

June 2016



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A TEPID RECOVERY: THE INDEX OF ECONOMIC
WELL-BEING FOR CANADA AND THE
PROVINCES, 1981-2014

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CSLS Research Report 2016-05

June 2016

A Tepid Recovery: the Index of Economic Well-being for Canada and the Provinces, 1981-2014

Abstract

This report presents new estimates of the Index of Economic Well-being (IEWB) and its four domains (consumption flows, stocks of wealth, economic equality and economic security) for Canada and the provinces for the 1981-2014 period. We find that the IEWB grew at an average annual rate of 0.74 per cent per year over the period, notably below the 1.30 per cent growth of GDP per capita over the same time frame. Both the consumption and wealth domains steady advanced over the period, but their growth was offset by declines in the equality and economic security domains. Since 2008, reflecting the 2009 recession and the weak recovery, Canada's IEWB has exhibited meager growth, advancing only 0.09 per cent per year. This reflects declines in all domains of the IEWB except consumption. Six of the ten provinces had lower levels for their respective IEWBs in 2014 than in 2008 (Newfoundland and Labrador, Prince Edward Island, Ontario, Saskatchewan, Alberta, and British Columbia).

A Tepid Recovery: the Index of Economic Well-being for Canada and the Provinces, 1981-2014

Table of Contents

Abstract	1
Executive Summary	4
I. The Index of Economic Well-being: Motivation and Framework	9
II. Trends in the IEWB for Canada and the Provinces, 1981-2014	14
A. Overall IEWB	14
i. Canada	14
ii. Provinces	15
B. Overall Trends in the Four Domains of the Index of Economic Well-being	18
i. Measurement of Trends in the Scaled Domain Indices	18
ii. Canada	19
C. Trends in the Components of the Consumption Flows Domain	21
i. Personal Consumption	23
ii. Average Family Size	24
iii. Government Expenditures on Goods and Services	25
iv. Unpaid Work	27
v. Regrettable Expenditures	28
vi. Life Expectancy	29
vii. Total Adjusted Consumption Flows	30
D. Trends in the Components of the Stocks of Wealth Domain	32
i. Physical Capital	35
ii. R&D Capital	36
iii. Natural Resources	37
iv. Net International Position	40
v. Human Capital	41
vi. Social Costs of Environmental Degradation	42
vii. Total Wealth Stocks	45
E. Trends in the Economic Equality Domain	47
i. Income Inequality	48
ii. Poverty	50
iii. Overall Economic Equality Domain	52
F. Trends in the Economic Security Domain	53
i. Risk from Unemployment	55
ii. Financial Risk from Illness	59
iii. Risk from Single-Parent Poverty	61
iv. Risk of Poverty in Old Age	66
v. Weighting of the Components in the Index of Economic Security Domain	69
vi. Trends in the Economic Security Domain	70
III. Sensitivity Analysis	71
A. Alternative 1: Consumption Weighted More Heavily than Wealth	72

i. Canada	72
ii. Provinces	73
B. Alternative 2: No Weight Given to Economic Equality	75
i. Canada	75
ii. Provinces	76
C. Alternative 3: High Weights Given to Economic Equality and Security	76
i. Canada	77
ii. Provinces	77
D. Overall Summary of Sensitivity Analysis	78
IV. Conclusion	78
References	81

A Tepid Recovery: the Index of Economic Well-being for Canada and the Provinces, 1981-2014

Executive Summary

In 1998, the Centre for the Study of Living Standards (CSLS) released the first estimates of the Index of Economic Well-being for Canada (Osberg and Sharpe, 1998), which is a composite index based on a conceptual framework developed by Osberg (1985). Over the past decade, the CSLS has extended the geographical coverage of the Index to the Canadian provinces and to major OECD countries and has made a number of methodological changes to the Index.

The objective of this report is to present updated estimates of the IEWB for Canada and the provinces over the 1981 to 2014 period, with emphasis on the developments since 2008. The report outlines trends in the four domains of economic well-being that make up the Index – consumption, wealth, economic equality, and economic security. The report also offers an analysis of the sensitivity of our results to the subjective choice of weights assigned to the domains.

The Index of Economic Well-being: Motivation and Conceptual Framework

The Index of Economic Well-being is based on two main ideas. First, economic well-being has multiple dimensions and an index should reflect that reality. Second, an index of economic well-being should recognize that individuals differ in the relative weights they assign to the different domains of economic welfare. In order to be useful to all individuals independent of their value differences, an index of well-being ought to make value judgments as explicit and transparent as possible. For example, real GDP per capita is the most frequently cited indicator of economic well-being. However, GDP accounting omits consideration of many factors – leisure time, longevity of life, asset stock levels, income inequality, and so on – that are important to individuals' economic welfare.

In accordance with the conceptual framework developed by Osberg (1985), the IEWB is a composite index comprised of four domains of economic welfare:

- Per-capita consumption
- Per-capita wealth
- Economic equality
- Economic security.

These four domains reflect economic well-being in both the *present* and the *future*, and account for both *average* access to economic resources and the *distribution* of that access among members of society. By basing the IEWB on data from each of these domains, we attempt to capture the multifaceted nature of *economic* well-being. Our

domain approach also allows individuals assign weights in accordance with their value judgments (e.g. consumption versus economic equality).

We do not mean to overlook the importance of non-economic factors by focusing on economic well-being. Instead, we are motivated by the idea that a better measure of “access to resources needed for a decent standard of living” is needed if economic and social trends are to be combined into an index with greater ambitions.

Trends in the Index of Economic Well-being, 1981-2014

Overall, the improvement of economic well-being in Canada over the 1981-2014 period has been driven by the dramatic increase in per-capita consumption and wealth, though it was somewhat hampered by the increases in economic inequality and insecurity. The Index of Economic Well-being 0.74 per cent per year from 1981 to 2014. For comparison, real GDP per capita in Canada over the same period grew 0.56 percentage points more than the Index of Economic Well-being (having grown at a rate of 1.30 per cent per year).

Growth of the IEWB has ebbed and flowed over the last three decades. The IEWB grew 1.53 per cent per year over 1981-1989, but was effectively flat over 1989-2000 (growing only 0.06 per cent per year). For reference, from 1981 to 1989 GDP per capita grew 1.64 per cent per year and from 1989 to 2000 it grew 1.51 per cent per year. IEWB growth from 1989 to 2000 was especially poor when compared with GDP per capita growth. Growth returned to the Index for the 2000 to 2008 period, at a rate 1.41 per cent per year, actually outgrowing GDP per capita by 0.12 percentage points per year. Finally, since 2008 the IEWB grew at a tepid rate of 0.09 per cent per year reflecting weaker GDP per capita growth of 0.47 per cent per year. This reflects both the impact of the 2009 recession and the slow recovery which followed.

Chart 1: IEWB and Domain Scores, 1981, 2008, and 2014

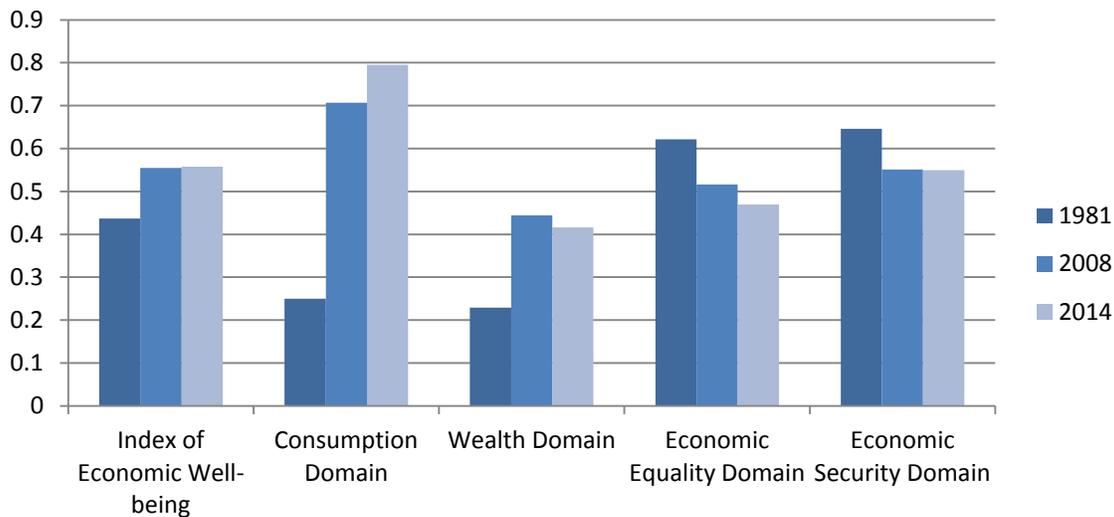


Chart 1 shows Canada's scores in 1981, 2008, and 2014 for the overall IEWB and each individual domain. We are able to report that:

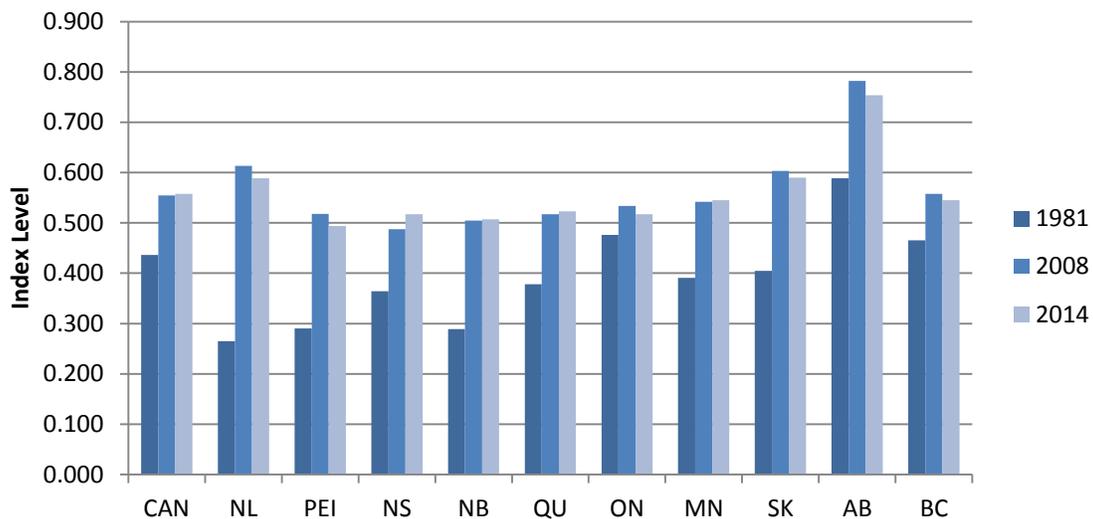
- Between 1981 and 2014, both the consumption domain and the wealth domain experienced robust growth (growing 3.57 per cent per year and 1.83 per cent per year respectively), driving IEWB growth in spite of declines in economic equality and security (falling 0.84 per cent per year and 0.49 per cent per year respectively).
- Since 2008, consumption was the sole driver of IEWB growth (growing 1.99 per cent per year). Wealth, economic equality, and economic security all declined (falling 1.09 per cent per year, 1.56 per cent per year, and 0.05 per cent per year). Some of wealth's transition from a positive to a negative contributor to IEWB growth was mitigated by economic security, which deteriorated much less after 2008 than before.

As shown in Chart 2, Alberta had the highest overall IEWB values in 2014, followed by Saskatchewan and Newfoundland and Labrador. New Brunswick and Prince Edward Island had the lowest overall IEWB values. These results – Alberta ranking first in economic well-being and Prince Edward Island ranking last – are largely robust to the use of different weights for the four domains.

Newfoundland and Labrador experienced by far the strongest growth in the IEWB between 1981 and 2014, growing 2.45 per cent per year. Ontario had the slowest growth, up only 0.25 per cent per year. Every province experienced positive IEWB growth from 1981 to 2014.

In 2014, six provinces sat at IEWB levels below their 2008 values (Newfoundland and Labrador, Prince Edward Island, Ontario, Saskatchewan, Alberta, and British Columbia). In contrast, from 1981 to 2008 all provinces improved their IEWB levels.

Chart 2: Overall IEWB Levels for Canada and the Provinces, 1981-2014



There was significant cross-province variation in the scores for the overall IEWB and the four domain indices. Specifically:

- Between 1981 and 2014 the indices of the consumption and wealth domains increased in all provinces, lead by Newfoundland and Labrador. The index of the economic equality domain decreased in four provinces, indicating growing poverty and economic inequality. The index for economic security fell in eight provinces. Newfoundland and Labrador and Prince Edward Island were the only two provinces to show growth in the security domain since 1981.
- Since 2008, consumption has increased in all provinces except Saskatchewan. The wealth domain has fallen in six provinces, economic equality has fallen in seven provinces, and economic security has fallen in six provinces. Every province experienced declines in at least one of the four components of its IEWB.

In conclusion, Canada experienced much slower growth in economic well-being from 2008 to 2014 relative to the 1981 to 2008 period. While consumption increased in Canada and all provinces except for Saskatchewan after 2008, the three other components declined at the national level and in most provinces.

A Tepid Recovery: the Index of Economic Well-being for Canada and the Provinces, 1981-2014¹

In 1998, the Centre for the Study of Living Standards (CSLS) released the first empirical estimates for Canada of the Index of Economic Well-being (Osberg and Sharpe, 1998), a composite index based on a conceptual framework for measuring economic well-being developed by Osberg (1985). In the past decade, the CSLS has extended the geographical coverage of the Index to the Canadian provinces and to major OECD countries and has made a number of changes to the methodology used to construct the Index. The dual objectives of this report are to review these methodological changes and to present updated estimates of the Index for Canada and the provinces for the 1981-2014 period, with particular emphasis on the 2008 to 2014 period.

The report is divided into five main parts. The first part provides a discussion of the motivation for the development of the Index of Economic Well-being (IEWB) and the potential contributions of the Index to the debate on the measurement of economic well-being. It also outlines the basic framework of the measure.² The second part, by far the longest, provides a detailed discussion of trends in the Index of Economic Well-being, and in the four domains and sub-components of the domains, in Canada and the provinces over the last three and a half decades. Special attention is paid to the 2009 recession and the ensuing recovery.³ The third part tests the sensitivity of our results to alternative assumptions regarding the relative weights assigned to the four domains of the Index. The fourth part concludes.

¹ This report is an update of the previous report on the IEWB for Canada and the provinces by Osberg and Sharpe (2011). Some sections draw from this previous report. This report was written by CSLS economists Jasmin Thomas (jasmin.thomas@csls.ca) and James Uguccioni (james.uguccioni@csls.ca) under the supervision of Andrew Sharpe. The authors would like to thank Alberta Finance and Enterprise of the Government of Alberta for financial support for the updating of the IEWB database (available at <http://www.csls.ca/iwb/FinalIEWBCanada2013.xlsx>).

² For a discussion of methodological issues in the IEWB and lessons learned in the development of the IEWB, see Osberg and Sharpe (2009a, 2009b), and Thomas and Uguccioni (2016).

³ We acknowledge that the itself recession began in Q4 2008, but the major effect on output in annual terms was felt in 2009. As such, we treat 2008 as the peak (as it is in annual terms) and refer to the 2009 recession throughout.

I. The Index of Economic Well-being: Motivation and Framework⁴

A frequent refrain in the social indicators literature is the (true) statement that there is more to “well-being” than economics. It is, however, widely recognized that a key component of overall well-being is economic well-being or “access to economic resources.” Although there are valid concerns that national income accounting measures may not necessarily be a good guide to trends in economic well-being, real GDP per capita is probably the single most often mentioned measurement of economic progress.

In focusing on the economic aspects of well-being in this report we do not intend to downgrade the importance of non-economic issues. Instead, we are motivated by the idea that a better measure of “access to resources needed for a decent standard of living” is needed if economic and social trends are to be combined into an index with larger ambitions.

With respect to the economic component of societal well-being, our particular emphasis is on sustainability and on the sensitivity of measures of aggregate “command over resources” to the omission or inclusion of measures of income distribution and economic security.

Although we argue that the IEWB is superior to GDP as a measure of command over resources, we do not intend to deny the importance of obtaining an accurate count of the total money value of goods and services produced for sale in the market in a given country in a given year (i.e. GDP). Clearly, GDP measurement is essential for many important public policy purposes (e.g. macroeconomic demand management, public finance). However, GDP accounting does omit several considerations (for example, leisure time, longevity of life, asset stock levels) which are important to individuals’ command over resources. Although the compilers of the national accounts may protest that their attempt to measure the aggregate money value of marketed economic output was never intended as a full measure of economic well-being, it has often been used as such. The question the critics of GDP have to answer is whether alternative measures of command over resources are possible, plausible, and make some difference.

In developing an Index of Economic Well-Being for Canada based on four dimensions of economic well-being – consumption, accumulation, economic equality, and economic security – this report attempts to construct better measures of effective consumption and societal accumulation. However, an important point of difference with other indices is that we argue that “society’s well-being” is not a single, objective number.

It is more accurate, in our view, to think of each individual in society as making a subjective evaluation of objective data in coming to a personal conclusion about society’s well-being. Well-being has multiple dimensions and individuals differ in their subjective

⁴ This section is taken from Osberg and Sharpe (2009a).

valuation of the relative importance of each dimension of well-being. But because all adults are occasionally called upon, in a democracy, to exercise choices (e.g. in voting) on issues that affect the collective (and some individuals, such as civil servants, make such decisions on a daily basis), citizens have reason to ask questions of the form: “Would public policy X make ‘society’ better off?” Presumably, self-interest plays some role in all our choices, but unless self-interest is the sole criterion, an index of society’s well-being is useful in helping individuals answer such questions.

Exhibit 1: Conceptual Framework for the Index of Economic Well-being

Concept	Present	Future
"Typical Citizen" or "Representative Agent"	Average flow of current income	Aggregate accumulation of productive stocks
Heterogeneity of Experiences of All Citizens	Distribution of potential consumption -- income inequality and poverty	Insecurity of future incomes

Although conceptually there may be no way to measure some of the different dimensions of well-being in directly comparable units, as a practical matter citizens are frequently called upon to choose between policies that favour one or another. Hence, individuals often have to come to a summative decision – i.e. have a way of “adding it all up” – across domains that are conceptually dissimilar. From this perspective, the purpose of index construction should be to assist individuals – e.g. as voters in elections and as bureaucrats in policy making – to think systematically about public policy, without necessarily presuming that all individuals have the same values.

Our hypothesis is that indices of social well-being can best help individuals to come to reasonable answers about social choices if information is presented in a way that highlights the objective trends in major dimensions of well-being and thereby helps individuals to come to summative judgments – but also respects differences in values. Although it may not be possible to define an *objective* index of societal well-being, individuals still face the problem of coming to a *subjective* evaluation of social states, and they need organized, objective data if they are to do it in a reasonable way.

The logic of our identification of four components of well-being is that it recognizes both trends in average outcomes and in the diversity of outcomes, both now and in the future, as Exhibit 1 illustrates.

