attitudes entravent l'innovation. Il est aussi assuré que les entreprises gagnantes trouveront une façon de promouvoir des idées compatibles avec les principes d'une économie de marché, laquelle permet la décentralisation, les transactions internes tarifées et la rémunération au mérite.

> Prédiction : Les entreprises canadiennes évolueront vers la décentralisation et la rémunération axée sur le rendement.

Nous avons fait valoir précédemment que les notions voisines de la mondialisation et de l'ère de l'information vont de pair. Un proverbe chinois explique comment être vraiment érudit : « Lisez dix mille livres et voyagez dix mille milles ». Pour vraiment réussir en tant qu'entité traitant de l'information et créant des innovations, une entreprise doit parcourir le monde.

> Prédiction : Les entreprises qui prospéreront à l'ère de l'information devront avoir une solide expérience internationale.

Les gestionnaires d'entreprise qui ont fait l'expérience de cultures étrangères seront de plus en plus en demande. Les immigrants établis au Canada seront une ressource particulièrement utile à cet égard. Nous ne serions pas surpris de voir des entreprises dirigées par des immigrants récents se

développer et acquérir une stature nationale beaucoup plus rapidement que par le passé.

Nous ne savons pas quelle est la structure de régie appropriée à long terme pour faire d'une entreprise une entité habile à traiter l'information et à innover, mais on peut prédire sans risquer de se tromper que les entreprises qui auront trouvé la bonne formule prospéreront de façon spectaculaire, tandis que celles qui n'y parviennent pas ou qui refusent d'adopter une telle formule subiront l'échec. Des pressions politiques intenses s'exerceront pour que l'on impose les bénéfices des entreprises qui réussissent et que l'on vienne à la rescousse des entreprises défaillantes. Il est important de ne pas le faire.

LE SECTEUR DES ENTREPRISES AU CANADA ET LES MARCHÉS ÉMERGENTS

> *Le danger est un homme aveugle qui chevauche une monture aveugle au bord d'un précipice à minuit*.
>
> — Ancien proverbe chinois.

LES SECTEURS EN FORTE CROISSANCE qui pourraient devenir d'importants marchés attirent les entreprises. Il ne fait aucun doute que la Chine et l'Europe de l'Est correspondent à cette description. Ces marchés sont difficiles à percer et peu d'entreprises y ont fait beaucoup d'argent jusqu'à maintenant. Pourquoi alors les sociétés canadiennes y sont-elles accourues?

Une possibilité est que les gestionnaires d'entreprise, qui sont des êtres sociaux, se déplacent en troupeau. Étant donné que peu d'entreprises étrangères qui ont investi en Chine ou dans d'autres marchés émergents ont jusqu'à maintenant réalisé d'importants bénéfices, cette explication ne peut être écartée.

Une explication plus flatteuse est que le potentiel que recèlent ces marchés est suffisamment important pour justifier des années de pertes à établir une présence sociétale. Les marchés importants attirent naturellement les entreprises manufacturières et les fonctions de siège social régional. Les centres manufacturiers éloignés engendrent des coûts de transport inutiles. Les sièges sociaux éloignés limitent la capacité d'une entreprise à servir sa clientèle. Ce regroupement de l'activité des entreprises est appelé « agglomération » par les théoriciens du commerce international. Les grands centres de demande engendrent un effet d'agglomération, lequel suscite une concentration supplémentaire de l'activité économique en facilitant les retombées entre les entreprises sur le plan de l'information. Les sociétés qui sont établies dans les grandes agglomérations prospèrent tandis que celles qui sont établies ailleurs éprouvent des difficultés. Même s'il y a peu de données empiriques pour illustrer comment opère cette théorie de l'agglomération, elle a d'ardents défenseurs en milieu universitaire[39]. À mesure qu'augmente l'efficacité et que diminuent les coûts des communications, l'importance de la proximité pour faciliter les flux d'information pourrait être remise en question et le fondement de cette théorie pourrait

devenir moins crédible. La théorie de l'agglomération nous laisse franchement sceptique en tant que critère de justification de l'investissement étranger direct.

Une troisième raison qui, selon nous, paraît plus plausible est que ces économies accusaient un certain retard dans l'utilisation de l'information publique et que les entreprises étrangères ont bénéficié d'occasions temporaires de réaliser des bénéfices en y introduisant des innovations. Ces bénéfices ont disparu dès qu'il y a eu suffisamment d'entreprises — étrangères ou nationales — sur le marché utilisant la même technologie et la même information.

Ce profil de développement est appelé « convergence » par les économistes. Dès qu'une économie possède un système juridique et politique témoignant d'un minimum d'honnêteté, qui restreint l'opportunisme politique et permet aux investisseurs de confier sans danger des fonds aux entrepreneurs, le cycle de croissance illustré à la figure 5 s'amorce[40]. Les économies peuvent prendre rapidement de l'expansion lorsque les sociétés qui y évoluent réalisent des bénéfices considérables en appliquant des technologies et de l'information publiquement disponibles qui, auparavant, n'avaient pas été exploitées localement[41]. Mais le taux de croissance élevé ne peut se maintenir que tant que l'économie continue d'intégrer de l'information publique. Pour croître davantage, ces entreprises doivent alors rivaliser avec celles des autres pays développés en mettant au point des technologies et des idées entièrement nouvelles. Cela est beaucoup plus difficile que le simple rattrapage.

> Prédiction : Les taux de croissance élevés des économies émergentes ralentiront lorsque celles-ci approcheront du seuil atteint par les économies actuellement développées.