When an average flow variable like GDP per capita (or an alternative, such as the average personal income) is used as a summative index of well-being, the analyst is implicitly stopping in the first quadrant of Exhibit 1. He or she is assuming that the experience of a representative agent can summarize the well-being of society and that the measured income flow optimally weighs consumption and savings, so that one need not explicitly distinguish between present consumption flows and the accumulation of asset stocks which will enable future consumption flows.

However, as society is composed of diverse individuals living in an uncertain world who typically “live in the present, anticipating the future,” each individual’s estimate of societal economic well-being will depend on the proportion of national income saved for the future. GDP is a measure of the aggregate market income of a society. It does not reveal the savings rate, and there is little reason to believe that the national savings rate is automatically optimal. Indeed, if citizens have differing rates of time preference, any given savings rate will only be “optimal” from some persons’ points of view. Hence, a better estimate of the well-being of society should allow analysts to distinguish between current consumption and the accumulation of productive assets (which determines the sustainability of current levels of consumption), and thereby enable citizens to apply their differing values.

Some individuals may be concerned about the degree to which they and others will share in prosperity – there is a long tradition in economics that “social welfare” depends on both average incomes and the degree of inequality and poverty in the distribution of incomes. If the future is uncertain, and complete insurance is unobtainable (either privately or through the welfare state), individuals will also care about the degree to which the economic future is secure for themselves and others.

If the objective of index construction is to assist public policy discussion, we recognize that when too many categories have to be considered simultaneously, discussion can easily be overwhelmed by complexity. We therefore do not adopt the strategy of simply presenting a large battery of indicators. However, because reasonable people may disagree in the relative weight they would assign to each dimension (e.g. some will argue that inequality in income distribution is highly important while others will argue the opposite), we are explicit and open about the relative weights assigned to components of well-being, rather than leaving them implicit and hidden. (An additional reason to distinguish the underlying components of economic well-being is that for policy purposes it is not particularly useful to know only that well-being has gone “up” or “down”, without also knowing which aspect of well-being has improved or deteriorated.) We specify *explicit* weights to the components of well being and test the sensitivity of aggregate trends to changes in those weights, in order to enable others to assess whether, based on their personal values about what is important in economic well-being, they would agree with an overall assessment of trends in the economy.

This report’s basic hypothesis – that a society’s economic well-being depends on total consumption and accumulation, and on the individual inequality and insecurity that surround the distribution of resources – is consistent with a variety of theoretical perspectives. We do not present here a specific, formal model. In a series of papers (Osberg and Sharpe, 1998, 2002a, and 2005) we have already described the details of the calculation of the four components or dimensions of economic well-being:

- effective per capita consumption flows – which include consumption of marketed goods and services, government services, and adjustment of effective per-capita consumption flows for household production, changing household economies of

scale, leisure, regrettable expenditures, and life expectancy;

- net societal accumulation of stocks of productive resources – which consists of net accumulation of physical capital, the value of natural resources stocks, net international investment position, accumulation of human capital, and R&D stocks, as well as an adjustment for costs associated with environmental degradation;
- income distribution – the intensity of poverty (incidence and depth) and the inequality of income;
- economic security from job loss and unemployment, illness, family breakup, and poverty in old age.

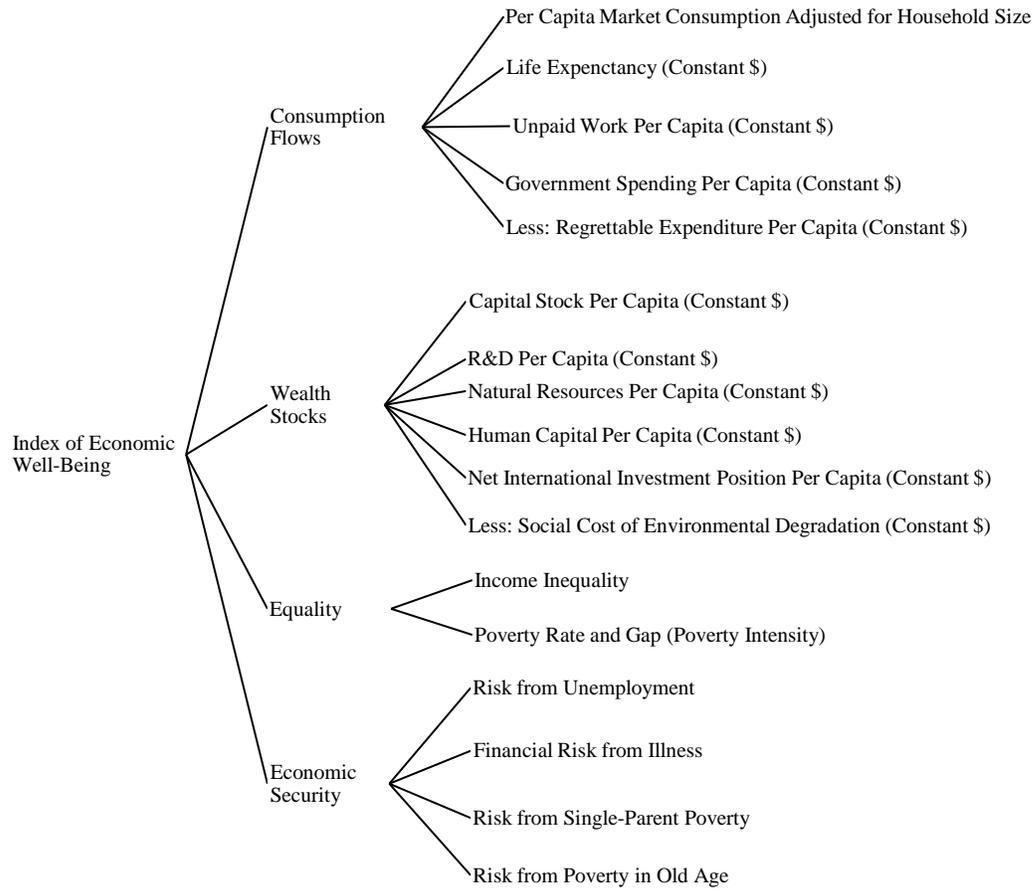
Each domain of economic well-being is itself an aggregation of many underlying variables, on which the existing data can be of uncertain quality. By contrast, the System of National Accounts has had many years of development effort by international agencies (particularly the UN and the IMF), and has produced an accounting system for GDP that is rigorously standardized across countries. However, using GDP per capita as a measure of “command over resources” would implicitly:

- (1) assume that the aggregate share of income devoted to accumulation (including the public capital stock, human capital, research and development and the value of unpriced environmental assets) is in fact optimal, and
- (2) set the weight of income distribution and economic insecurity to zero, by ignoring entirely their influence.

These assumptions do not seem justifiable, and they are not innocuous.

Due to data limitations, estimates of the Index of Economic Well-being computed for different geographical regions may differ in the number of variables that can be included in the calculations. Exhibit 2 illustrates the components that are used in our estimates of the Index of Economic Well-being for Canada and the provinces, based on the four domains outlined above.

Exhibit 2: CSLS Index of Economic Well-being: Weighting Tree for Canada and the Provinces



Source: CSLS

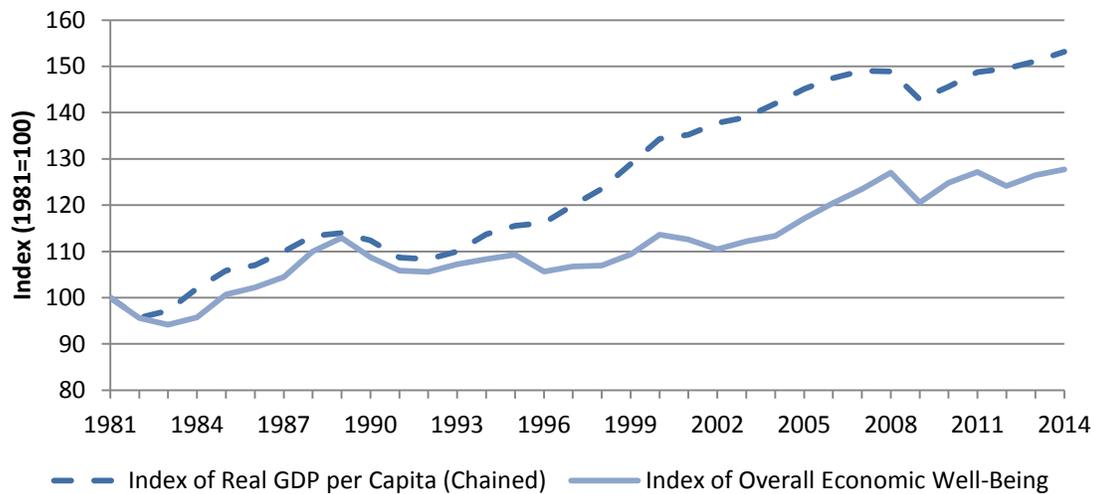
II. Trends in the IEWB for Canada and the Provinces, 1981-2014

A. Overall IEWB

i. Canada

The scaled value of the overall Index of Economic Well-being rose 0.121 points from 0.437 points in 1981 to 0.558 points in 2014 in Canada. This amounts to a 27.7 per cent total increase over the period, or an average annual rate of change of 0.74 per cent. This rate of growth is less than that of GDP per capita, the most widely used metric of living standards and sometimes seen as a proxy for economic well-being. Real GDP per capita in Canada over the 1981-2014 period advanced 53.1 per cent (1.30 per cent per year) from \$32,107 to \$49,171 (2007 dollars) – 0.56 percentage points per year faster than the rate of increase of the Index of Economic Well-being (Chart 3).

Chart 3: Trends in the Overall Index of Economic Well-being and GDP per Capita, Canada, 1981-2014, Indexed, 1981=100



Source: IEWB database.

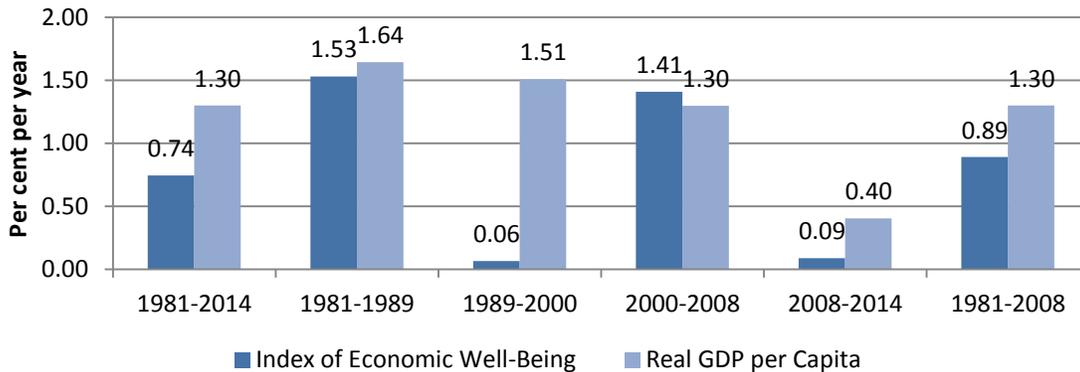
The years 1989, 2000, and 2008 were well-defined business cycle peaks in Canada. From a peak to peak perspective, which controls for cyclical fluctuations, the Index of Economic Well-being grew at 1.53 per cent per year over 1981-1989, but slowed to a rate of 0.06 per cent per year over 1989-2000. Between 2000 and 2008, growth in the Index averaged 1.41 per cent per year, and it grew 0.09 per cent per year from 2008 to 2014.

The Index of Economic Well-being for Canada is roughly procyclical (Chart 3), with economic expansions characterized by growth in both the Index of Economic Well-being and in GDP per capita, and with recessions and periods of economic stagnation characterized by declines in both variables. This relationship of course reflects the fact

that some components of the Index of Economic Well-being, such as consumption, are included in GDP and that other components are correlated with or driven by GDP trends.

The compound annual growth rate of GDP per capita was similar to that of the Index during the 1981-1989 period (growth rates of 1.64 and 1.53 per cent per year were achieved respectively). However, the growth of GDP per capita and the Index wildly diverged during the 1989-2000 period, with the former growing approximately 1.45 percentage points per year more than the latter (1.51 per cent per year and 0.06 per cent per year respectively). The 2000-2008 period saw the compound annual growth rates of real GDP per capita and the Index converged, with each series respectively attaining rates of 1.30 per cent per year and 1.41 per cent per year (Chart 2). Finally, GDP per capita grew 0.31 percentage points per year faster than the IEWB from 2008 to 2014 (0.40 per cent per year and 0.09 per cent per year respectively). Evidently, real GDP per capita and the Index capture different phenomena, and growth in one is not necessarily mirrored in the other.

Chart 4: Growth of the Index of Economic Well-being and Per-capita GDP, Canada, 1981-2014



Source: Table 9.

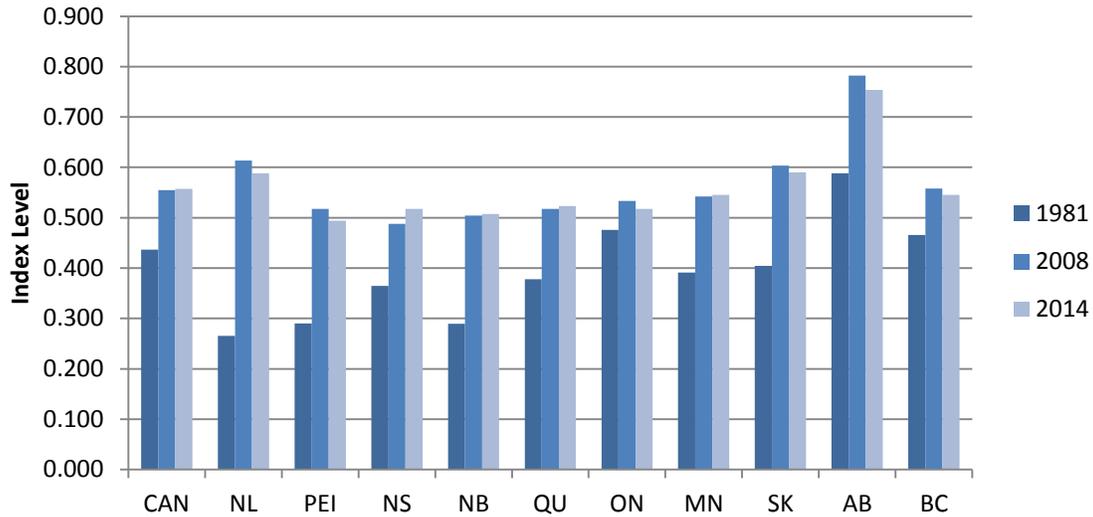
ii. Provinces

Among the provinces, Alberta had the highest value of the overall index in 2014 at 0.754 points, followed by Saskatchewan at 0.590 points and Newfoundland and Labrador at 0.588 points (Chart 5). New Brunswick and Prince Edward Island had the lowest values at 0.507 points and 0.494 points, respectively. In terms of progress, every province experienced considerable growth in the overall Index of Economic Well-being over the 1981-2014 period. Newfoundland and Labrador by far and away experienced the strongest gain, growing 121.9 per cent over the period, while Ontario grew the least (8.7 per cent).

Alberta also had the highest level of real GDP per capita in 2014, followed by Saskatchewan and Newfoundland and Labrador, while the Maritime Provinces had the lowest levels. In contrast to the national trend, two provinces experienced better growth in the Index of Economic Well-being than in real GDP per capita over the 1981-2014 period: Québec and Prince Edward Island. Exhibit 3 shows the rankings of Canada and the provinces according to the levels and growth rates of the Index of Economic Well-

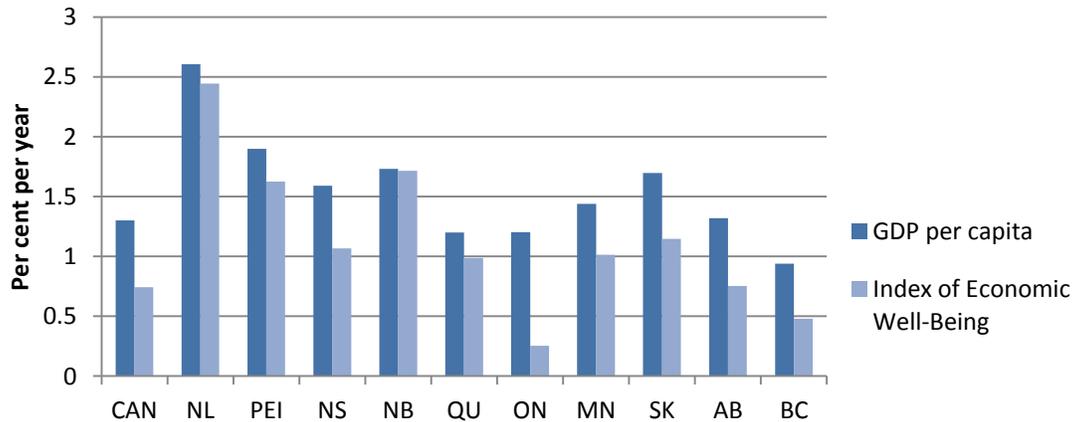
being and per-capita GDP. It is clear that the dimensions of economic welfare to which GDP implicitly assigns zero weight have an important impact on economic well-being rankings. Both in terms of 2014 levels and in terms of growth rates over the 1981-2014 period, the rankings given by the IEWB differ from those based on per-capita GDP (see Exhibit 3).

Chart 5: Overall Index of Economic Well-being, Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

Chart 6: Growth of the Index of Economic Well-being and Per-capita GDP, Canada and the Provinces, 1981-2014



Source: IEWB database.

Exhibit 3: Ranking by Index of Economic Well-being and Per-capita GDP, Canada and the Provinces:

Level, 2014		Growth Rate, 1981-2014		
Rank	Index of Economic Well-being	GDP Per Capita	Index of Economic Well-being	GDP Per Capita
1	Alberta	Alberta	Newfoundland and Labrador	Newfoundland and Labrador
2	Saskatchewan	Saskatchewan	New Brunswick	Prince Edward Island
3	Newfoundland and Labrador	Newfoundland and Labrador	Prince Edward Island	New Brunswick
4	Canada	Canada	Saskatchewan	Saskatchewan
5	Manitoba	British Columbia	Nova Scotia	Nova Scotia
6	British Columbia	Ontario	Manitoba	Manitoba
7	Quebec	Manitoba	Quebec	Alberta
8	Ontario	Québec	Canada	Canada
9	Nova Scotia	Nova Scotia	Alberta	Ontario
10	New Brunswick	New Brunswick	British Columbia	Québec
11	Prince Edward Island	Prince Edward Island	Ontario	British Columbia

B. Overall Trends in the Four Domains of the Index of Economic Well-being

The Index of Economic Well-being is comprised of four domains, or dimensions, of economic well-being: consumption flows, stocks of wealth, economic equality, and economic security. This section examines overall trends in these four domains in Canada over the 1981-2014 period. The next four sections look at each domain in depth, analyzing developments in the components and subcomponents of the domains at the national and provincial levels.

Table 1 presents estimates of the four domains of the Index of Economic Well-being over the 1981-2014 period. There are significant divergences in trends in the domains. The consumption and wealth domains enjoyed very large increases while the economic equality and security domains experienced more cyclical trends and declined over the period.

i. Measurement of Trends in the Scaled Domain Indices

There are two ways to measure progress in the domains: the absolute change in the scaled value of the domain, and the per cent change in the index of the scaled values. This latter method is influenced by the absolute level of the scaled value in the base year. For example, assume Domain A has scaled values of 0.2 points and 0.6 points in the base and end years while Domain B has values of 0.5 points and 0.9 points. Progress measured in absolute terms is the same for the two domains – 0.4 points. But the index of the scaled values shows that Domain A increased 200 per cent while Domain B advanced only 80 per cent.

The scaled values are sensitive to the universe of values that are used for the scaling procedure. For Canada there are 34 data points for a time series for the 1981-2014 period, but for Canada and the provinces there are 374 data points (11*34). For Canada scaled separately values run from 0 to 1. Equally, for Canada and the provinces scaled together the values run from 0 to 1. But for any given variable, some provinces will be above the Canadian average and some will be below. This means that the range of values must be wider when the provinces are included, and the range of *scaled* values for Canada will be much smaller when the provincial values are included than when Canada is considered alone. This also means that the percentage rate of increase in the index of the scaled values will be considerably greater for Canada if scaled separately.

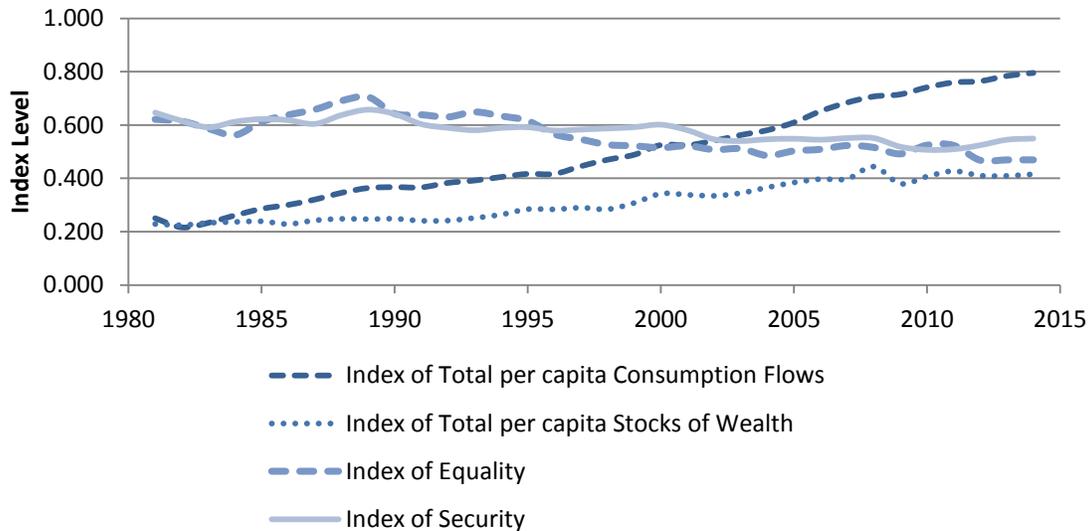
It should also be noted that for domains where components are aggregated in prices (consumption and wealth), index values will have different percentage rates of change depending on whether these rates are based on the scaled or unscaled values. For example, over the 1981-2014 period, total consumption flows in Canada increased 1.75 per cent per year (from \$30,344 per capita to \$53,811 per capita) in real 2007 dollar terms, and 3.57 per cent per year (from 0.250 points to 0.795 points) in scaled index terms.

ii. Canada

In Canada, the consumption domain's index score of 0.795 points was the highest among the four domains in 2014. The economic security domain had the next highest score, at 0.549 points, followed by the equality domain at 0.470 points and the wealth domain at 0.416 points (Chart 7 and Chart 8).⁵

Chart 8 illustrates that the increase in the overall Index of Economic Well-being over the 1981-2014 period was driven entirely by increases in the index scores for the consumption and wealth domains, while declines in economic equality and security dampened growth in overall well-being. Over the period, the index of the consumption domain increased 0.545 points (or 3.57 per cent per year) from its 1981 value of 0.250 points, while the index of the wealth domain grew 0.187 points (or 1.83 per cent per year) from 0.229 points in 1981. In contrast, the index of the economic equality domain fell 0.152 points (or 0.84 per cent per year) from its 1981 value of 0.621 points, and the index of the economic security domain declined 0.097 points (or 0.49 per cent per year) from 0.646 points in 1981.

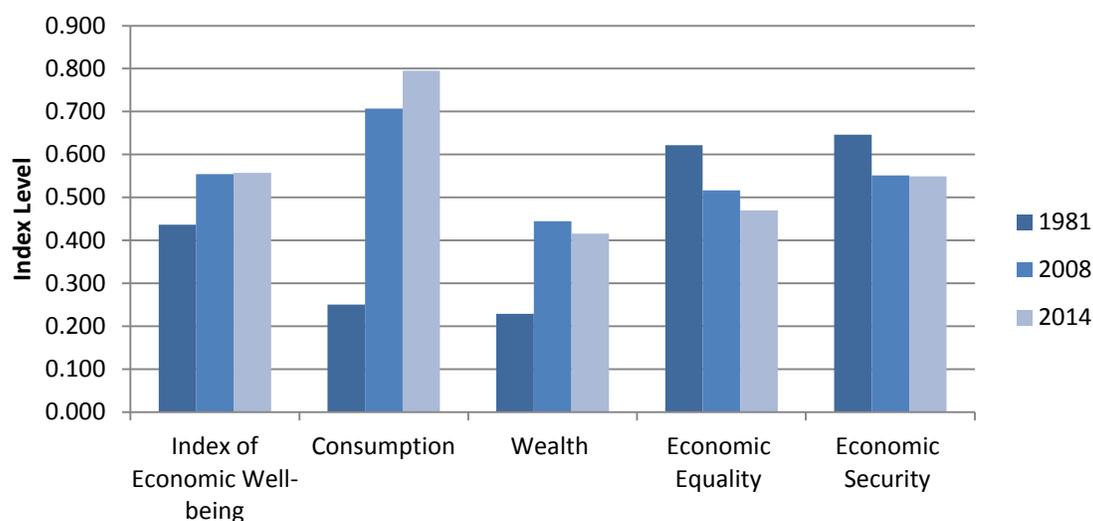
Chart 7: Trends in the Four Domains of the Index of Economic Well-being, Canada, 1981-2014



Source: IEWB database.

⁵ Because of the linear scaling procedure, a scaled index of a variable for Canada is a function of the variation in that variable across provinces. As described in Section II(B)(i) above, the observed range of provincial values determines the 'feasible range' that we use in the linear scaling procedure. This explains why Canada's scaled value for the wealth domain is smaller than its scaled value for the consumption domain even though, in dollar terms, per-capita wealth is much greater than per-capita consumption. The wealth domain takes a much wider range of values across provinces, and the Canadian average value is further from the maximum provincial value in wealth than in consumption. For further discussion of the scaling procedure, refer to Sharpe and Salzman (2003).

Chart 8: The Index of Economic Well-being and its Domains, Canada, 1981, 2008, and 2014



Source: IEWB database.

However, there were significant differences across the peak-to-peak periods in terms of progress (or regress) in the four domains (see Table 1). The consumption domain experienced the strongest and most consistent growth, although it grew much faster over the 1981-1989 period (4.78 per cent per year) and the 1989-2000 period (4.16 per cent per year) than the 2000-2008 period (3.79 per cent per year) or the 2008-2014 (1.99 per cent per year). In contrast, the index of the wealth domain grew by only 0.96 per cent per year over 1981-1989, before growing to an average annual growth of 3.02 per cent per year over the 1989-2000 period, growing 3.29 per cent per year from 2000 to 2008, and finally falling 1.10 per cent over 2008-2014.

Canada's performance in economic equality was volatile. The domain's index increased by 1.58 per cent per year over 1981-1989, then shrank at an average rate of 2.81 per cent per year over the 1989-2000 period. The index of equality grew by 0.03 per cent per year from 2000 to 2008 and from 2008 to 2014 it decreased by 1.56 per cent per year.

It was the economic security domain in which Canada's performance was consistently weak in all three time periods. In particular, after growing by 0.21 per cent per year over the 1981-1989 period, the index of the economic security domain declined 0.81 per cent per year over the 1989-2000 period, 1.08 per cent per year over the 2000-2008 period, and 0.05 per cent per year over the 2008 to 2014 period.

Table 1 compares the 2008 to 2014 period with the overall trend from the three prior business cycles (1981 to 2008). Strikingly, after 2008 the Index grew much slower than its overall trend from 1981 to 2008. At the component level, growth in consumption, wealth, and equality has deteriorated significantly compared to the overall trend. Economic equality, however, has improved versus the overall trend. This could in part reflect the recession differentially affecting high incomes versus low incomes.

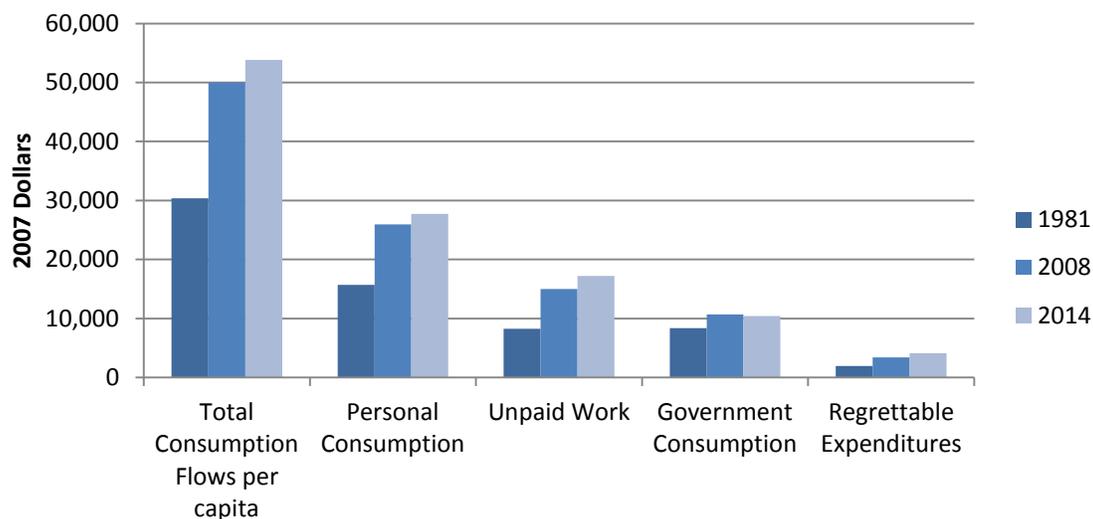
Table 1: Summary of Growth for the IEWB and its Domain, 1981-2014

	1981-2014	1981-1989	1989-2000	2000-2008	2008-2014	1981-2008
IEWB	0.74	1.53	0.06	1.41	0.09	0.89
Consumption Domain	3.57	4.78	4.16	3.79	1.99	3.92
Wealth Domain	1.83	0.96	3.71	3.29	-1.10	2.49
Economic Equality	-0.84	1.58	-3.42	0.03	-1.56	-0.68
Economic Security	-0.49	0.21	-0.98	-1.08	-0.05	-0.59

C. Trends in the Components of the Consumption Flows Domain

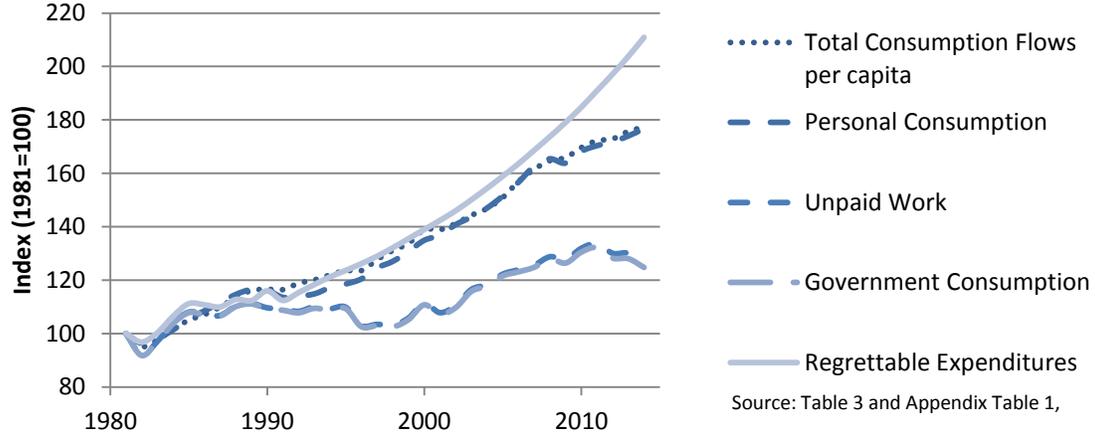
As noted earlier in the report, the consumption domain consists of three main components: private or personal consumption expenditures; government expenditures on goods and services consumed either directly or indirectly by households; and the value of unpaid work, including both unpaid household work and volunteer work outside the household.

Chart 9: Components of the Consumption Domain, Canada, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

Chart 10: Trends in Total Adjusted Consumption per Capita and its Components, Canada, 1981-2014, (1981=100)



Source: IEWB database.

Three adjustments are in turn made to these components.⁶ First, since economies of scale exist in private household consumption, private consumer expenditure is adjusted for changes in family size. Second, regrettable expenditures – expenditures that do not contribute to economic well-being, defined here as commuting costs, costs of crime, costs of divorce, and household pollution abatement expenditures – are subtracted from overall consumption flows. Third, an adjustment for the positive impact of increased life expectancy on well-being is made by adjusting total consumption flows by the per cent increase in life expectancy.

Chart 9 illustrates the levels of the dollar-denominated consumption components for Canada in 1981, 2000, and 2014, while Chart 10 plots their trends over the 1981-2014 period.

⁶ In the estimates of the Index of Economic Well-being for OECD countries a fourth adjustment is made to consumption flows to account for the large international differences in growth rates and levels of annual hours worked (Osberg and Sharpe, 2009). As both the trend in average hours worked in Canada and level differences among provinces are not particularly large, this adjustment has not been introduced in this report, but may be in the future.

Table 2: Summary of Growth for the Consumption Domain and its Components, 1981-2014

	1981-2014	1981-1989	1989-2000	2000-2008	2008-2014	1981-2014
Consumption Domain	3.57	4.78	4.16	3.79	1.99	3.92
Personal Consumption per Capita	1.74	1.93	1.34	2.58	1.10	1.88
Square Root of Family Size	-0.21	-0.38	-0.18	-0.17	-0.11	-0.23
Government Expenditures per Capita	0.67	1.32	-0.03	1.82	-0.42	0.92
Unpaid work per Capita	2.25	1.93	3.10	1.37	2.30	2.24
Regrettable Expenditures	2.29	1.46	1.95	2.83	3.28	2.07
Life Expectancy	0.26	0.28	0.24	0.25	0.29	0.26

Table 2 details the annual growth rates for the consumption domain and its components overall and in each peak-to-peak period. As the consumption domain is a scaled value, the growth rates for the domain overall are not directly linked to the growth rates of the individual components. The growth of the consumption domain, however, reflects growth of the individual components. As personal consumption per capita makes up roughly half of the consumption domain, its steady growth throughout the period drove robust overall consumption growth.

In the 2008 to 2014 period, growth of the consumption domain overall slowed significantly from where it had been in prior periods. In particular, growth of personal consumption per capita and government expenditure both drastically slipped in the 2008 to 2014 period versus the overall trend from 1981 to 2008. Government expenditures per capita especially grew throughout the 1981 to 2008 period, but shrank 0.42 per cent per year from 2008 to 2014. This could, in part, reflect increased emphasis on austerity by policy makers in the wake of the 2009 recession.

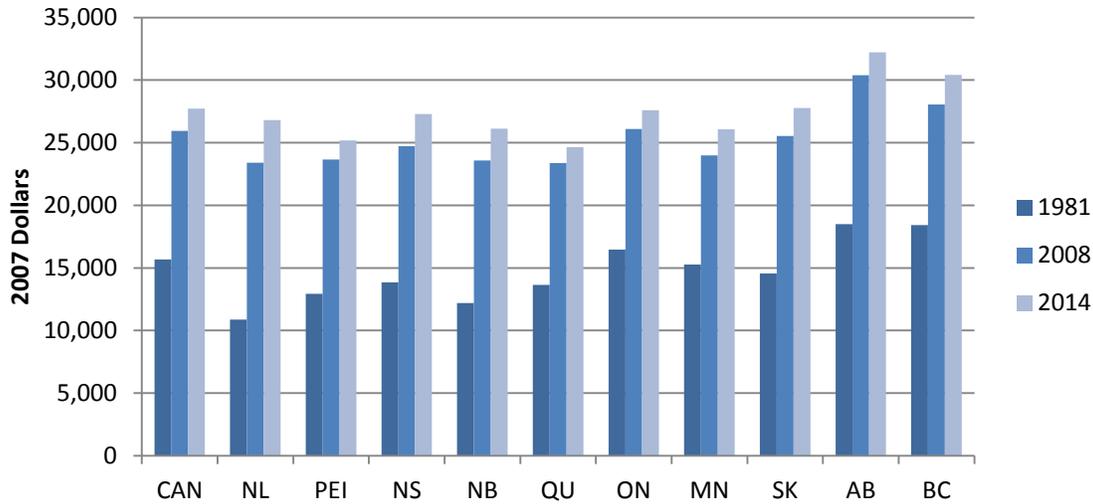
i. Personal Consumption

a. Canada

In 2014, personal consumption per capita in Canada was \$27,713 (2007 dollars), accounting for just over one half of total consumption flows (Chart 9) Personal consumption in 2014 was up 76.7 per cent from its 1981 level of \$15,684, an average annual rate of increase of 1.74 per cent. Except for the recessions of the early 1980s, early 1990s, and 2009, personal consumption progressed steadily throughout the period (Chart 10). However, growth was somewhat slower in the 1989-2000 period (1.34 per cent per year) than in the 1981-1989 period (1.93 per cent). During the 2000 to 2008

period personal consumption grew 2.58 per cent per year, though growth slowed to 1.10 per cent per year during the 2008 to 2014 period.