Le degré de maturité du système juridique et politique de nombreuses économies émergentes est beaucoup moins élevé que de nombreux gestionnaires d'entreprises canadiennes l'avaient espéré. Les pots-de-vin, les ristournes et les autres formes d'opportunisme politique sont répandus dans presque toutes les économies émergentes et la primauté du droit y a des assises beaucoup moins solides qu'en Occident. Cela va certainement mener à des cas spectaculaires de comportement malhonnête et de mauvaise régie d'entreprise en général. Nous ne serions pas surpris de voir des pays où ces problèmes se posent avec le plus d'acuité, par exemple la Chine, suivre un sentier de croissance erratique, marqué par l'effondrement périodique d'importants secteurs industriels. Les subventions gouvernementales rendent hautement profitables les comportements opportunistes dans ces pays, une pratique qui est aussi dommageable là qu'ici. La concurrence mondiale punira les pays qui ne peuvent exercer un certain contrôle sur ces comportements.

> Prédiction : Les marchés émergents deviendront moins intéressants avec le temps. Ils connaîtront périodiquement des crises spectaculaires qui pourraient se répercuter sur certaines entreprises

canadiennes. Les moyens de se prémunir contre le risque politique dans ces pays deviendront un sujet d'actualité.

De nombreux critiques du libre-échange font valoir que les entreprises canadiennes peuvent obtenir un avantage sur le plan de la concurrence en se soustrayant à la coûteuse réglementation environnementale du Canada pour aller produire dans des pays du tiers monde dirigés par des gouvernements irresponsables, corrompus ou inefficients. Les données disponibles démontrent que le laissez-faire en matière de normes environnementales n'attire pas les entreprises étrangères[42]. L'irresponsabilité, la corruption et l'inefficience qui permettent des normes environnementales trop permissives rendent également difficile la conduite des affaires en général dans ces pays.

Un autre attrait que l'on prête aux pays en développement est leur main-d'oeuvre peu coûteuse, facile à exploiter. Il est vrai que les pays du tiers monde tels que Taïwan ont attiré des entreprises étrangères en leur offrant de la main-d'oeuvre bien formée et peu coûteuse. Cependant, ces entreprises ont rapidement appris qu'une main-d'oeuvre bien formée est difficile à exploiter. Les salaires dans les pays où la main-d'oeuvre est productive ont augmenté rapidement pour atteindre les niveaux du marché. Les pays qui possèdent une main-d'oeuvre coûteuse et improductive n'arrivent pas à attirer des entreprises étrangères. Une étude réalisée par Stephen Golub du Swarthmore College, en Pennsylvanie, révèle que le soi-disant avantage que les faibles salaires confèrent aux pays en développement est illusoire. Après avoir examiné toute une gamme de pays développés et en développement, l'auteur a observé une corrélation positive entre les niveaux de salaire et la productivité[43].

Bref, les avantages des pays du tiers monde sont fortement exagérés tandis que leurs désavantages sont sous-estimés.

Prédiction : Nous n'entrevoyons pas de migration de masse de fabricants canadiens vers les pays en développement.

Si des entreprises canadiennes vont s'établir à l'extérieur du pays, nous croyons qu'elles iront vraisemblablement vers d'autres pays riches où existent des infrastructures matérielles, juridiques et sociales acceptables mais où le coût de l'appareil gouvernemental est moins élevé.

Ces prévisions un peu sombres ne signifient pas que les marchés émergents ne sont pas importants mais, simplement, qu'ils répondent aux mêmes lois de l'économique et aux mêmes régularités de la nature humaine que les nôtres. Manifestement, si nous disons que la Chine ne croîtra pas plus rapidement que le Canada une fois qu'elle aura adopté dans l'ensemble de son économie les meilleurs pratiques mondiales, nous disons, implicitement, qu'elle aura atteint, à ce stade, une stature économique considérable.

Prédiction : Les économies émergentes, notamment la Chine, prendront une importance croissante. Leur culture exercera une influence de plus en plus grande sur les pratiques d'affaires à travers le monde.

À l'heure actuelle, les entreprises chinoises qui veulent pénétrer le marché mondial doivent adopter les coutumes et pratiques occidentales. Cette situation ne persistera vraisemblablement pas une fois que les économies asiatiques auront acquis une plus grande importance.

La démographie et l'entreprise

L'immigration est la forme la plus sincère de flatterie.
— Jack Paar (1918-).

Le Canada est le pays qui a connu le boom des naissances le plus important. En 1996, il y avait environ 550 000 Canadiens âgés de 35 ans mais seulement 400 000 âgés de 20 ans. Cette bulle démographique engendrera vraisemblablement des tensions considérables dans le système de pensions et le système social du Canada. Une façon d'atténuer ces tensions est d'accroître l'immigration de jeunes gens. Nous croyons qu'un boom de l'immigration est pratiquement inévitable. Cette voie se révélera politiquement intéressante lorsque la génération du boom des naissances aura atteint un âge suffisant pour craindre l'insécurité davantage qu'elle ne craint la concurrence des immigrants sur le marché de l'emploi.

Une bonne partie de l'immigration proviendra de minorités visibles. Les Canadiens de souche chinoise sont la minorité qui connaît la croissance la plus rapide au pays. Leur nombre atteint environ 800 000 et une étude récente de Statistique Canada prévoit (dans un scénario de forte immigration) que ce nombre pourrait atteindre 2 millions d'ici l'an 2016[44]. Cette population sera concentrée en Colombie-Britannique, en Alberta et en Ontario où sont également concentrées les entreprises canadiennes. Trente-huit pour cent des Canadiens d'origine chinoise ont choisi de mener des carrières en gestion d'entreprise ou dans les professions, un chiffre qui est sensiblement plus élevé que celui observé pour les Canadiens en général.

La plupart des immigrants sont attirés par les coutumes et le mode de vie que l'on retrouve au Canada. Cela signifie qu'ils s'attendent à abandonner plusieurs de leurs anciennes coutumes. Cependant, le Canada est peut-être dans une catégorie à part pour ce qui est d'appuyer les immigrants qui cherchent à conserver des éléments de la culture de leur pays d'origine. Réunies, ces observations laissent penser que les entreprises canadiennes pourraient acquérir un avantage intéressant dans un avenir rapproché.