Chart 11: Personal Consumption per Capita, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

b. Provinces

At \$32,229 (in 2007 dollars), Alberta had the highest personal consumption per capita of all the provinces in 2014, followed closely by British Columbia at \$30,423 and Saskatchewan at \$27,763 (Chart 9). Québec had the lowest level of personal consumption per capita at \$24,645. In terms of growth, every provinces showed considerable progress. Newfoundland and Labrador showed by far the strongest gains in personal consumption per capita since 1981 with a 146.6 per cent overall improvement (2.77 per cent annually). New Brunswick was the only other province to grow more than 100 per cent over the period, touting a gain of 113.9 per cent over the same period (2.33 per cent annually). British Columbia experienced the least progress with a 65.2 per cent increase in per capita personal consumption between 1981 and 2014. Over the 1981-2014 period, most of the provinces showed a pattern similar to the national one: consistent, positive per capita consumption growth throughout the period, with some meager slowing in the 1990s.

ii. Average Family Size

It is important to adjust the dollar value of per-capita consumption to reflect the fact that there are economies of scale in household consumption. When people live together in groups, they can achieve greater effective consumption than they could if they lived alone as individuals; for instance, they can cooperate in household production (e.g. one person can cook for everyone) and share fixed costs (e.g. they can share one refrigerator rather than each person having to buy one). To account for this issue, we use the Luxembourg Income Study equivalence scale, which is the square root of family

size.⁷ As family sizes have fallen over the last few decades, it has dampened the ability of households to reap these returns to scale in consumption.

a. Canada

In 2014, the average family size in Canada was 2.36 persons.⁸ This was down 13.0 per cent (or 0.42 per cent per year) from its 1981 level of 2.72 persons, due to both a decline in the number of children per family and an increase in the proportion of unattached individuals within total households. Average family size declined during all three sub-periods of the 1981-2014 period, however it shrunk fastest during the 1981-1989 period (0.75 per cent per year). Decreasing family size has, however, somewhat slowed in recent years. The average family size in Canada fell only 0.34 per cent per year from 2000 to 2008 and 0.22 per cent per year from 2008 to 2014.

b. Provinces

Among the provinces, Manitoba had the largest average family size in 2014, at 2.50 persons, followed by Alberta at 2.48 persons. The smallest family size was in Nova Scotia, at 2.22 persons. Over the 1981-2014 period, there was a shift in terms of where the largest average family sizes were observed. In 1981, family sizes in the Atlantic Provinces were all well above the national average, this was particularly true in Newfoundland and Labrador, where the average family contained 3.55 persons. Over the period, each of the Atlantic provinces experienced dramatic declines of at least 20.0 per cent in average family size, while the remainder of Canada experienced declines below 20.0 per cent (Québec shrank 18.8 per cent over the period, the next largest decline was in British Columbia at 10.1 per cent). Overall, the largest decline was in Newfoundland and Labrador, where average family size fell 35.4 per cent from 3.55 persons to 2.29 persons over the period.

iii. Government Expenditures on Goods and Services

a. Canada

In 2014, government expenditures per capita on goods and services in Canada were \$10,429 (2007 dollars). Government expenditures include spending by all levels of government on current goods and services and on fixed capital and inventories, minus

⁷ The definition of ‘family’ encompasses two groups: ‘economic families,’ which are groups of two or more persons related by blood, marriage, common-law, or adoption and living in the same dwelling; and ‘unattached individuals,’ which are persons either living alone or sharing a dwelling with persons to whom they are unrelated by blood, marriage, common-law, or adoption. Note that multiple families may live within a single household. Strictly speaking, our adjustment should be made on the basis of households rather than families. Two unattached individuals who live as roommates enjoy many of the benefits of economies of scale in household consumption (e.g. they don’t have to buy two refrigerators), but since they are recorded as two separate families, our income adjustment does not capture the benefits of their cooperation. This is a minor issue, however.

⁸ Data on the total number of families in Canada and the provinces, which is used to compute average family size, is available only to 2013; the values for 2014 are extrapolated using the compound annual growth rate for the 2008-2013 period. Throughout this report, the unavailability of data sometimes necessitates the construction of such estimates. Such cases will be identified either in the text or in a footnote.

capital consumption allowances.⁹ Government expenditures in 2014 were up 24.7 per cent from \$8,361 in 1981, an average annual rate of increase of 0.67 per cent. Government expenditures increased every year throughout most of the period, with the notable exceptions of 1990-1998 and 2011-2014 (Chart 10). Growth in per-capita real government expenditures was extremely weak in the 1989-2000 period (falling 0.03 per cent per year), but fairly strong in the 1981-1989 period (1.32 per cent per year) and 2000-2008 period (1.82 per cent per year). In the 2008-2014 period, government expenditures per capita actually fell 0.42 per cent per year. Government expenditures per capita peaked in 2011 at \$11,055.

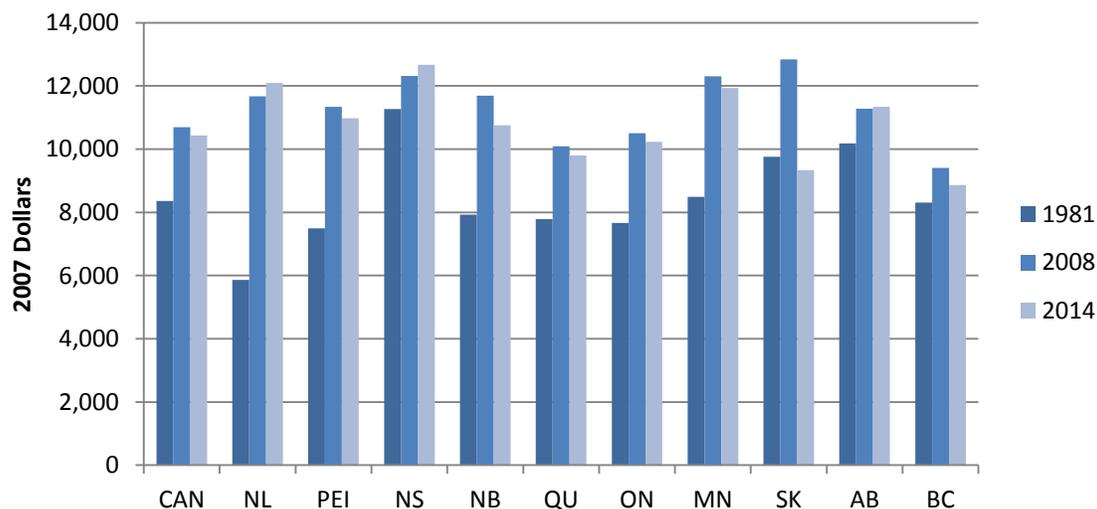
b. Provinces

At the provincial level, the Atlantic Provinces tended to have the high levels of per-capita government expenditures in 2014, with Nova Scotia topping the rankings at \$12,671, followed by Newfoundland and Labrador at \$12,091, and Manitoba at \$11,928. British Columbia had the lowest per-capita level at \$8,867.

The Atlantic Provinces also ranked at the top of the provinces with the largest growth in per-capita government spending over the 1981-2014 period. In particular, Newfoundland and Labrador – which had the lowest per-capita government expenditures of any province in 1981, at \$5,865 – saw a 106.1 per cent increase over the period, while Prince Edward Island and New Brunswick also saw large gains of 46.5 per cent and 35.7 per cent, respectively. Ontario and Manitoba also experienced notable growth in per capita government spending over the period, posting 33.4 per cent and 40.5 per cent respectively. Meanwhile, per-capita government spending growth in Saskatchewan over the same period was the lowest of all the provinces, shrinking 4.4 per cent. Similar to the national pattern, all provinces experienced the lowest growth rates (negative rates in all provinces except Newfoundland and Labrador, Nova Scotia, and Alberta) during the 2008-2014 period.

⁹ Capital consumption allowances data are not available post-2009. The values for 2010 through 2014 are extrapolated using the compound average annual growth rate of 2004 to 2009.

Chart 12: Per-capita Government Expenditures on Goods and Services, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

iv. Unpaid Work

Statistics Canada (1995) classifies unpaid work into five major categories: domestic work (meal preparation, cleaning, clothing care, repairs and maintenance, and other domestic work); help and care (child care and adult care); management and shopping; transportation and travel; and other unpaid work. The first four categories are called household work. The last category is non-household work, or volunteer work. We draw estimates of hours of unpaid work performed by persons aged 15 and over for 1981, 1986, and 1992 from Statistics Canada (1995). Estimates for 1998, 2005 and 2010 are taken, respectively, from Statistics Canada's General Social Survey, Statistics Canada (2006b) and Statistics Canada (2011a). Values for other years are estimated based on the average annual growth rates implied by the Statistics Canada data. Estimates of the value of unpaid work, based on a generalist replacement wage, are drawn from Statistics Canada (1995) for 1981, 1986 and 1992; values after 1992 are extrapolated using the growth rate of real wages over the 1992-2014 period.

a. Canada

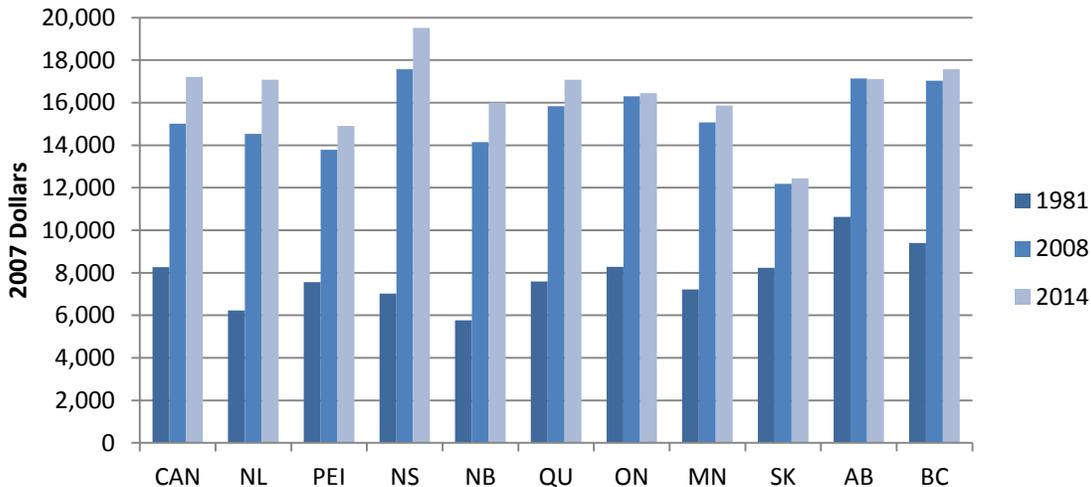
The value of unpaid work in the Canadian economy in 2014 was \$17,206 per capita in 2007 dollars, up 108.4 per cent (or 2.25 per cent per year) from \$8,257 in 1981. Unpaid work accounted for the second largest share of total consumption flows at nearly one third (Chart 10).

Changes in the per-capita value of unpaid work reflect trends in three factors: the actual hours of unpaid work of the working age population, the rate of increase in the generalist replacement wage that is used to value unpaid work, and the rate of growth of the working age population compared to the total population. The per-capita number of

hours of unpaid work in Canada was 1,103 in 2014, 28.0 per cent higher than the 1981 level of 862 hours. Much of the increase in the per-capita value of unpaid work over the period reflects changes in the replacement wage rate for unpaid work, which increased 63.0 per cent from \$9.57 per hour in 1981 to \$15.60 per hour in 2014 (in 2007 dollars). Growth of the working age population (from 75.8 per cent to 81.5 per cent of the total population) also contributed to the increase in the value of unpaid work. Finally, since wages are deflated with the CPI and the value of unpaid work is deflated with the GDP deflator, the faster growth of the CPI relative to the GDP deflator (a difference of 0.10 percentage points per year) also led to growth in the measured value of unpaid work.

Looking at the individual peak to peak periods, from 1981 to 1989 the value of unpaid work grew 1.93 per cent per year and it grew 3.10 per cent per year from 1989 to 2000. From 2000 to 2008 the value of unpaid work grew 1.37 per cent per year, and from 2008 to 2014 the per capita value of unpaid work grew 2.30 per cent per year.

Chart 13: Per-capita Value of Unpaid Work, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

b. Provinces

Among the provinces, Nova Scotia had the largest value of unpaid work in 2014 at \$19,518 per capita (Chart 13). British Columbia was second, with unpaid work valued at \$17,569 per capita. The lowest value was in Saskatchewan at \$12,439. The value of unpaid work increased in every province over the 1981-2014 period. The greatest growth over the period was 177.8 per cent (or 3.14 per cent per year) in Nova Scotia. New Brunswick was immediately behind with growth of 177.7 per cent (also 3.14 per cent per year).

v. Regrettable Expenditures

Most expenditures can be assumed to increase well-being because they are spent on the acquisition of things that people desire. Some expenditures, however, are spent to prevent or ameliorate undesirable outcomes. Since people would be better off if such

expenditures were not necessary, they represent a reduction in well-being rather than an increase. These are called ‘regrettable expenditures.’ In this report, regrettable expenditures comprise four components: the costs of commuting, including transportation and time use; the costs of crime, including security measures, repair of damaged property, and medical and legal expenses; the costs of household pollution abatement, including devices to improve air and water quality in the home; and the costs of automobile accidents, including medical and legal expenses and repair costs. The sum of these costs is subtracted from total consumption flows to account for the fact that they do not contribute to well-being, and indeed may detract from it.

a. Canada

In 2014, regrettable expenditures per capita were \$4,131 in 2007 dollars. This total includes the costs of automobile accidents, commuting, crime, and household pollution abatement.¹⁰ Regrettable expenditures rose 100.9 per cent in Canada over the 1981-2014 period, an average annual rate of advance of 2.29 per cent. As estimates since 1994 are based on extrapolations, growth rate trends during this period may be misleading.

b. Provinces

Among the provinces, the values of regrettable expenditures per capita were all within \$700 of the national average in 2014. The largest value was \$3,804 in Alberta; the smallest was \$3,673 in Québec. The most significant growth over the 1981-2014 period was 194.4 per cent (or 3.33 per cent per year) in Newfoundland and Labrador.

vi. Life Expectancy

a. Canada

The final adjustment to consumption flows is for life expectancy, which has risen from 75.6 years in 1981 to an estimated 82.4 years in 2014, an increase of 9.0 per cent.¹¹ Life expectancy advanced steadily at a rate of 0.26 per cent per year over the 1981-2014 period. If consumption is constant over a consumer’s lifetime, total consumption flows in 2014 would be 9.0 per cent higher simply by increased longevity.¹² Naturally, there were minimal differences in the annual growth rate of life expectancy across the peak to peak periods, with growth ranging from 0.24 per cent per year to 0.29 per cent per year.

¹⁰ Estimates of regrettable expenditures for the 1981-94 period are from Messinger (1997). Post-1994 estimates are extrapolations based on the growth rate of the 1989-1994 period.

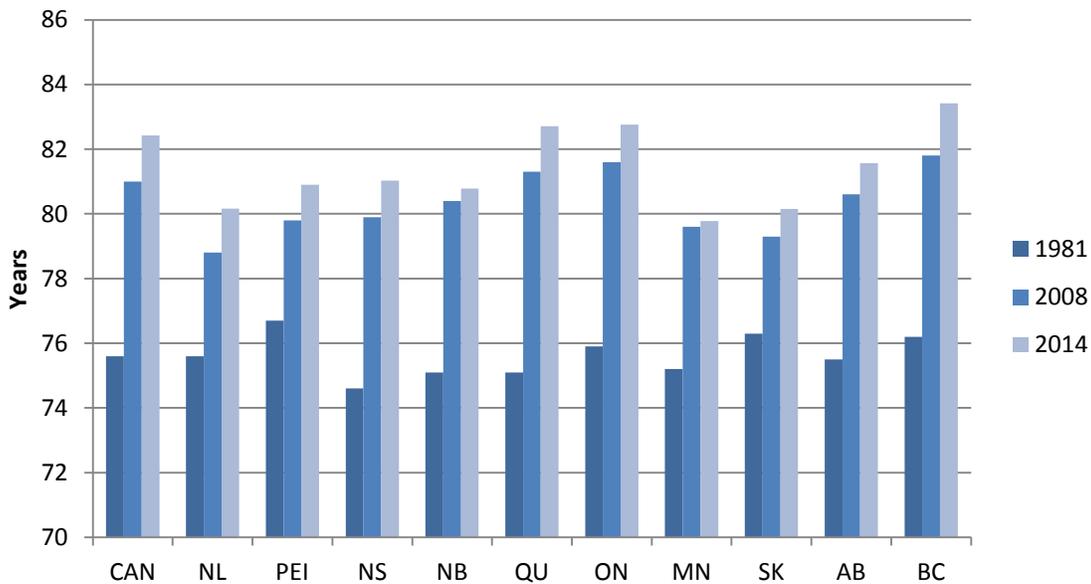
¹¹ Life expectancy estimates are currently available to only 2009. The 2009-2014 estimates are extrapolated using the average growth rate for the 2000-2009 period.

¹² Calver (2016) estimates that roughly 41 per cent of the improvement in Canada’s standard of living from 2000 to 2011 is due changes in life expectancy. As such, we may be underestimating the benefits of life expectancy to overall economic well-being.

b. Provinces

Manitoba had a life expectancy of 79.8 years in 2014, the lowest of the Canadian provinces, while British Columbia had the highest at 83.4 years. Saskatchewan's growth in life expectancy was the slowest over the 1981-2014 period, at 5.0 per cent (or 0.15 per cent per year). The largest growth over the 1981-2014 period was 10.1 per cent (or 0.30 per cent per year) in Québec. Québec has quickly climbed in the provincial life expectancy rankings, as its 1981 life expectancy of 75.1 years was second-lowest in Canada and its 2014 value of 82.7 years was third highest among the provinces.

Chart 14: Life Expectancy at Birth, Canada and the Provinces, Years, 1981, 2008, and 2014



Source: IEWB database.

vii. Total Adjusted Consumption Flows

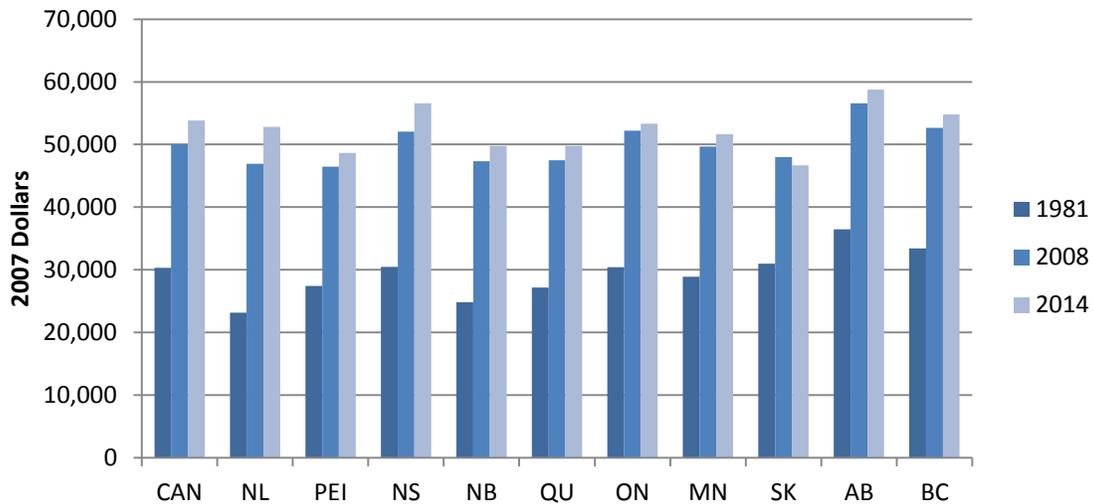
a. Canada

Total per-capita consumption is computed by summing family size-adjusted personal consumption, government expenditures on goods and services, and unpaid work, subtracting regrettable expenditures, and then adjusting the total for the increase in life expectancy. It is this adjusted total consumption flows series that is scaled to generate the index of the consumption domain of the overall Index of Economic Well-being. In 2014, total consumption flows on a per-capita basis amounted to \$53,811 (2007 dollars), up 77.3 per cent or 1.75 per cent per year from \$30,344 in 1981. Per-capita consumption showed strong positive growth in every peak-to-peak: it grew 1.88 per cent per year over 1981-1989, 1.65 per cent per year over 1989-2000, 2.15 per cent per year over 2000-2008, and 1.23 per cent per year over 2008-2014.

b. Provinces

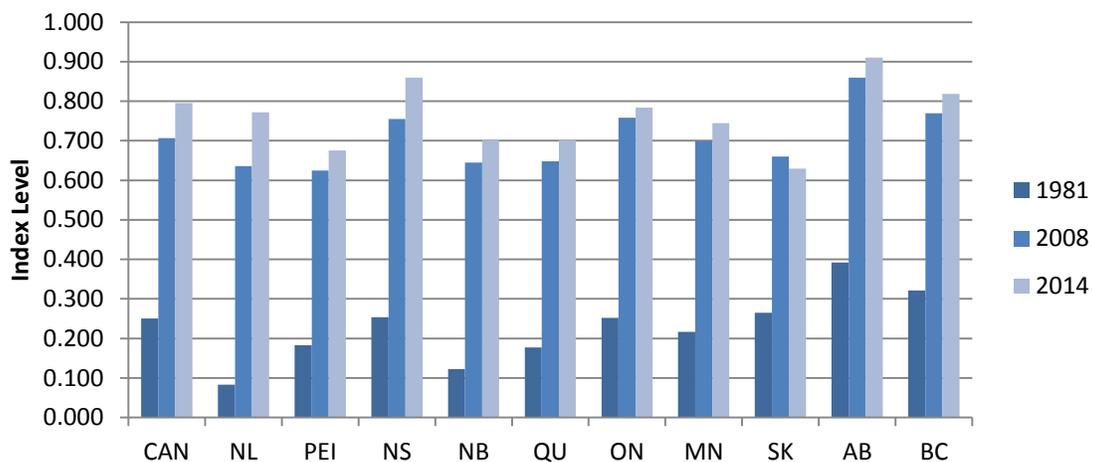
Among the provinces, Alberta had the highest per-capita total consumption flows in 2014 with \$59,166, followed by Nova Scotia with \$58,753 and Nova Scotia with \$56,588 (Chart 16). Saskatchewan and Prince Edward Island had the lowest flows with \$46,666 and \$48,645 respectively. Newfoundland and Labrador enjoyed the highest growth in total consumption per capita over the 1981-2014 period at 127.8 per cent, followed by New Brunswick at 100.2 per cent. These numbers suggest that the regional economic disparities, in terms of total consumption, may be becoming less significant over time. All four of the Atlantic Provinces experienced growth in total consumption above the Canadian average over the period.

Chart 15: Total Adjusted Consumption per Capita, Canada and the provinces, 2007 dollars, 1981, 2008, and 2014



Source: IEWB database.

Chart 16: Index of the Consumption Domain in Canada and the province, 1981, 2008, and 2014



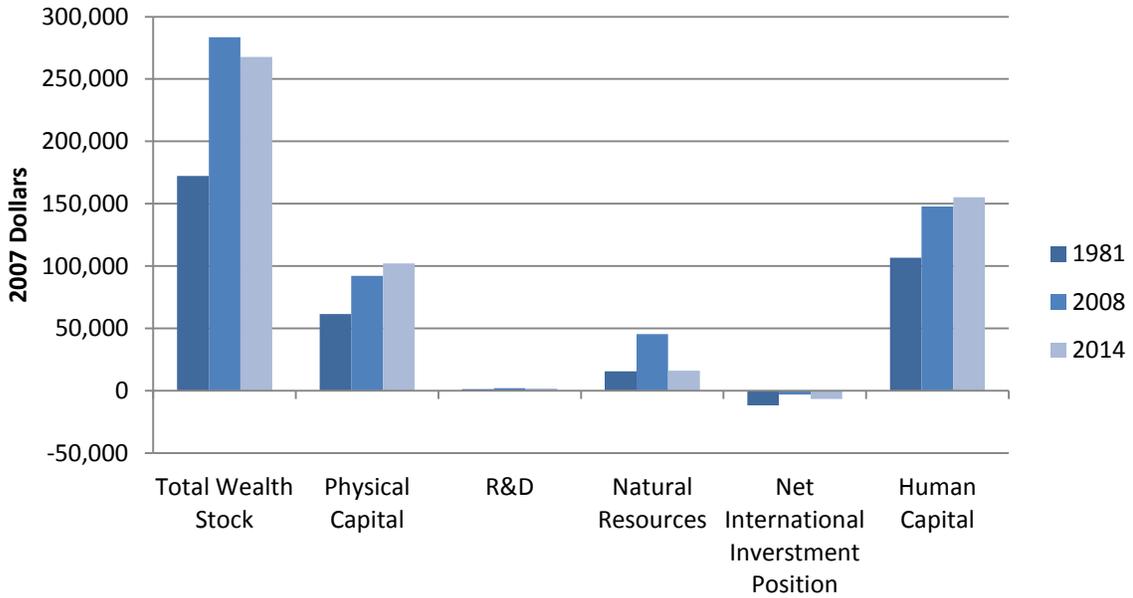
Source: IEWB database.

The linear scaling procedure is applied to the total adjusted consumption flows data to compute the scores for the index of the consumption domain. The scaling procedure does not affect the rankings of provinces. The index of the consumption domain was 0.739 points in Canada in 2014, up 0.545 points (or 218.0 per cent) from 0.250 points in 1981. Among the provinces, the index was greatest in Alberta, at 0.910 points. Nova Scotia was second at 0.860 points, followed by British Columbia at 0.818 points. Saskatchewan had the lowest score at 0.629 points. The index of consumption increased significantly in all provinces over the 1981-2014 period. The most impressive increase was in Newfoundland and Labrador, where the index grew by 0.689 points from 0.083 points in 1981 to 0.772 points in 2014. Alberta had the slowest growth in the consumption domain, but its consumption score was highest among the provinces in both 1981 and 2014.

D. Trends in the Components of the Stocks of Wealth Domain

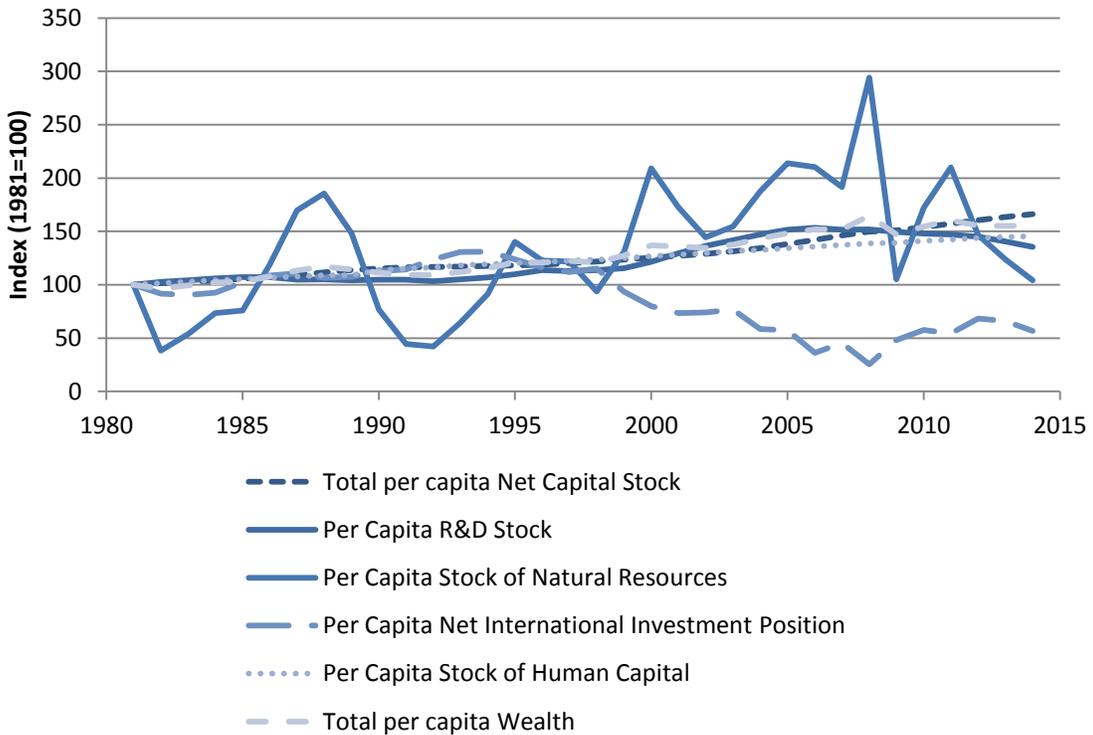
As noted earlier in the report, a society's stocks of wealth – both manmade and naturally occurring – determine how sustainable its current level of consumption really is. The wealth domain, which could equally well be called the sustainability domain, consists of five main components: the physical capital stock, the R&D stock, the stock of natural resources, the stock of human capital, and the net international investment position. One adjustment is made to the sum of these five components: to account for the social costs of environmental degradation, we subtract the estimated annual cost of greenhouse gas emissions. Chart 17 shows the levels of each component in 1981 and 2014, while Chart 18 illustrates their growth over the 1981-2014 period. The stock of human capital accounts for the largest share of total wealth in Canada, followed by physical capital and then natural resources. The social cost of greenhouse gas emissions is not included in the charts; it is very small relative to total wealth, which partly reflects the fact that it is a flow concept being used to adjust the total wealth stock on a year-to-year basis.

Chart 17: Components of the Wealth Domain, Canada, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

Chart 18: Trends in Per-capita Wealth and its Components, Canada, 1981-2014, Indexed, 1981 = 100



Source: IEWB database.

Table 3: Summary of Growth for the Wealth Domain and its Components, 1981-2014

	1981-2014	1981-1989	1989-2000	2000-2008	2008-2014	1981-2008
Wealth Domain	1.83	0.96	3.71	3.29	-1.10	1.65
Total per Capita Net Capital Stock	1.55	1.61	0.90	2.26	1.73	1.51
Per Capita R&D Stock	0.93	0.51	1.41	2.82	-1.87	1.56
Per Capita Stock of Natural Resources	-0.96	-5.00	6.10	4.36	-13.93	2.18
Per Capita Net International Investment Position	1.71	-0.90	2.64	13.33	-14.26	4.94
Per Capita Stock of Human Capital	1.14	1.08	1.39	1.12	0.82	1.22
Per Capita Greenhouse Gas Social Cost	-0.20	0.59	0.29	-0.66	-1.51	0.09

Table 3 details the annual growth rates for the consumption domain and its components overall and in each peak-to-peak period. As the wealth domain is a scaled value, the growth rates for the domain overall are not directly linked to the growth rates of the individual components. The growth of the wealth domain, however, reflects growth of the individual components. The per capita stock of human capital makes up roughly half of the wealth domain and the per capita net capital stock makes up a third, so overall wealth growth is primarily driven by the two.

The 2008 to 2014 period was the only period which saw the stock of wealth shrink. Net capital growth slowed almost half a percentage point in the wake of the 2009 recession versus the long run trend of 1981 to 2008, as did human capital growth. Assuming that there was no change in depreciation rates after the recession, both of these changes represent decreased investment in physical and human capital. These could be a result of increased uncertainty regarding the returns of an investment in physical or human capital following the recession, or firms and individuals lowering their economic growth expectations downwards as a result of the recession.

The 2008 to 2014 period also saw Canada's net international investment position drop sharply after decades of sustained improvement. The stock of natural resources fell significantly from 2008 to 2014, in part driven by extremely high commodity prices in (early) 2008. Over the long run period of 1981 to 2008, the stock of natural resources had steadily grown for decades.

i. Physical Capital

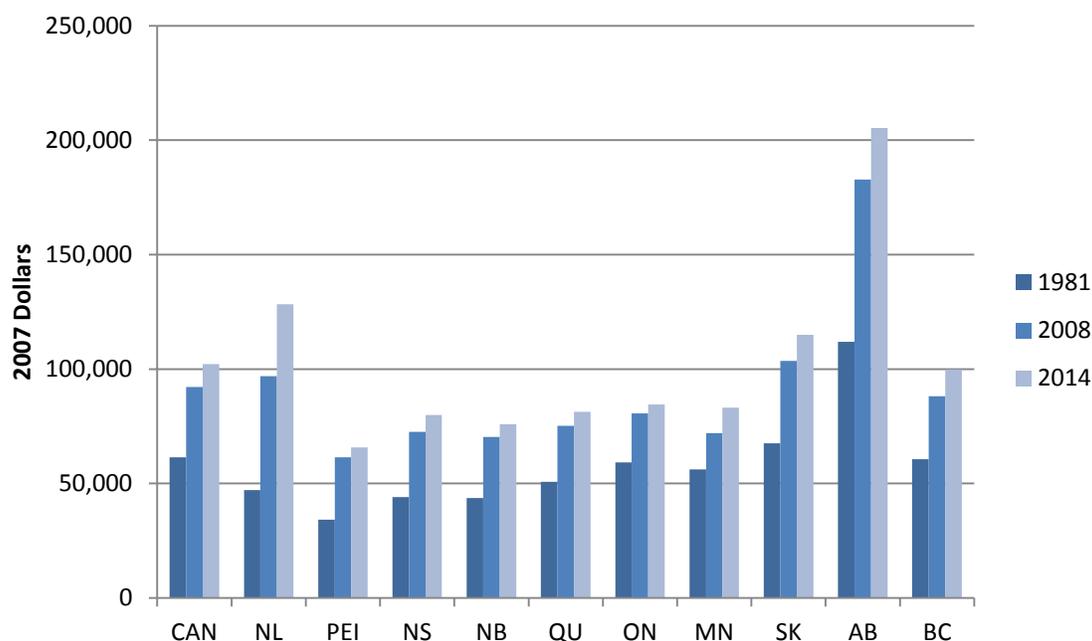
a. Canada

In 2014, the per-capita stock of physical capital in Canada, defined as the residential and non-residential net capital stock based on geometric depreciation, was \$102,140 in 2007 dollars. Physical capital accounted for over one third of the total wealth stocks, the second highest of all the components (Chart 17). Over the 1981-2014 period, the capital stock in Canada increased 66.1 per cent (or 1.55 per cent per year). The growth rate of the capital stock was positive throughout the period, even during recessions. Over the 1989-2000 period, however, per-capita capital stock growth grew more slowly (0.90 per cent per year) than the 1981-1989 period (1.61 per cent per year), the 2000-2008 period (2.26 per cent per year), and the 2008-2014 period (1.73 per cent per year).

b. Provinces

Alberta had, by far, the largest per-capita stock of physical capital of all the provinces with \$205,249 in 2007 dollars (Chart 19). Saskatchewan was a distant second with \$128,316, while Prince Edward Island had the lowest level in 2010 with \$65,735. Newfoundland and Labrador enjoyed the strongest growth rate in per-capita capital stock over the 1981-2014 period at 172.5 per cent, or 3.08 per cent per year. Ontario had the slowest overall growth over the period at 42.97 per cent, or 1.08 per cent per year. Similar to the national pattern, growth of the capital stock was positive in all three sub-periods. However, there were differences across the sub-periods in terms of the rate of growth. Some provinces have had their strongest growth in the 2000-2014 period (for example, Prince Edward Island and British Columbia), while others had their strongest growth in the 1981-1989 period (for example, Newfoundland and Labrador).

Chart 19: Per-capita Net Capital Stock, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

ii. R&D Capital

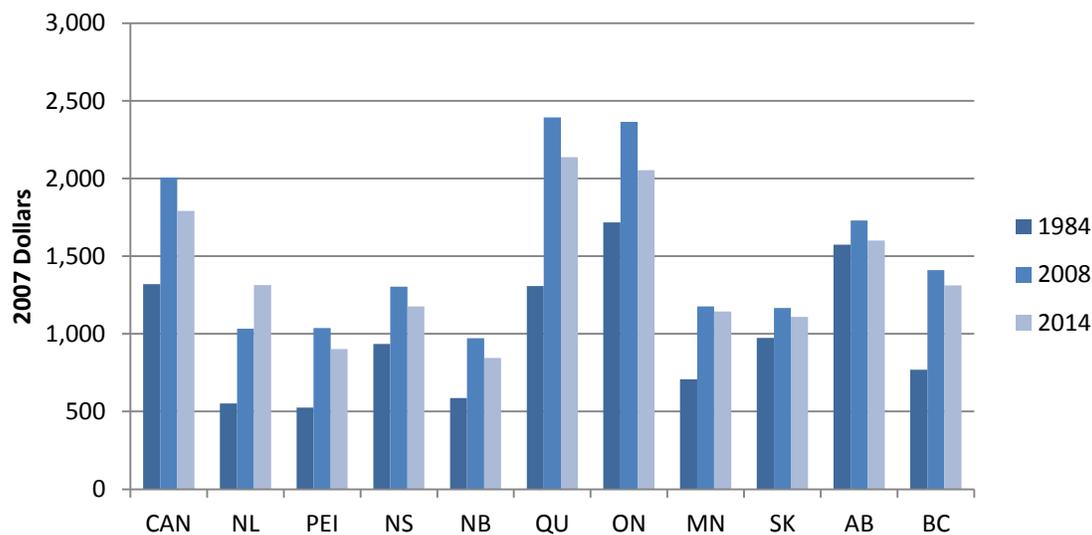
a. Canada

In 2014, the per-capita stock of R&D in Canada was \$1,791 (2007 dollars), accounting for less than 1 per cent of the total stocks of wealth. This low share reflects both the relatively low share of GDP devoted to R&D (around 2 per cent) and the high depreciation rate of 20 per cent assumed for R&D stocks. Over the 1981-2014 period, R&D stocks increased 35.6 per cent or 0.93 per cent per year, growing at a similar speed to the other components of wealth. Growth in R&D stocks was positive through most the period, although somewhat faster in the 1980s (1.61 per cent per year) than in the 1990s (0.90 per cent per year), but slower than 2000-2008 (2.82 per cent per year). The 2008 to 2014 period saw the per capita stock of R&D fall somewhat, deteriorating 1.87 per cent per year. This could reflect decreased R&D investment in the wake of the 2009 recession due to increased uncertainty or lowered expectations of future economic growth.

b. Provinces

The provincial levels of per-capita stock of R&D were quite varied in 2014 (Chart 20). Québec and Ontario had the highest levels at \$2,136 and \$2,054 (in 2007 dollars), respectively, whereas New Brunswick and Prince Edward Island had the lowest levels at \$903 and \$844. Newfoundland and Labrador had the highest growth in the per-capita stock of R&D at 138.4 per cent over the 1981-2014 period, over 50 percentage points above the second highest (Prince Edward Island at 71.7 per cent).