> Prédiction : Il n'est pas improbable que la gestion des entreprises canadiennes témoigne d'une influence sino-canadienne croissante. Puisque la Chine influencera indubitablement la culture d'entreprise internationale lorsqu'elle aura été pleinement intégrée à l'économie mondiale, les entreprises canadiennes pourraient se retrouver avec un avantage sur de nombreux concurrents des autres pays occidentaux.

LES PARTENARIATS ENTREPRISES-GOUVERNEMENT

LES ENTREPRISES CANADIENNES QUI NE RÉUSSISSENT PAS à innover subiront la concurrence de nouvelles entreprises canadiennes, y compris des entreprises dirigées par des entrepreneurs immigrants qui ont des valeurs non canadiennes, ainsi que des entreprises étrangères établies chez nos partenaires commerciaux traditionnels ou à des endroits dont on n'avait pratiquement jamais entendu parler auparavant. Au delà d'un certain point, les atouts classiques que possèdent les entreprises canadiennes (par exemple l'accès aux ressources naturelles) ne suffiront plus à compenser le manque d'innovation. À ce stade, les entreprises canadiennes qui stagnent seront confrontées à la réalité de la concurrence mondiale et non uniquement à sa rhétorique. Les subventions gouvernementales, les garanties de marché et les autres formes de protection peuvent repousser à plus tard le jour de vérité, mais celui-ci est éventuellement inévitable. Ce jour-là, les gestionnaires des entreprises canadiennes, qui sont conditionnés par des notions telles que les « partenariats gouvernement-entreprises », la « réglementation socialement équitable » et un rythme de changement moins rapide en tant que caractéristiques de la « culture canadienne », seront paralysés de la même façon que peut l'être un orignal surpris par des phares de voiture... avec le même résultat éventuel. Ils ne seront pas les seuls : de nombreux gestionnaires américains, européens et japonais se trouvent dans la même situation. Personne ne sait vraiment comment se préparer à l'imprévu.

Mais au delà du conditionnement qui peut affecter les entreprises canadiennes, l'intérêt personnel et la dissonance cognitive nous dictent une réaction :

> Prédiction : De nombreuses personnes qui possèdent des intérêts économiques dans les entreprises canadiennes non innovatrices développeront un certain enthousiasme à l'égard des « partenariats gouvernement-entreprises » qui comportent une aide financière. Une foule de subventions gouvernementales déguisées se retrouveront dans les programmes politiques.

La dissonance cognitive fera en sorte qu'il sera difficile à certains gestionnaires, qui avaient adhéré au principe de la libre entreprise dans le passé, d'accepter une aide directe de la part du gouvernement. Par conséquent, on assistera à la recherche introspective d'une façon idéologiquement acceptable de

faire autrement la même chose. Les « politiques industrielles », les « programmes d'expansion internationale appuyés par le gouvernement », les « accords de commercialisation ordonnée », la « préservation des emplois au Canada », les « filets de sécurité visant à encourager l'investissement », la « réglementation visant à protéger la culture, les entreprises et les consommateurs canadiens », la « réglementation axée sur la stabilité des marchés » et de nombreux autres modèles innovateurs feront leur apparition.

Les représentants des entreprises qui exerceront des pressions pour obtenir de telles concessions adopteront les motifs nobles que sont la protection des emplois, des collectivités et de la culture canadienne; grâce au pouvoir de la dissonance cognitive, ils pourront en venir à croire à leur propre rhétorique. Celle-ci pourrait même se révéler exacte. Mais, en définitive, l'échec aura été causé par l'incapacité des gestionnaires d'entreprise à innover parce qu'ils se seront trop confortablement habitués aux routines établies. Ces comportements sont préjudiciables à la régie d'entreprise et ne devraient pas être récompensés. Les gouvernements qui envisagent de telles opérations de sauvetage devraient à tout le moins insister pour que les gestionnaires responsables ne partagent pas la manne. Étant donné que la répétition des sauvetages d'entreprise pourrait éventuellement conditionner les gestionnaires et les actionnaires à s'attendre à ce qu'il y en ait encore plus dans l'avenir, cette pratique pourrait engendrer une spirale ascendante où le lobbying se ferait plus insistant.

UN AVENIR PEUT-ÊTRE PROMETTEUR POUR LES ENTREPRISES DE RESSOURCES

> *Vous vous présenterez devant le Seigneur… les coupeurs de bois comme les porteurs d'eau*.
>
> — Deutéronomie, 29:11.

LES ENTREPRISES QUI EXPLOITENT DES RESSOURCES NATURELLES ne sont probablement pas près de disparaître. La demande de matières premières de la part des entreprises en croissance rapide de l'Asie sera vraisemblablement considérable. Cela augure bien pour les entreprises canadiennes du secteur des ressources. Le Canada est un pays stable et riche en ressources, une source durable de revenu. À mesure que les autres parties du globe adoptent le modèle de l'économie de marché et que des régimes politiques plus stables s'établissent, l'expertise des entreprises canadiennes pourrait, initialement, leur donner un avantage dans le secteur du développement des ressources naturelles à l'étranger. Cependant, les entreprises canadiennes du secteur des ressources qui n'arriveront pas à innover perdront rapidement cet avantage.

> Prédiction : Les grandes entreprises canadiennes du secteur des ressources, qui sont en mesure de promouvoir un climat interne propice à l'innovation, prospéreront. Celles qui ne parviendront pas à le faire seront acquises par des entreprises qui réussissent et, dans certains cas, par des intérêts étrangers.

LES CARRIÈRES DU SECTEUR DES ENTREPRISES DANS L'ÉCONOMIE MONDIALE DE L'INFORMATION

LES COLS BLEUS ET LES ORGANISATIONS OUVRIÈRES

> *À l'âge de 40 ans l'esprit de l'homme durcit comme du plâtre de Paris*.
> — John Stewart Mill (1806-1873).

LES COLS BLEUS APPRENNENT HABITUELLEMENT un ensemble de compétences particulières liées à une certaine technologie. Un taux plus rapide de désuétude technologique fait donc surgir la menace d'une désuétude imprévue des compétences. En outre, alors que les salaires versés dans les économies émergentes rattrapent ceux des pays occidentaux, les cols bleus au Canada pourraient se retrouver avec des salaires trop élevés dans l'économie mondiale. Lorsque nous ajoutons les avantages sociaux consentis aux employés aux coûts de main-d'oeuvre, l'écart est encore plus évident. Ces facteurs ont incité les dirigeants syndicaux canadiens à préconiser la mise en place de barrières commerciales.

Nous croyons qu'il s'agit là d'une politique à courte vue, même dans la perspective où l'on cherche uniquement à défendre les intérêts des travailleurs. Les emplois de cols bleus, même dans les industries qui produisent des biens ou des services qui n'entrent pas dans le commerce international, dépendent de la clientèle des industries exportatrices et, par conséquent, de niveaux d'exportation robustes. Cette condition ne peut être assurée que si nous suivons le rythme des innovations à l'échelle mondiale. L'isolement économique n'est pas une option sérieuse.

Cette constatation, ainsi que le besoin de tenir compte de l'insécurité des employés, a suscité un intérêt accru à l'égard des programmes de recyclage de la main-d'oeuvre. Malheureusement, de nombreuses entreprises trouvent que ces programmes ont une valeur incertaine[45]. Il est difficile de transformer des plombiers de 50 ans en spécialistes de l'informatique capables de rivaliser avec des jeunes de 20 ans.

Cela laisse les cols bleus dans une position peu enviable. Par le passé, les règles d'ancienneté au moment des mises à pied constituaient un élément central des conventions collectives. (Par coïncidence, les dirigeants syndicaux sont habituellement des employés ayant acquis beaucoup d'ancienneté.) Cela signifie que les dirigeants syndicaux ont accepté avec plaisir de mettre à pied de jeunes travailleurs afin de préserver les emplois et les salaires des travailleurs plus âgés. Étant donné que le groupe des 20 ans ne représente qu'environ 70 p. 100 du groupe des 35 ans, les jeunes travailleurs se feront probablement de plus en plus rares et les coupures d'emploi fondées sur l'ancienneté toucheront de plus en plus des travailleurs plus âgés. Cela pourrait changer l'ordre de priorité des négociateurs ouvriers.

Prédiction : La sécurité d'emploi des cols bleus sera une question plus importante dans les négociations ouvrières. Les syndicats feront pression pour que les entreprises conservent ou à tout le moins recyclent les travailleurs devenus désuets. Mais cela pourrait n'avoir que peu d'utilité pratique.

LES CARRIÈRES DE COLS BLANCS

La connaissance est un processus d'accumulation des faits; la sagesse réside dans leur simplification.
— Martin Fischer (1879-1962).

LA QUANTITÉ D'INFORMATION à laquelle un gestionnaire d'entreprise a accès rend la prise de décisions difficile. Il n'est pas impossible que de nouvelles professions de cols blancs apparaissent, des professions spécialisées dans le traitement de quantités considérables de données. Ces emplois combineront vraisemblablement la formation en affaires, en informatique et en bibliothéconomie.

D'autres professions de cols blancs pourraient faire leur apparition : des spécialistes dans les diverses façons de présenter l'information en formats utiles. Les gouvernements et les entreprises ont besoin d'employés qui peuvent créer des réservoirs d'information dans le cyberespace à l'intention des clients, des fournisseurs, des actionnaires et d'autres groupes intéressés. Ces postes nécessiteront des compétences permettant de rendre ces banques simples à utiliser tout en étant suffisamment complexes pour être utiles.

Mais nous doutons beaucoup que les postes de gestionnaires traditionnels disparaîtront. Les décisions financières peuvent être éclairées par une analyse informatique mais, essentiellement, elles demeurent un art. Elles nécessitent jugement et expérience. On peut dire la même chose de la gestion des ressources humaines, de la commercialisation et des autres fonctions qui relèvent d'un siège social.

Les emplois classiques de gestionnaires de niveau intermédiaire sont moins sûrs et un grand nombre de ces postes pourraient devoir être supprimés au nom de l'efficience économique. Ces emplois pourraient aussi être touchés de façon disproportionnée par la sous-traitance. Comme nous l'avons fait valoir plus tôt, cela traduit essentiellement une structure de franchisage dans la régie des entreprises.

Du côté positif, les programmes d'avantages sociaux coûteux offerts aux employés à temps plein n'ont plus à être financés et les cols blancs autonomes, ayant un esprit d'entreprise, seront fortement incités à innover. Leur contrat précise habituellement un paiement forfaitaire pour un projet particulier, de sorte que s'ils trouvent une façon plus efficiente d'accomplir la tâche, leur revenu augmentera.

Du côté négatif du bilan de la sous-traitance, on retrouve des problèmes de responsabilité, de loyauté réduite et des lacunes sur le plan de l'information. Lorsqu'on se rend compte après coup que des entrepreneurs indépendants ont fourni un travail de piètre qualité, on ne peut les punir qu'en les privant de contrat dans l'avenir. En outre, les entrepreneurs indépendants pourraient être moins disposés à servir les intérêts à long terme de l'entreprise. Les sociétés pourraient hésiter à accorder à des entrepreneurs de l'extérieur le même accès à l'information que celui qu'elles accordent à leurs employés, de sorte que la qualité des décisions pourrait en souffrir. Nous croyons que les aspects négatifs sont plus importants que ne le laisse croire le peu d'attention qui leur a été accordée.