Chart 20: R&D Stock Per Capita, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

iii. Natural Resources

a. Canada

Data on natural resource stocks are drawn from Statistics Canada's national environmental accounts. In 2014, the total value of natural resources was \$655.3 billion in 2007 dollars, reflecting both the physical quantities and the prices of the resources. Timber stocks accounted for roughly 16 per cent of that total and subsoil resource stocks made up the rest. Estimates for land, largely reflecting urban and agricultural land values, are available, but are not included in the definition of natural resources used in the Index of Economic Well-being. Estimates of the value of fish stocks and water have not yet been developed by Statistics Canada.

The per-capita value of natural resources in Canada in 2014 was estimated at \$18,437 (2007 dollars), down 27.2 per cent (or 0.96 per cent per year) from \$25,334 in 1981 (Chart 21). Natural resources accounted for 6.8 per cent of total wealth stocks.¹³ The value of natural resources fell by 5.00 per cent per year between 1981 and 1989, grew by 6.10 per cent per year between 1989 and 2000, grew by 4.36 per cent per year between 2000 and 2008, and fell by 13.93 per cent annual between 2008 and 2014.

Clearly, there is significant volatility in our valuation of the stock of natural resources. Short-term swings in the value of natural resources largely reflect commodity price movements as changes in the physical stock of natural resources through exhaustion and discoveries are slow. For example, the value of natural resources fell 64 per cent

¹³ For a detailed discussion of the methodologies used by Statistics Canada to estimate the value of natural resources, see Statistics Canada (2006a).

between 2008 and 2009, reflecting the collapse of the market during the 2009 recession which also affected commodity prices.

b. Provinces

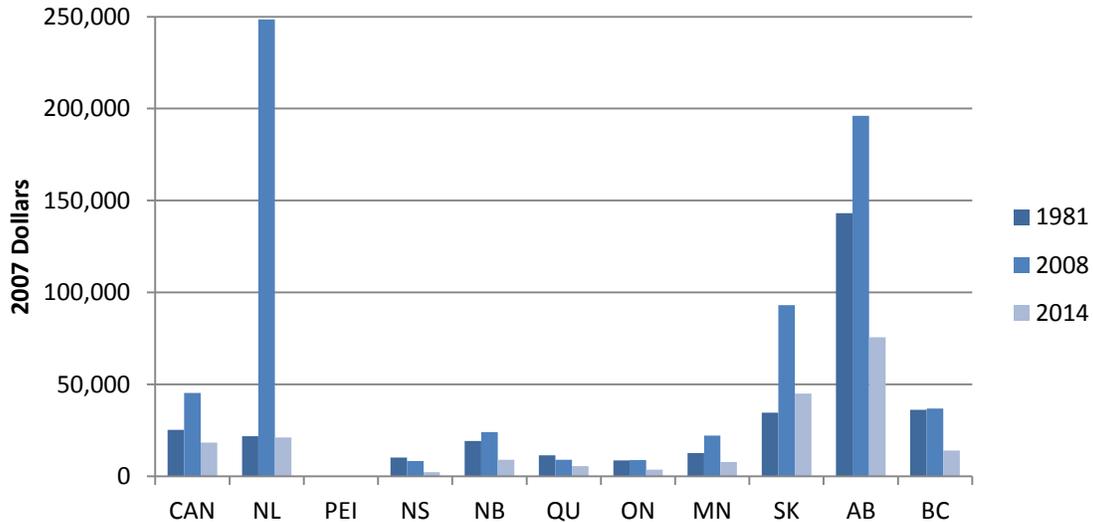
Not surprisingly, the value of natural resources per capita varied tremendously across the provinces in 2014. Newfoundland and Labrador, Saskatchewan, and Alberta were distant outliers among the provinces, with values of \$21,138, \$45,048, and \$45,048 per capita, respectively – all three well above the fourth highest value of \$14,072 in British Columbia (Chart 21). At the other extreme, the value of natural resources in Prince Edward Island was a meager \$81 per capita. Moreover, the value of natural resources was the most volatile component of total wealth for many of the provinces. For example, Alberta's value of natural resources per capita more than halved between 2000 and 2014 (shrinking 71.5 per cent), taking natural resources from accounting for 36 per cent of Alberta's wealth to 18.5 per cent in the space of 14 years.

c. A Note on Natural Resource Valuation

The valuation of natural resources is very uncertain and an important caveat needs to be made. In official estimates for 2013 (the most recent year for which official data are available), Statistics Canada placed a value of \$333.5 billion (\$18,437 per capita in 2007 dollars) on established crude bitumen reserves, better known as oil sands reserves. This is based on the estimate that the oil sands contain 22.0 billion barrels of oil. However, most observers think this reserve estimate is much too low given the advances that have been made in the technologies used to exploit the oil sands. For example, the Canadian Association of Petroleum Producers (CAPP) estimates the oil sands' potential at 175 billion barrels, placing Canada second only to Saudi Arabia in terms of oil reserves.¹⁴

¹⁴ According to the CAPP website: "Canada's oil sands deposits contain as much as 175 billion barrels of economically viable oil, or enough oil to meet the country's current energy needs for 500 years. With current technology, Canada's oil sands are second only to Saudi Arabia in global oil reserves. As technology improves, so too does the potential to produce more oil from the oil sands."

Chart 21: Per-Capita Stock of Natural Resources, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

If this estimate is accurate, the figures of Canada's natural resource wealth presented in this report are wildly underestimated. Under the assumption of oil at \$70 Canadian per barrel, and an estimated cost of extraction of \$19 per barrel, Sharpe *et al.* (2008) estimate that the net present value of the oil sands is \$1.48 trillion under the 175 billion barrel reserve assumption. Given Canada's population of 33.2 million in 2008, this translated into natural resource wealth for Canadians of \$44,484 per capita from the oil sands alone. That is greater than Statistics Canada's official estimates of *total* natural resource wealth per capita. While Canada's population has certainly since grown and extraction may have somewhat depleted the bitumen stock, the natural resource wealth of Canadians should still be above \$40,000 – far above the official per capita total natural resource wealth estimates.

From this perspective, the estimates of well-being presented in this report, based on official estimates of natural resource wealth, greatly underestimate the stocks of wealth and the future well-being of Canadians. For example, a key point made by Sharpe *et al.* (2008) is that the net present value of a natural resource is heavily dependent upon the assumed time path of exploitation. Sharpe *et al.* (2008) estimate the value of the Alberta oil sands based on projected short-term rates of exploitation that may no longer be valid, since the global recession and the collapse of oil prices after the summer of 2008 led to the postponement of many oil sands development projects. Pushing resource exploitation further into the future reduces the net present value of the resource because future resource revenues are subject to intertemporal discounting. Nevertheless, it remains likely that the official Statistics Canada estimates of the value of the oil sands understate the true value of the resource because they do not value the full quantity of exploitable oil.

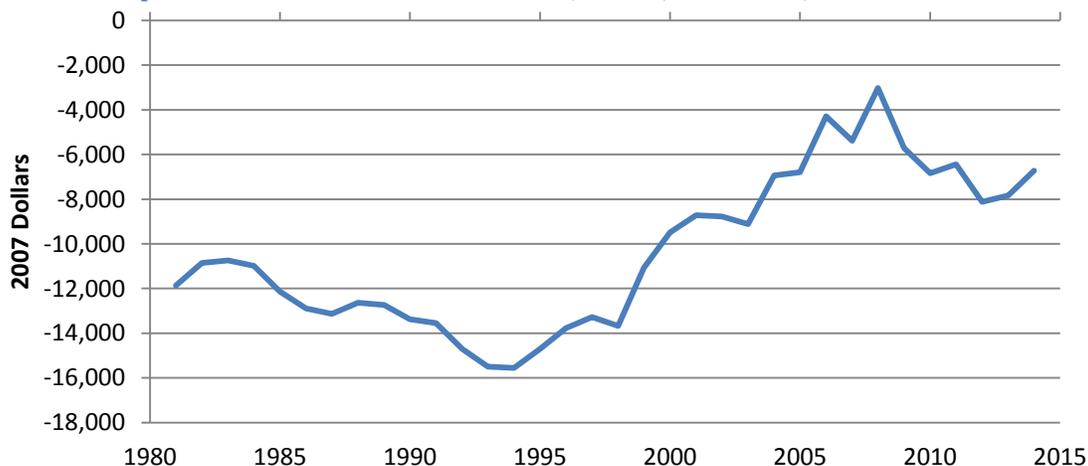
iv. Net International Position

a. Canada

Statistics Canada publishes data on Canada's annual end-of-year net international investment position in current dollars. In 2014, Canada had a net asset position of negative \$269.8 billion. We transform the current-dollar estimates to 2007 dollars using the GDP deflator, published by Statistics Canada.

In 2007 dollars, Canada's net international investment position in 2014 was negative \$239.0 billion dollars, equivalent to a debt of \$6,724 per capita (Chart 22). Canada's international indebtedness rose in the 1980s and early 1990s, peaking at \$15,548 per capita in 1994, up from \$11,863 in 1981. It then had a strong downward trend until 2008, reflecting Canada's large current account surpluses. In 2009, Canada's net asset position began to deteriorate once again.

Chart 22: Per-capita Net International Investment Position, Canada, 2007 Dollars, 1981-2014



Source: IEWB database.

In terms of the individual peak to peak periods, Canada's per capita net international position moved further into international indebtedness during the 1981 to 1989 period (at a rate of 0.90 per cent per year). Canada's per capita net international investment position rallied in both the 1989 to 2000 and the 2000 to 2008 periods, improving at a rate of 2.64 per cent per year and 13.33 per cent per year respectively. It has, however, since deteriorated, slipping 14.26 per cent per year during the 2008 to 2014 period.

b. Provinces

No data are available on the provincial distribution of foreign assets and liabilities. Therefore, provincial figures for net international investment position are constructed by weighting the national figure by provincial shares of national GDP, on the assumption that such assets and liabilities directly related to the amount of economic

activity in a province. Since the provincial values are constructed in this way, they are of little interest in and of themselves. Under these assumptions, in 2014 they ranged from -\$9,871 per capita in Alberta to -\$4,696 per capita in Prince Edward Island.

v. Human Capital

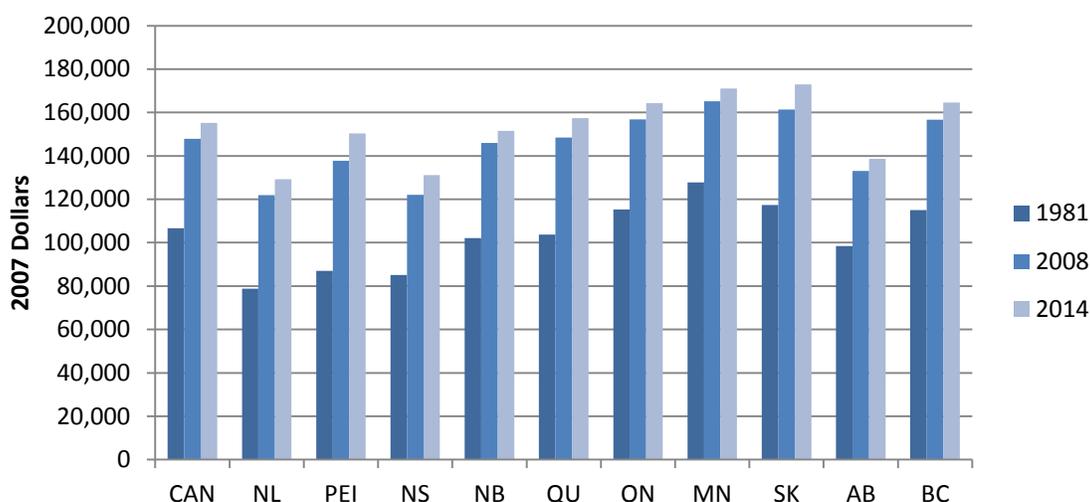
a. Canada

Human capital in the Index of Economic Well-being is defined on a cost basis as the accumulated private and public expenditures on education at all levels. In 2014, the per-capita value of human capital in Canada was \$155,247 (2007 dollars).¹⁵ Representing just under 60 per cent of wealth stocks, human capital is the most important component of wealth stocks – even more important than physical capital (Chart 17). Per-capita human capital rose 45.6 per cent over the 1981-2014 period, an average annual rate of increase of 1.14 per cent. The annual rate of growth was somewhat faster in the 1990s (1.39 per cent) than in the 1980s (1.08 per cent), the 2000-2008 period (1.12 per cent), and the 2008-2014 period (0.82 per cent per year).

b. Provinces

Once again, there were considerable differences across provinces in the per-capita value of human capital in 2014. Saskatchewan had the highest value at \$173,000 per capita, followed by Manitoba at \$171,065 and British Columbia at \$164,607 (Chart 21). Nova Scotia and Newfoundland and Labrador had the lowest values at \$131,165 and \$129,288 per capita respectively. All provinces experienced growth in the values of human capital per capita in excess of 30 per cent over the 1981-2014 period, with Newfoundland and Labrador, Prince Edward Island, Nova Scotia, and Québec all enjoying rates above 50 per cent. Most provinces exhibited a pattern similar to the national one in terms of growth rates in the cyclically-neutral sub-periods, with the fastest growth occurring in the 1990s.

¹⁵ The value of human capital is based on estimates of the cost of education in 2009/2010 drawn from Statistics Canada. Enrollment numbers are from different years based on the level of educational attainment in consideration. See the accompanying database for more details and sources.

Chart 23: Per-capita Human Capital Stock, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014

Source: IEWB database.

vi. Social Costs of Environmental Degradation

A negative factor affecting the sustainability of stocks of wealth is the degradation of the environment. Placing a value on the environment or the “services provided by ecosystems” is a massive and controversial task and well beyond the scope of the Index of Economic Well-being. But to highlight the importance of the environment for economic well-being, and to show that environmental issues can be accommodated in our framework for quantifying economic well-being, the Index does include estimates of the social costs of greenhouse gases, which contribute to global warming. In each year, we adjust the total wealth stock estimates by subtracting the social costs of greenhouse gas emissions in that year.

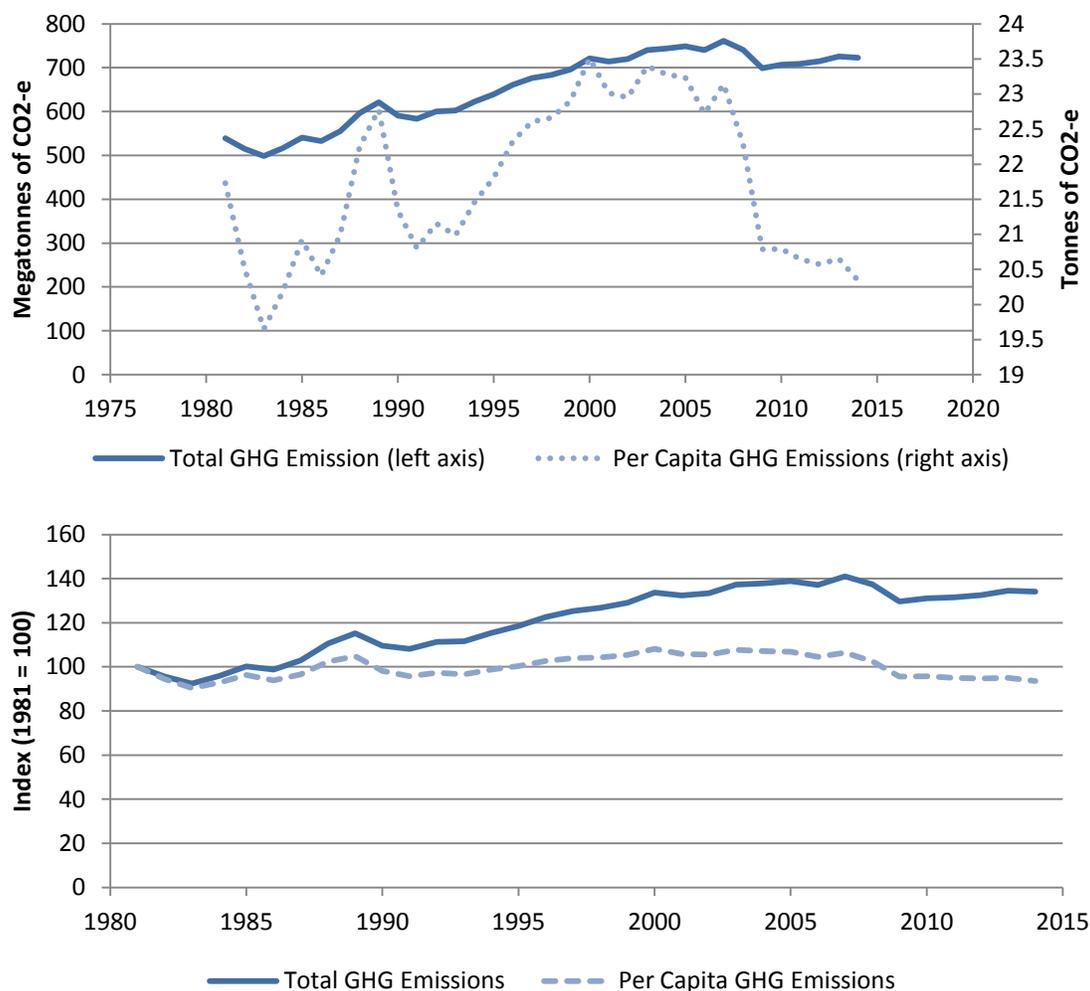
The estimates are derived by multiplying greenhouse gas emissions (measured in megatonnes of CO₂-equivalent emissions, or MtCO₂-e) by the social cost of such emissions.¹⁶ In a recent review of 211 published estimates of the social cost of carbon, Tol (2007) finds that the average estimate from peer-reviewed studies is \$23/tCO₂-e in 1998 Canadian dollars.¹⁷ To simplify the calculations, it is assumed that all the costs of greenhouse gas emissions are borne in the jurisdiction in which the emissions are

¹⁶ See Sharpe *et al.* (2008) for a brief discussion of the methodological challenges surrounding the estimation of the marginal social costs of GHG emissions.