> Prédiction : Les gestionnaires de niveau intermédiaire pourraient être sacrifiés à mesure que la sous-traitance gagne en popularité, mais les inconvénients de tels arrangements deviendront plus évidents et la tendance ralentira. Des compromis, qui comportent ni un emploi à temps plein ni le statut d'entrepreneur indépendant, pourraient émerger. Ces arrangements pourraient ressembler aux accords de franchise dans le commerce de détail.

La formation en milieu de travail

> *L'éducation coûte de l'argent, mais on peut dire la même chose de l'ignorance*.
> — Sir Claus Moser, *Daily Telegraph*, London, 1990.

Dans le modèle autrichien, les cols bleus comme les cols blancs doivent adopter les innovations et s'y adapter rapidement. Cela soulève deux questions problématiques : la sélection des employés et la formation en milieu de travail. Les entreprises préféreront embaucher des employés qui peuvent être facilement recyclés. Nous croyons qu'il s'agit de personnes possédant déjà une bonne formation de base. Les entreprises constateront qu'elles n'ont pas besoin d'employés possédant une formation uniquement dans les domaines « pertinents » à leur secteur d'activité parce que la pertinence devient une cible de plus en plus mobile.

Les programmes de formation universitaire qui peuvent réellement apprendre aux étudiants comment « apprendre » seront en forte demande. La plupart des universités ont encore à mettre au point de tels programmes, en dépit de ce qu'elles prétendent. Une formation rigoureuse dans les arts libéraux, les langues, les sciences, les mathématiques et d'autres matières traditionnelles semblerait ici un bon point de départ. Les matières qui répondent au goût de l'heure de la rectitude politique et les programmes professionnels de portée étroite pourraient représenter des investissements moins judicieux que ne le réalisent de nombreux étudiants.

La formation en milieu de travail suscite de l'intérêt. Des multinationales de premier plan ont établi des centres de formation interne et obligent leurs

employés à y suivre des cours. Cette pratique soulève trois interrogations. Premièrement, il n'y a jusqu'à maintenant aucune preuve empirique que les programmes de formation élaborés en milieu de travail améliorent le rendement de l'entreprise. Cela est possible, mais jusqu'à maintenant nous n'en avons tout simplement pas la preuve. Deuxièmement, la formation en milieu de travail est coûteuse, tant directement qu'indirectement en termes d'heures de travail perdues. À une époque de concurrence plus vive à l'échelon mondial, les entreprises sont de moins en moins en mesure d'assumer ce coût. Enfin, aussi longtemps que l'esclavage demeurera illégal, les gestionnaires ne pourront être sûrs que les employés qui ont reçu de la formation aux frais de l'entreprise ne partiront pas une fois la formation acquise pour aller travailler chez un concurrent. Incidemment, certaines sociétés pourraient rationnellement décider qu'il est moins coûteux de débaucher les diplômés du programme de formation d'une entreprise rivale que de les former elles-mêmes à l'interne. Cette « lacune du marché » pourrait inciter les entreprises à sous-investir dans la formation des travailleurs. Une solution consisterait à laisser les entreprises d'une industrie financer conjointement des centres de recyclage ou céder à contrat à des établissements d'enseignement la tâche de fournir de tels services. Si chaque entreprise paie une part des coûts de formation de chaque employé, le problème de la mobilité des employés ne se pose plus.

> Prédiction : Les entreprises exerceront de plus en plus de pressions pour que l'on assure une meilleure éducation générale à tous les niveaux. Elles pourraient dépenser davantage en formation interne mais il deviendra évident que des solutions de plus vaste portée sont requises pour résoudre le problème de la formation des travailleurs.

UN DERNIER MOT SUR LES PRÉDICTIONS ÉCLAIRÉES

Une dépression sévère comme celle que l'on a connue en 1920-1921 se situe hors du domaine du probable.

— Harvard Economic Society, 1929.

LES ÉCONOMISTES ONT BESOIN D'UN FORT SENTIMENT de faillibilité et nous avons peut-être été trop audacieux dans nos prophéties. Pourtant, nous estimons que nous avons suivi une démarche intellectuellement honnête. Nous avons énuméré les lois les plus fondamentales de l'économie et décrit la façon dont elles découlent de régularités essentielles de la nature humaine. Nous avons fait valoir que ces fondements, aussi vagues qu'ils soient, sont la seule base sensée sur laquelle s'appuyer pour faire des prévisions à long terme en matière économique. À notre avis, le modèle économique de l'école autrichienne fournit le meilleur cadre de référence pour décrire les changements que nous observons actuellement dans notre économie parce que cette approche est presque la seule à prendre l'économie de l'information au sérieux. Ayant établi ces prémisses et en adoptant cette perspective de l'économie, nous nous sommes ensuite risqués à faire des prédictions.

Si nos prédictions ne se matérialisent pas, un examen des raisons en cause permettra d'éclairer la validité de nos hypothèses. C'est la façon dont la science progresse. Il est à espérer que cela nous aidera à mieux faire à l'avenir. Dans l'éventualité où aucune des prédictions qui précèdent ne se concrétiserait, nous avons inclus la prophétie suivante, empruntée à un ouvrage antérieur dont le droit d'auteur est depuis longtemps expiré, afin de préserver quelques lambeaux de notre réputation :

> Prédiction : Il y aura des guerres et des rumeurs de guerre, ainsi que des tremblements de terre à divers endroits.

NOTES

1 Pour une analyse des prédictions de Marx et de Veblen, voir R. Heilbroner, *The Worldly Philosophers*, Simon and Schuster, New York, 1986. Au milieu du 19e siècle, Marx a prédit l'expansion du capitalisme à l'ensemble du monde, accompagnée de soulèvements socialistes dans les pays capitalistes les plus avancés. Il a pris ses distances des « marxistes », en affirmant vers la fin de sa vie : « Je ne suis pas marxiste » et n'a pas recommandé le socialisme comme stratégie de développement pour les économies retardataires comme celles de la Russie ou de la Chine. Au tournant du siècle, Veblen a prédit une bonne partie de l'expansion subséquente du capitalisme axé sur la consommation. Pour une prédiction passablement précise de l'effondrement du communisme, voir F. A. von Hayek, *The Road to Serfdom*, University of Chicago Press, Chicago, 1944.

2 Le magazine *Forbes* a réellement procédé à cette expérience. Le singe a fait au moins aussi bien que la moyenne des analystes professionnels du marché. Voir B. Malkiel, *A Random Walk Down Wall Street*, Norton, New York, 1990.

3 D. Meadows, J. Randers et W. Behrens III, *The Limits to Growth*, Universe Books, New York, 1972.

4 von Hayek, *The Road to Serfdom*.

5 Parce que cette tradition intellectuelle a débuté à Vienne vers 1870, on l'a appelée l'école économique autrichienne. Les historiens considèrent que Carl Menger en est le fondateur et que l'étude intitulée *Principles of Economics*, publiée en 1871, représente l'ouvrage séminal de cette école.

6 Voir Aristote, *L'éthique de Nicomaque*, vol. E, § 1131-1133 et, en particulier, § 1132b. Voir également Saint-Thomas d'Aquin, *Somme*, vol. II, no 2, quaest, LXXVIII, article 1. Schumpeter remet en cause cette interprétation classique d'Aristote et de Saint-Thomas, dans *History of Economic Analysis*, Oxford University Press, 1954; voir, notamment, les p. 60, 61, 93 et 98-99.

7 Sur ce point, voir Robert Axelrod, *The Evolution of Co-operation*, Basic Books, New York, 1982, qui renferme par ailleurs un bon résumé des données expérimentales et des données provenant d'une simulation par ordinateur examinées dans ce chapitre.

8 Une bonne partie des travaux de Kahneman et Tversky, Einhorn, Shoemaker et Thaler font ressortir le lien étroit entre le conditionnement et le comportement économique. Pour un exposé préliminaire sur cette question, voir R. Hogarth et M. Reder, *Rational Choice*, ouvrage collectif, University of Chicago Press, Chicago, 1986.

9 Voir M. Boycko, A. Scheifer et R. Vishny, *Privatizing Russia*, MIT Press, Cambridge (Mass.), 1995, p. 53, 60.

10 La notion a été proposée à l'origine par Leon Festinger, dans *A Theory of Cognitive Dissonance*, Stanford University Press, Palo Alto (Cal.), 1962.

11 La gestion de la qualité totale (GQT) s'appuie principalement sur des données anecdotiques provenant de très grandes sociétés américaines qui étaient auparavant très mal gérées. On peut penser que tout effort visant à secouer la routine dans ces entreprises aurait permis d'améliorer les choses. La société Florida Power and Light a déployé de grands efforts pour se mériter le Demming Award dans le domaine de la GQT; elle a remporté ce prix mais, par la suite, le rendement de l'entreprise a périclité. Huson (1995) présente des données montrant que la pratique de la gestion des stocks « juste à temps » améliore la performance des entreprises où la gestion des

stocks revêt une importance critique. Il n'y a pratiquement aucune donnée indépendante sur les autres modes dans le domaine de la gestion. Nous connaissons des gestionnaires qui considèrent les cercles de qualité comme ne valant guère plus qu'une thérapie de groupe auto-glorifiante.

12 Les mesures des coûts de stockage ou de traitement de l'information, par exemple le montant dépensé par bit stocké ou le montant dépensé par opération de calcul en virgule flottante, ont diminué de façon exponentielle depuis la fin des années 70.

13 Certaines entreprises ont maintenant accès à des données sur les ventes à la minute près.

14 Cette « dissipation de l'avantage au niveau des facteurs de production » sera vraisemblablement beaucoup plus rapide à l'ère de l'information où les nouvelles au sujet des entreprises se propagent rapidement.

15 C'est là une superstition populaire, moussée par Michael Porter et d'autres, qui prétendent que les actionnaires nord-américains sont obsédés par les rendements à court terme et que cette fixation incite les gestionnaires d'entreprise à sacrifier des projets d'investissement valables à long terme. Il n'y a pas de données empiriques appuyant cette hypothèse mais beaucoup de données pour la réfuter. Lorsqu'une entreprise annonce un projet d'investissement en capital ou en R-D à long terme, le prix de ses actions augmente, ce qui indique une demande accrue de la part des investisseurs sur le marché. Les entreprises qui ont des dépenses de R-D élevées arborent des ratios valeur marchande/valeur comptable élevés. Pour un aperçu de cette question, voir R. Giammarino, « Patient Capital? », dans *La prise de décisions dans les entreprises au Canada*, sous la direction de R. Daniels et R. Morck, Industrie Canada et University of Calgary Press, 1995. Nous émettons l'hypothèse que les gestionnaires d'entreprise associés à des plans peu réalistes qui ont été rejetés par les actionnaires sont peut-être attirés par les théories de la « myopie » pour des raisons de dissonance cognitive.