¹⁷ This corresponds to a social cost of carbon of \$71 US dollars per tonne of carbon (\$71/tC), the value given in Table 1 of Tol (2007). We convert it to Canadian dollars per tonne of CO₂-equivalent emissions using the molecular mass conversion factor between carbon and CO₂ (3.664 tonnes of CO₂ contain one tonne of C) and the 1998 OECD Canada-US PPP for GDP (1.187293 CAD/USD). Tol does not specify the base year for the estimates in his meta-analysis; we use 1998 because it is the midpoint of the time period covered by his study. In our database, we estimate the total social costs of CO₂ emissions for Canada and the provinces in 1998 dollars per tonne, then convert the totals to 2007 dollars per tonne using province-specific GDP deflators from Statistics Canada.

produced. In reality, the effects of greenhouse gases cross borders and are global in nature, but the distribution of the costs throughout the world is not known.¹⁸

Chart 24: Trends in Total and Per-capita Greenhouse Gas Emissions, Canada, Megatonnes of CO₂-equivalent, 1981-2014



Source: IEWB database.

a. Canada

In 2014, emissions of greenhouse gases in Canada (primarily CO₂) were 723 Mt CO₂-e, up 34.1 per cent from 539 Mt CO₂-e in 1981 (Environment Canada, 2011).¹⁹ Despite the Kyoto protocol, greenhouse gas emissions in Canada have been on a roughly continuous upward trend throughout much of the period, although there was a sharp drop between 2007 and 2009 (from a high water mark of 761 Mt CO₂-e to 699 Mt CO₂-e). Canada's

¹⁸ In the companion report on the Index of Economic Well-being in OECD countries (Osberg and Sharpe, 2009), we estimate the total costs of CO₂ emissions for the world based on global CO₂ emissions and then distribute these costs in proportion to a country's share of world GDP.

¹⁹ GHG emissions estimates are available only to 2013; 2014 values are extrapolated based on the compound annual growth rate from the 2008-2013 period.

greenhouse gas emissions have been roughly stable since. Based on the marginal social cost estimate from Tol (2007), the social costs of greenhouse gases totaled \$716 (2007 dollars) per capita in 2014, down 6.4 per cent from \$765 in 1981. The per-capita burden of greenhouse gas costs increased by 0.59 per cent per year between 1981 and 1989 and by 0.29 per cent per year in the 1990s, but it fell by 1.03 per cent per year over the 2000-2014 period as Canada's population grew faster than its emissions. We assume that the costs of greenhouse gas emissions are borne in the jurisdiction in which they are produced. In reality, the effects of greenhouse gases cross borders and are global in nature. As yet, the global distribution of costs is unknown. Chart 24 illustrates the divergence of the trends in aggregate and per-capita GHG emissions over the 1981-2014 period.

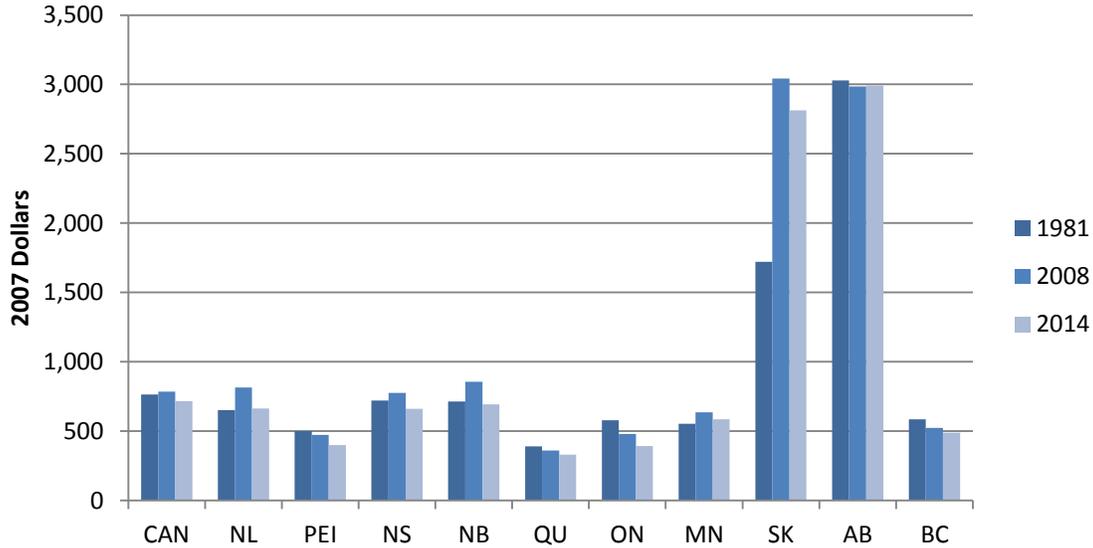
Given that the total value of stocks of wealth (including the cost of GHG emissions) in Canada was \$267,794 per capita in 2014, the social costs of greenhouse gases, according to the admittedly simplistic calculations in this report, have only a marginal impact on total wealth. All else held constant, Canadians' per-capita wealth would have been only 0.3 per cent higher in 2014 if per-capita greenhouse gas costs had been zero.

This figure neglects the impact that a presumed higher future social cost of GHG emissions would have on the present value of oil and gas reserves and is, of course, dependent on our assumption regarding the marginal social cost per tonne of CO₂ emitted. We have used the average of estimates from a number of studies, which themselves have a wide range of values. In future editions of the IEWB, we plan to embed programming to allow analysts to specify the shadow value they assign to CO₂ emissions.

b. Provinces

Saskatchewan and Alberta had per-capita greenhouse gas social costs well above all the other provinces in 2014, at \$2,993 and \$2,813 per capita, respectively (Chart 25). For Alberta, per capita GHG costs were down 1.2 per cent from 1981 levels as population growth (up 79.8 per cent from 1981) outstripped the growth in greenhouse gas emissions (up 77.7 per cent from 1981). Alternatively, in Saskatchewan, per-capita GHG costs were 63.5 per cent higher in 2014 than in 1981, with most of the rise occurring over the 1989-2000 period. Saskatchewan's meteoric rise in GHG costs is largely driven by its meager population growth (only 15.0 per cent since 1981), although its emissions have grown just over 10 percentage points more than Alberta since 1981 (88.0 per cent growth). Saskatchewan is also the only province which has not reduced its per capita GHG costs since 2000, experiencing a 1.9 per cent increase over last fourteen years.

Chart 25: Per-capita Social Costs of Greenhouse Gas Emissions, Canada and the Provinces, 2007 Dollars, 1981, 2008, and 2014



Source: IEWB database.

vii. Total Wealth Stocks

a. Canada

As the different components of wealth stocks are expressed in prices, total wealth stocks are the sum of the five components and the greenhouse gas adjustment. In 2014, they totaled \$270,175 per capita (2007 dollars) in Canada, up 48.3 per cent from 1981 (Table 4). Chart 17 shows the relative importance of each component in the wealth domain. Net capital stock and the stock of human capital dwarf the importance of all other components, accounting for rough 90 to 95 per cent of total per capita wealth from 1981 to 2014.

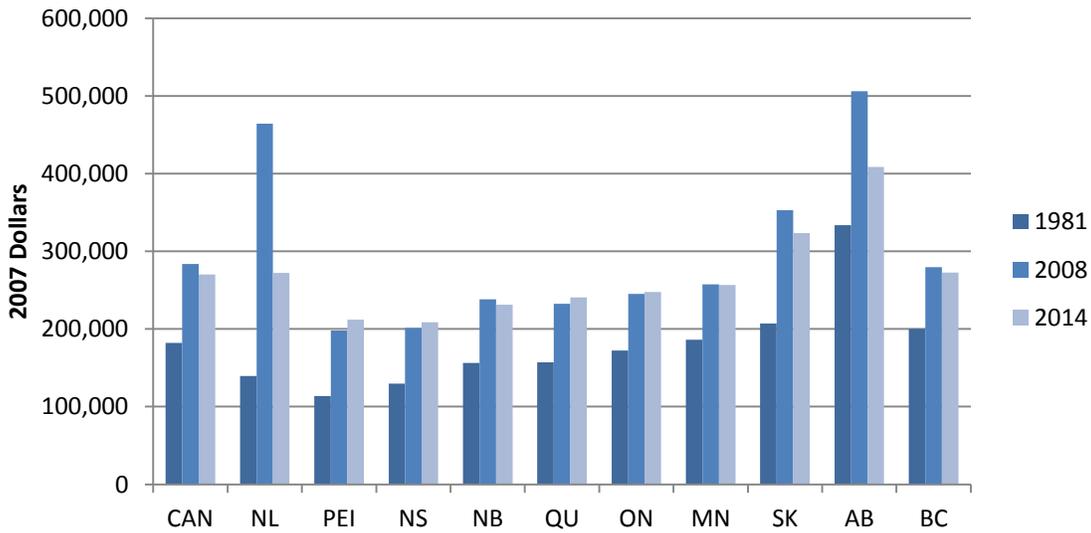
From 1981 to 1989, the per capita stock of wealth in Canada grew at a rate of 0.58 per cent per year. Growth accelerated in the 1989 to 2000 and 2000 to 2008 periods, growing 1.95 per cent per year and 2.33 per cent per year in each period respectively. The 2009 recession stunted per capita wealth stock growth altogether, with the stock falling 0.80 per cent per year throughout the period. This derailment reflects several developments: the falling commodity prices, thereby lowering the valuation on natural resources and eliciting less growth due to decrease benefits of discovery; a deteriorating international investment position; and the slight slowing of growth in the stock of human capital.

b. Provinces

At \$408,346 (2007 dollars), Alberta had the largest total per-capita wealth stock in 2014 (Chart 24). The province also had the most volatile total wealth, shrinking at 3.60

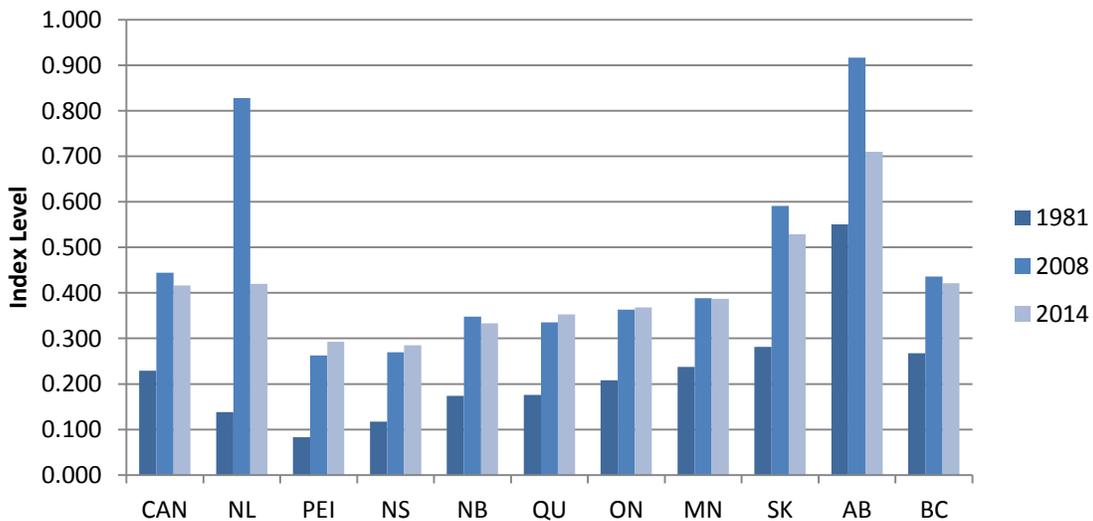
per cent per year in the 1980s, then growing at 3.98 per cent per year in the 1990s and 0.48 per cent per year between 2000 and 2014. Fluctuations in the value of natural resources were responsible for these swings. Behind Alberta were Saskatchewan (with \$323,412 total wealth per capita), British Columbia (with \$272,726), and Newfoundland and Labrador (with \$271,993). At the other end, Nova Scotia had the least total wealth per capita at \$208,652, followed by Prince Edward Island with \$212,050. Newfoundland and Labrador experienced by far the fastest growth; its total per-capita wealth in 2014 was 94.9 per cent higher than its 1981 stock, which implies a growth rate of 2.04 per cent per year. Due to a very high stock of total wealth compared to the other provinces in 1981, Alberta experienced the least growth over the 1981-2014 period at 22.4 per cent.

Chart 26: Total Per-capita Wealth in Canada and the Provinces, 2007 dollars, 1981, 2008, 2014



Source: IEWB database.

Chart 27: Index of the Wealth Domain in Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

The index of the wealth domain is acquired by applying the linear scaling procedure to the total per-capita wealth data. The index was 0.416 in Canada in 2014, up 0.187 points (or 81.7 per cent) from 0.229 in 1981.

As in the case of the consumption domain, the scaling procedure does not affect the rankings of the provinces. Alberta had the highest score in the wealth domain in 2014, at 0.710 (Chart 25). It was followed by Saskatchewan at 0.529 and British Columbia at 0.421. Nova Scotia's score of 0.285 was lowest among the provinces. The wealth domain index increased in all ten provinces over the 1981-2014 period. Newfoundland and Labrador's increase of 0.281 points was the largest among the provinces. As in the case of the consumption domain, Alberta had the lowest per cent growth in the wealth domain over the period, but had the highest wealth score in both 1981 and 2014.

E. Trends in the Economic Equality Domain

The third domain of the Index of Economic Well-being is economic equality. At current levels, a fall in equality, or rise in inequality, is considered to decrease economic well-being and vice versa. The equality domain consists of two component concepts: income inequality and poverty. We measure income inequality using the Gini coefficient, constructed by Statistics Canada for the total population of family units based on total after-tax family income. To measure poverty, we use poverty intensity, which is the product of the poverty rate and the poverty gap. The poverty rate and gap are based on Statistics Canada's low-income measure rates (LIMs).²⁰ The poverty rate is the per cent of Canadians who live below the poverty line defined by fifty per cent of median equivalent family income, and the average poverty gap is the average difference between the poverty line and the incomes of those in poverty.

High poverty intensity is considered more detrimental to economic well-being than an unequal income distribution. Consequently, poverty intensity is given a weight of three quarters, and income distribution a weight of one quarter, in the determination of the overall index for the equality domain.

²⁰ In our work on international estimates of the Index of Economic Well-being (Osberg and Sharpe, 2009), and in past work on the Index for Canada and the provinces, we have measured poverty using the low income measure (LIM) approach, whereby the poverty line is defined as a fixed proportion (e.g. 50 per cent) of the median income. We must use this approach in international comparisons because comparable data similar to the LICOs are not available for countries other than Canada. For our work on Canada and the provinces, we previously opted to use the LICO approach for several reasons. First, the LICOs are the most common poverty measures used in the literature on Canada. Second, Statistics Canada produces official estimates of the poverty rate and gap based on location- and family size-specific LICOs; this level of precision would be difficult to achieve using the LIM approach, and in any case, we think it is better to use Statistics Canada's official data whenever possible in the interest of transparency. Recently, reliable LIM-based poverty data became available from Statistics Canada. As such, the numbers reported in this report are based on the LIM in order to match the methodology of the international comparisons. Note that poverty rates based on the LICOs should experience a greater decline over the 1981-2013 period than rates based on the LIM. This is because the LICO is an 'absolute' measure of poverty while the LIM is a 'relative' measure; the poverty line rises with median income under the LIM approach, while the LICO does not. Indeed, while the LICO-based poverty rate for all persons fell by 2.4 percentage points in Canada between 1981 and 2007 (from 11.6 per cent to 9.2 per cent), the LIM-based rate increased by 0.6 percentage points (from 12.4 per cent to 13.0 per cent) over the same period (Osberg and Sharpe, 2009). For a detailed analysis of the implication of the use of the LICO versus the LIM, see Andrews (2015).

The index of economic equality weights the Gini coefficient at 25 per cent and the poverty intensity at 75 per cent. As such, changes in poverty intensity drive changes in the economic equality far more than changes in the Gini coefficient do. Table 4 presents the growth rates of the equality domain and its two components for the overall period and in each peak to peak period.

Table 4: Summary of Growth for the Equality Domain and its Components, 1981-2014

	1981-2014	1981-1989	1989-2000	2000-2008	2008-2014	1981-2008
Economic Equality	-0.84	1.58	-3.42	0.03	-1.56	-0.68
Index of Scaled Gini Coefficient²¹	-2.16	0.73	-6.32	1.05	-2.37	-2.11
Index of Poverty Intensity	-0.56	1.81	-2.09	-0.14	-1.43	-0.37

Comparing the 2008 to 2014 period with the overall trend from 1981 to 2008, the index of the scaled Gini coefficient declined slightly more quickly after 2008 than it had before. Poverty intensity growth, on the other hand, deteriorated nearly four times as quickly as it had been over the long run period of 1981 to 2008.

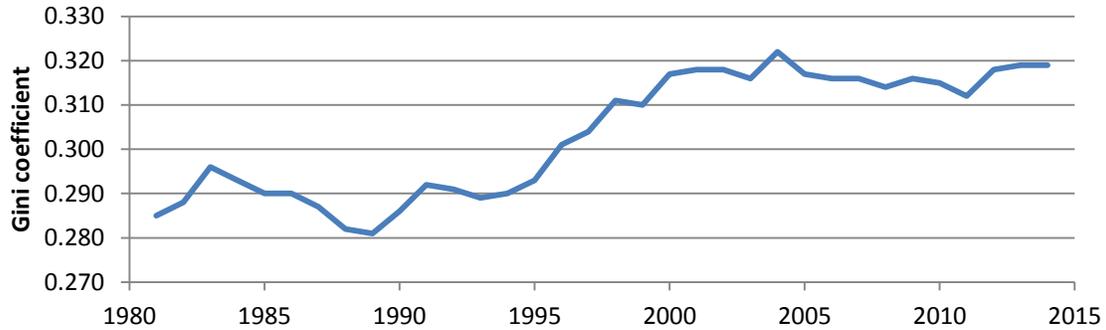
i. Income Inequality

a. Canada

In 2014, the Gini coefficient for all families in Canada based on after-tax income was estimated to be 0.319, up 11.9 per cent from 0.285 in 1981.²² Nearly all of the increase in inequality occurred in the 1990s, the Gini coefficient increased 12.8 per cent over the 1989-2000 period, compared to reductions of inequality of 1.4 per cent over the 1981-1989 period and of 0.1 per cent over the 2000-2008 period. The 2008 to 2014 period was the only other peak to peak period which experienced an increase inequality, though at 1.6 per cent it pales in comparison to the inequality growth of the 1990s.

²¹ Unlike most economic indicators where increases are “better” and decreases are “worse”, an increase in the Gini coefficient indicates an *increase* in inequality. As such, when scaling our Gini coefficient, we transformed it such that an increase meant an increase in equality.

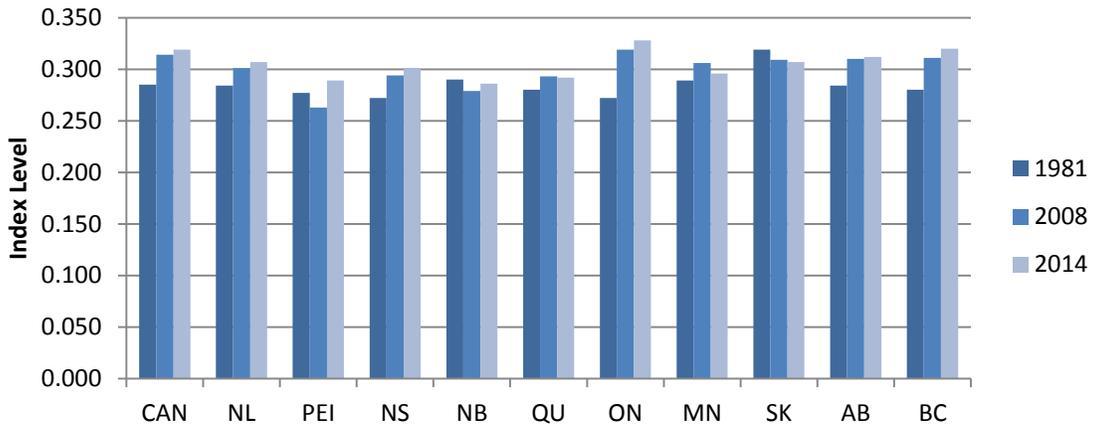
²² Statistics Canada estimates of the Gini coefficient are available to 2013; 2014 values are assumed to be equal to the 2013 value.