16 John Horgan, un rédacteur scientifique, a fait valoir dans son ouvrage intitulé *The End of Science: Facing the Limits of Knowledge in the Twilight of the Scientific Age*, Addison-Wesley, 1996, que tout ce qui pouvait être inventé l'a été. Nous ne connaissons aucun scientifique actif qui prend au sérieux cette vision des choses et nombreux sont ceux qui la considèrent comme étant tout simplement insensée. Pour une réflexion pénétrante sur les raisons pour lesquelles la science est probablement une poursuite sans fin, voir J. Casti, « Confronting Science's Logical Limits », *Scientific American*, octobre 1996, p. 102-105. Il y a toutefois de nombreux éminents scientifiques qui remettent en question l'utilité de la science à grande échelle, comme elle se manifeste dans les mégaprojets financés par l'État. C'est là une question tout à fait différente qui a trait principalement à la mauvaise utilisation des fonds plutôt qu'à une limite inhérente à la quantité de connaissances que peut renfermer l'univers.

17 Voir Will Mitchell, Randall Morck, J. Myles Shaver et Bernard Yeung, « Causality between International Expansion and Investment in Intangibles, with Implications for Financial Performance and Firm Survival », Université du Michigan, Ann Arbor (Mich.), 1996. Cette étude non publiée confirme les résultats antérieurs obtenus par Mansfield et d'autres.

18 R. Nelson et G. Wright présentent bien ce point dans « The Rise and Fall of American Technological Leadership: The Postwar Era in Historical Perspective », *Journal of Economic Literature*, vol. 30, n° 4, décembre 1992, p. 1931-1964. Les auteurs font valoir que l'avance technologique détenue par les États-Unis au cours de la période d'après-guerre s'est progressivement amenuisée en raison du caractère de plus en plus

transnational du commerce des denrées et des ressources, des affaires et des finances ainsi que des communautés technologiques. Nous croyons que c'est là une conséquence directe de la nécessité de justifier les coût des nouvelles technologies par des applications à grande échelle.

19 En pratique, un plus grand nombre de variables factorielles devraient entrer dans cette fonction. C'est là une question secondaire qui ne modifie en rien les points essentiels abordés ici.

20 Voir P. Romer, « The Origins of Endogenous Growth », *Journal of Economic Perspectives*, vol. 8, n° 1, hiver 1994, p. 3-22; « Increasing Returns and Long Run Growth », *Journal of Political Economy*, vol. 94, n° 5, octobre 1986, p. 1002-1037; « Endogenous Technological Change », *Journal of Political Economy*, vol. 98, 1990, p. 71-102; et « Increasing Returns and New Developments in the Theory of Growth », NBER, document de travail 3098, 1989. Voir également P. Aghion et P. Howitt, « A Model of Growth through Creative Destruction », *Econometrica*, vol. 60, 1992, p. 323-351.

21 J. Jayaratne et P. Strahan, « The Finance Growth Nexus: Evidence from Bank Branch Deregulation », *Quarterly Journal of Economics*, vol. 111, 1996, p. 639-670.

22 R. King et R. Levine, « Finance and Growth: Schumpeter Might Be Right », *Quarterly Journal of Economics*, vol. 108, 1993, p. 717-738.

23 De façon générale, les économistes utilisent le terme « rente » pour dénoter un revenu non gagné et non les paiements de loyer faits aux propriétaires. Techniquement, la rente représente tout revenu qui excède les coûts du fournisseur.

24 Les économistes ne perdent pas de temps à signaler que de nombreux biens, sinon la plupart, se situent quelque part entre des biens parfaitement privés et des biens parfaitement publics. Si j'utilise tellement la bibliothèque que sa collection dépérit à vue d'oeil, j'ai entamé ses caractéristiques de bien public. De même, les biens produits privément, par exemple les émission de télévision, ont des propriétés de bien public.

25 Voir R. Beason et D. Weinstein, « Growth, Economies of Scale and Targeting in Japan 1960-1990 », *Review of Economics and Statistics*, 1995.

26 K. Murphy, A. Schleifer et R. Vishny, « The Allocation of Talent: Implications for Growth », *Quarterly Journal of Economics*, mai 1991, p. 503-530.

27 Voir J. McConnell et H. Servaes, « Additional Evidence on Equity Ownership and Corporate Value », *Journal of Financial Economics*, vol. 27, 1990, p. 595-610.

28 Voir S.-H. Chan, J. Martin et I. Kensinger, « Corporate Research and Development Expenditures and Share Value », *Journal of Financial Economics*, vol. 26, 1990, p. 255-266.

29 Voir Bronwyn H. Hall, Adam Jaffe et Edward Mansfield, « Industrial Research during the 1980s: Did the Rate of Return Fall? Comments and Discussion », *Brookings Papers on Economic Activity*, vol. 2, 1993, p. 289-343.

30 Voir Beason and Weinstein, « Growth, Economies of Scale and Targeting in Japan », *Review of Economics and Statistics*, 1995.

31 Voir A. Jaffe, M. Trajtenberg et R. Henderson, « Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations », *Quarterly Journal of Economics*, vol. 108, n° 3, août 1993, p. 577-598. Pour des données qui réfutent l'existence d'un effet de « grappe », voir D. Irwin et P. Klenow, « Learning by Doing in the Semi Conductor Industry », *Journal of Political Economy*, vol. 102, n° 6, p. 1200-1207. Cette étude arrive à la conclusion que les employés apprennent sur le tas mais qu'ils ont autant de chance d'apprendre de nouvelles techniques auprès d'entreprises situées

à proximité que d'entreprises situées sur d'autres continents. L'étude conclut que les effets de « grappe » et les théories connexes ont une valeur douteuse.

32 Voir A. Krueger, « The Political Economy of the Rent Seeking Society », *American Economic Review*, juin 1974; W. Baumol, « Entrepreneurship: Productive, Unproductive and Destructive », *Journal of Political Economy*, vol. 98, 1990, p. 893-921; Murphy, Shleifer et Vishny, « The Allocation of Talent », *Quarterly Journal of Economics*, mai 1991.

33 Si les dépenses gouvernementales servent à financer des biens publics tels que l'éducation et les soins de santé, ces activités peuvent contribuer par elles-mêmes à améliorer l'efficience.

34 Bien que la figure 4 montre que des pays où les impôts sont élevés comme la Suède et l'Allemagne sont des chefs de file pour ce qui est des dépenses de R-D, une bonne partie de ces dépenses sont d'origine gouvernementale et le reste est essentiellement le fait de multinationales de très grande envergure. De fait, l'interprétation bureaucratique de l'entrepreneuriat est considérée un peu comme une farce nationale dans certains pays où les taux d'imposition sont élevés. Voir, par exemple, « For Germany, It's Nothing Ventured... », dans *Euromoney*, février 1986, p. 147-152. D'autres pays, notamment la Suède, ont continué à produire des innovations; voir, par exemple, T. Wallmarck, « One Hundred Major Swedish Technical Innovations, from 1945 to 1980 », *Research Policy*, vol. 20, n° 4, août 1991, p. 325-344. Manifestement, des recherches plus approfondies sont requises sur les rapports qui existent entre les impôts et l'innovation.

35 David K. Foot et Daniel Stoffman, *Boom, Bust and Echo: How to Profit from the Coming Demographic Shift*, Macfarlane, Water & Ross, Toronto, 1996.

36 Il existe des données empiriques démontrant que les legs peuvent constituer, pour les personnes âgées, un moyen important en vue d'influencer le comportement de leurs héritiers éventuels; voir B. D. Bernheim, A. Shleifer et L. Summers, « The Strategic Bequest Motive », *Journal of Political Economy*, vol. 93, n° 6, décembre 1985, p. 1045-1076. Les données sur l'importance globale des legs comme facteur explicatif de l'épargne ne sont pas concluantes. B. D. Bernheim, dans « How Strong Are Bequest Motives? Evidence Based Estimates of the Demand for Life Insurance and Annuities », *Journal of Political Economy*, vol. 99, n° 5, octobre 1991, p. 899-927, constate que les prestations de sécurité sociale ont pour effet de hausser les montants d'assurance-vie détenus et de réduire les rentes privées; l'auteur conclut que cela suppose que les legs constituent un important facteur de motivation.

B. D. Bernheim et L. Levin, dans « Social Security and Personal Saving: An Analysis of Expectations », *American Economic Review*, vol. 79, n° 2, mai 1989, p. 97-102, constatent que les prestations de sécurité sociale ont pour effet de réduire l'épargne personnelle pratiquement dollar pour dollar chez les personnes vivant seules mais non chez les couples mariés; cette observation laisse penser que les legs au conjoint peuvent constituer un facteur dominant.

37 L'inflation inattendue réduit la valeur réelle des créances antérieures des entreprises mais elle réduit également la valeur réelle des déductions fiscales au titre de l'amortissement. Il en résulte souvent que la perte annule pratiquement le gain.

38 Des données empiriques provenant des États-Unis indiquent que la pratique du sauvetage des entreprises nationales qui font face à une dure concurrence étrangère réduit les rendements des dépenses consacrées à l'innovation. Voir S. Lenway, R. Morck et

B. Yeung, « Rent Seeking, Protection and Innovation in the American Steel Industry », *Economic Journal*, vol. 106, 1996, p. 410-421.

39 La notion d'« agglomération » est étroitement liée à celle de « grappe » parmi les entreprises qui font de la R-D et les études empiriques citées à l'appui ou à l'encontre de l'une de ces théories sont aussi utilisées pour l'autre (voir la note 31). La notion d'agglomération a été mise de l'avant pour la première fois par A. Marshal dans *Principles of Economics*, MacMillan, New York, 1985, ch. 10.

40 Voir J. Sachs et A. Warner, « Economic Convergence and Economic Policies », NBER, document de travail 5039, 1995.

41 Ainsi, ces dernières années, la Chine a été le plus important pays de destination de l'investissement étranger direct; au cours des trois dernières années, l'IED à destination des pays en développement a dépassé l'IED dans les pays développés. Cela vient renverser le profil durable des flux d'IED se produisant principalement entre les pays développés et correspond à l'adoption, par les pays en développement, de nouveaux systèmes juridiques et de politiques gouvernementales axées sur le libre marché. Les économistes appellent ce genre de bénéfices des « quasi-rentes ». Ce sont des bénéfices dépassant les coûts mais de nature temporaire et éphémère.

42 Pour un examen de la documentation empirique, voir A. Jaffe et coll., « Environmental Regulations and International Competitiveness: What Does the Evidence Tell Us? », *Journal of Economic Literature*, 1996.

43 Pour un exposé non technique sur cette étude, voir « Not so Absolutely Fabulous », *The Economist*, 337, 7939, 4 novembre 1995, p. 86.

44 Statistique Canada, *Projections des groupes de population de minorités visibles*, publication n° 91-541-XPE au catalogue.

45 Les données économétriques sont incomplètes. Dans « Technological Change and Retirement Decisions of Older Workers », *Journal of Labor Economics*, vol. 11, n° 1, partie 1, janvier 1993, p. 162-183, A. Bartel et N. Sicherman présentent des données montrant une corrélation positive entre les taux de changement technologique et le recyclage dans l'ensemble des industries; mais les auteurs constatent également que de nombreux travailleurs âgés préfèrent prendre une retraite anticipée plutôt que de participer à un programme de recyclage. Dans « The Nonequivalence of High School Equivalents », *Journal of Labor Economics*, vol. 11, n° 1, partie 1, janvier 1993, p. 1-47, S. Cameron et J. Jeckman constatent que les décrocheurs au niveau du secondaire qui possèdent des équivalences certifiées ne peuvent être distingués statistiquement des autres décrocheurs du niveau secondaire sur les marchés du travail aux États-Unis.

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