Chart 28: Gini Coefficient for All Family Units Based on After-Tax Income, Canada, 1981-2014

Source: IEWB database.

b. Provinces

Among the provinces, the highest Gini coefficient in 2014 was 0.328 for Ontario, followed by British Columbia (0.320), and Alberta (0.312) (Chart 29). New Brunswick had the lowest coefficient at 0.286. Over the 1981-2014 period, Ontario and British Columbia experienced the most growth, with 20.6 per cent and 14.3 per cent. Saskatchewan and New Brunswick were the only provinces where Gini coefficients fell over the period (by 3.8 per cent and 1.4 per cent respectively). As was the case for Canada as a whole, the 1990s were responsible for most of the increase in Gini coefficients across the board, while the 2000s saw a relative stabilization and, in the cases of Québec and New Brunswick, a decline. Saskatchewan was the sole exception to this rule, as the rate of change actually increased in the 2000-2014 period relative to the previous periods.

Chart 29: Gini Coefficient for Families Based on After-tax Income, Canada and the Provinces, 1981, 2008, and 2014

Source: IEWB database.

ii. Poverty

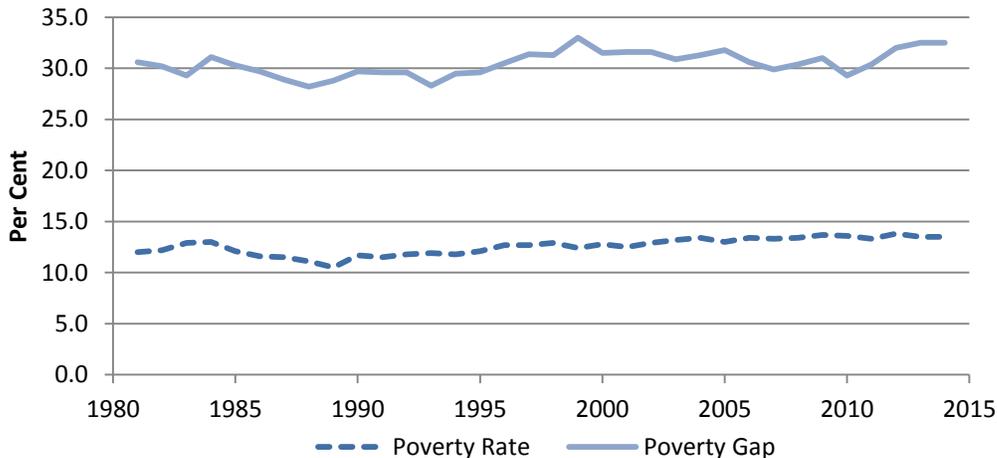
a. Canada

The poverty rate for all persons, based on the LIM, was estimated at 13.5 per cent in 2014, up from 12.0 per cent in 1981.²³ It hit a low point of 10.5 per cent in 1989, and peaked at 13.7 per cent in 2009. The poverty rate has remained in and around this level, sitting at 13.5 per cent in 2014.

In 2014, the per-person poverty gap in Canada was 32.85 per cent, 6.3 per cent higher than its 1981 value of 30.6 per cent. The poverty gap has been relatively stable for the entire period, although there was a slight decline in the mid-80s that was reversed by a slight increase in the mid-90s.

Poverty intensity is the product of the poverty rate and the poverty gap.²⁴ The magnitude of poverty intensity in a particular place at a point in time has no meaning; the measure is useful only for comparisons across time or across jurisdictions. Poverty intensity was up 19.5 per cent in 2014 from its 1981 level in Canada. Not surprisingly, it exhibited the same pattern as the poverty rate, falling in the late 1980s, slowly rising until 2009, and then remaining at this general level after 2009.

Chart 30: Poverty Rate and Poverty Gap for All Persons, Canada, 1981-2014



Source: IEWB database.

b. Provinces

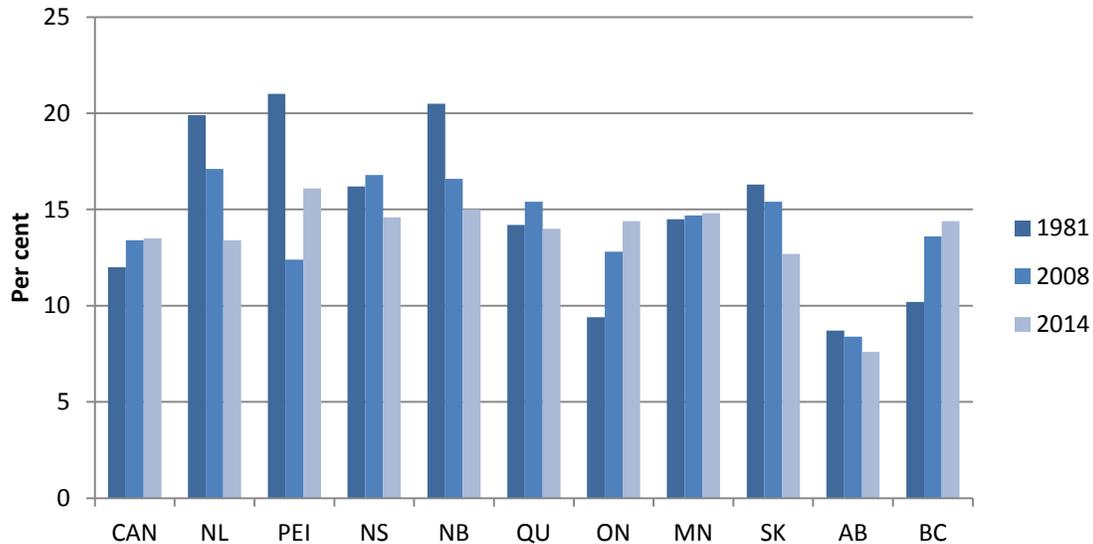
The highest poverty rate among the provinces in 2014 was in Prince Edward Island, 16.1 per cent. New Brunswick and Manitoba posted the second and third highest rates at 15.0 per cent and at 14.8 per cent respectively. The lowest rates in 2014 were in

²³ Statistics Canada estimates of the poverty rate and poverty gap are available to 2013; the 2014 values are assumed to be equal to the 2013 values.

²⁴ Admittedly, there is a measurement issue with using scaled poverty intensity in our index of economic equality rather than including the scaled poverty rate and poverty gap individually. As poverty intensity is the product of the poverty rate and the poverty gap, the effects of growth in the two are multiplicative.

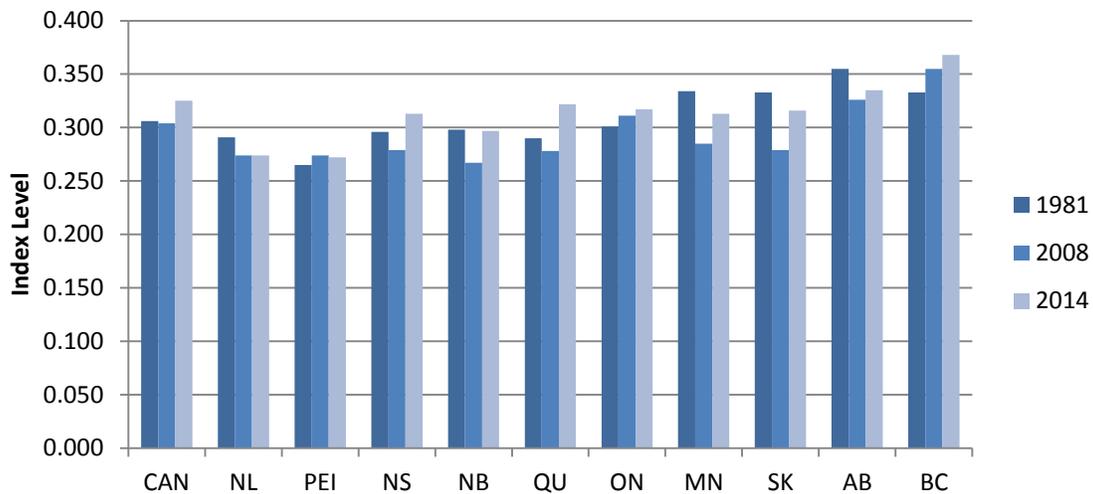
Alberta, 7.6 per cent, and Saskatchewan, 12.7 per cent. The poverty rate fell in seven of the provinces over the 1981-2014 period. In Ontario, Manitoba, and British Columbia the LIM grew between 1981 and 2014. While the provincial trends throughout the 1981-2014 period generally followed the national one, there was considerable variety across provinces in terms of total changes over the whole period. Poverty rates in Prince Edward Island and New Brunswick fell 4.9 percentage points and 5.5 percentage points between 1981 and 2010, while those of British Columbia and Ontario increased 4.2 percentage points and 5.0 percentage points, respectively.

Chart 31: Poverty Rate Based on LIM, Canada and the Provinces, Per Cent, 1981, 2008, and 2014



Source: IEWB database.

Chart 32: Average Poverty Gap Based on LIM, Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

Prince Edward Island had the lowest poverty gap among the provinces in 2014 at 27.2 per cent; British Columbia had the highest at 36.8 per cent. Over the 1981-2014

period, the poverty gap decreased in half of the provinces (Newfoundland and Labrador, New Brunswick, Manitoba, Saskatchewan, and Alberta). Between 2000 and 2014, the poverty gap decreased in half of the provinces once again, however the provinces were slightly different (New Brunswick and Manitoba were replaced by Prince Edward Island and Ontario).

Over the 1981-2014 period, the greatest drops in poverty intensity were in Newfoundland and Labrador and New Brunswick, at 36.6 per cent and 27.1 per cent, respectively. Poverty intensity increased over the period in three provinces: Québec, Ontario, and British Columbia.

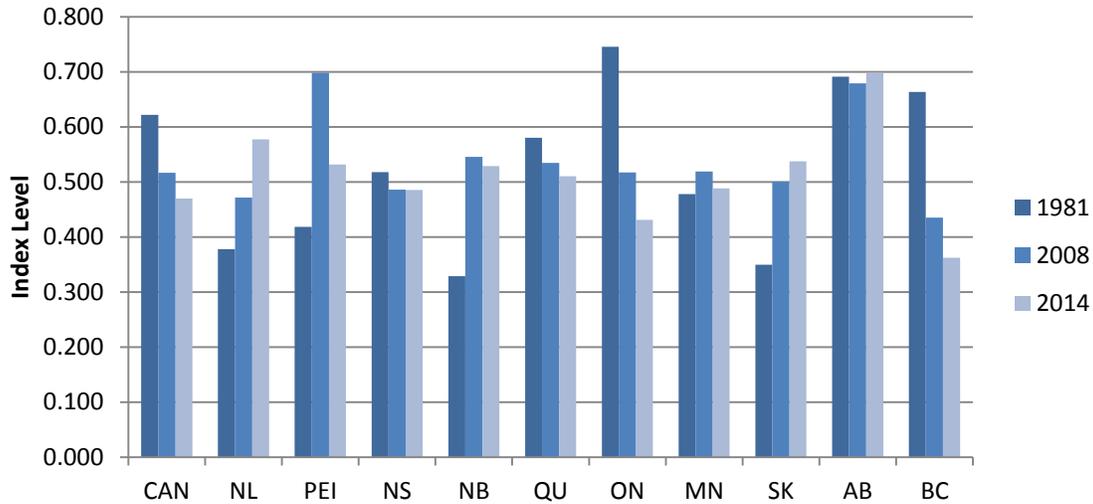
iii. Overall Economic Equality Domain

The index of the economic equality domain is the weighted sum of the scaled Gini coefficient and the scaled poverty intensity index, with poverty intensity receiving three quarters of the weight. In Canada, the index was 0.470 in 2014, down 0.151 points (or 24.4 per cent) from 0.621 in 1981. The index of economic equality in Canada grew during the 1981 to 1989 period at a rate of 1.58 per cent per year. The 1989 to 2000 period saw inequality growth wipe away the gains made by the index of economic equality in the 1980s, as it fell at a rate of 2.81 per cent per year. Canada became marginally more equal between 2000 and 2008, reflected in the index of economic equality growing 0.03 per cent per year. Inequality growth returned with the 2009 recession, as the index of economic equality fell 1.56 per cent per year from 2008 to 2014.

Alberta had the highest score in the equality domain in 2014 at 0.697 among the provinces, followed by Newfoundland and Labrador at 0.577 (Chart 33). British Columbia had the lowest score by a considerable margin with 0.362; the next lowest score was Ontario's at 0.431.

Four of the ten provinces (New Brunswick, Saskatchewan, Newfoundland and Labrador, and Prince Edward Island) saw considerable improvements in the equality index over the 1981-2014 period (60.7 per cent, 53.9 per cent, 52.7 per cent, and 27.1 per cent respectively). The largest decline was experienced in British Columbia, where the index of equality fell by 45.4 per cent over the period.

Chart 33: Index of the Equality Domain in Canada and the Provinces, 1981, 2008, and 2014



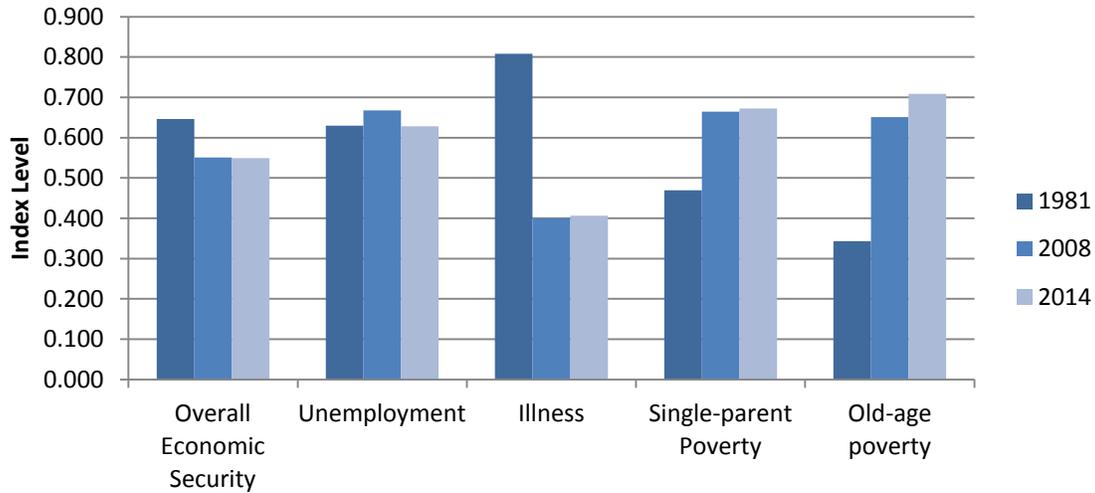
Source: IEWB database.

F. Trends in the Economic Security Domain

The economic security domain is the most complex domain of the Index of Economic Well-being and the methodologies used in its construction have evolved since the Index was first released in 1998.²⁵ The domain consists of four components called risks to economic well-being facing the population, namely the risk imposed by unemployment, the financial risk from illness, the risk from single parent poverty, and the risk of poverty in old age. Three of these components are in turn composed of more than one variable. Chart 34 illustrates Canada's scores in the sub-indices for each of the four economic security components in 1981, 2000, and 2014, as well as the overall index of economic security. Canadians became more secure over the period in terms of the risk from single-parent poverty and old-age poverty, but these gains were more than offset by the fall in security from the financial risk of illness and of unemployment.

²⁵ For a discussion of the role of economic security in an index of economic well-being and an assessment of the CSLS approach to the measurement of economic security, see Heslop (2009).

Chart 34: The Economic Security Domain and its Components, Canada, 1981, 2008, and 2014



Source: IEWB database.

Table 5 presents growth rates for the economic security domain and each of its four component indices. The component indices essentially are weighted by how much of the population is at risk. The risk imposed by illness receives the highest weight (as everyone in the population is at risk) of more than 40 per cent, while the risk imposed by poverty in old age receives the smallest weight at around 12 per cent. Each index is made up of multiple measures to try and capture the risk it describes. For example, the risk imposed by unemployment takes into account the risk of unemployment as well as the risk of being unemployed and not being caught by the social safety net.

Table 5: Summary of Growth for the Economic Security Domain and its Components, 1981-2014

	1981-2014	1981-1989	1989-2000	2000-2008	2008-2014	1981-2008
Economic Security	-0.49	0.21	-0.98	-1.08	-0.05	-0.59
Risk Imposed by Unemployment	-0.01	0.59	-0.27	0.51	-1.01	0.21
Risk Imposed by Illness	-2.06	-1.10	-2.95	-3.11	0.29	-2.57
Risk Imposed by Single-Parent Poverty	1.09	0.93	2.14	0.49	0.19	1.29
Risk Imposed by Poverty in Old Age	2.22	9.47	0.97	-2.35	1.43	2.40

The 2008 to 2014 period was the only peak to peak period within our scope of study where individuals actually became more economically secure against the risk imposed by illness. Individuals also became more insulated from the risks imposed by single-parent poverty and poverty in old age in the 2008 to 2014 period. Overall, we found that economic security actually deteriorated less in the 2008 to 2014 than it did in either of the prolonged booms of the 1990s or early 2000s.

Despite an overall slowing of growing economic insecurity in Canada, the 2008 to 2014 period also saw insecurity due to the risk imposed by unemployment grow the fastest. In 2009 recession unemployment rates in Canada peaked for the 2008 to 2014 period, and with them so did the proportion of unemployed receiving EI. While unemployment rates have since ebbed, the proportion of unemployed receiving EI hit its lowest point since 1981 in 2014 at 38.4 per cent (down from 50.6 per cent in 2009). As EI requires a certain number of hours worked prior to claiming benefits, this could be evidence of longer spells of unemployment in the wake of the 2009 recession.

When compared with the long run trend of 1981 to 2008, economic security declined much less from 2008 to 2014. However, improvements in security against the risks imposed by unemployment, single parent-poverty, and poverty in old age all slowed from 2008 to 2014 versus 1981 to 2008. Security against unemployment even relapsed from security growth over the long run to falling security from 2008 to 2014. Security from illness slowed the declined in economic security from 2008 to 2014 which had been experienced over the long run. From 1981 to 2008, security from the risk imposed by illness fell 2.57 per cent per year, but from 2008 to 2014 security finally improved 0.29 per cent per year.

i. Risk from Unemployment

Risk imposed by unemployment is determined by three variables: the unemployment rate, the proportion of the unemployed receiving EI benefits, and the proportion of earnings that are replaced by EI benefits.

a. Canada

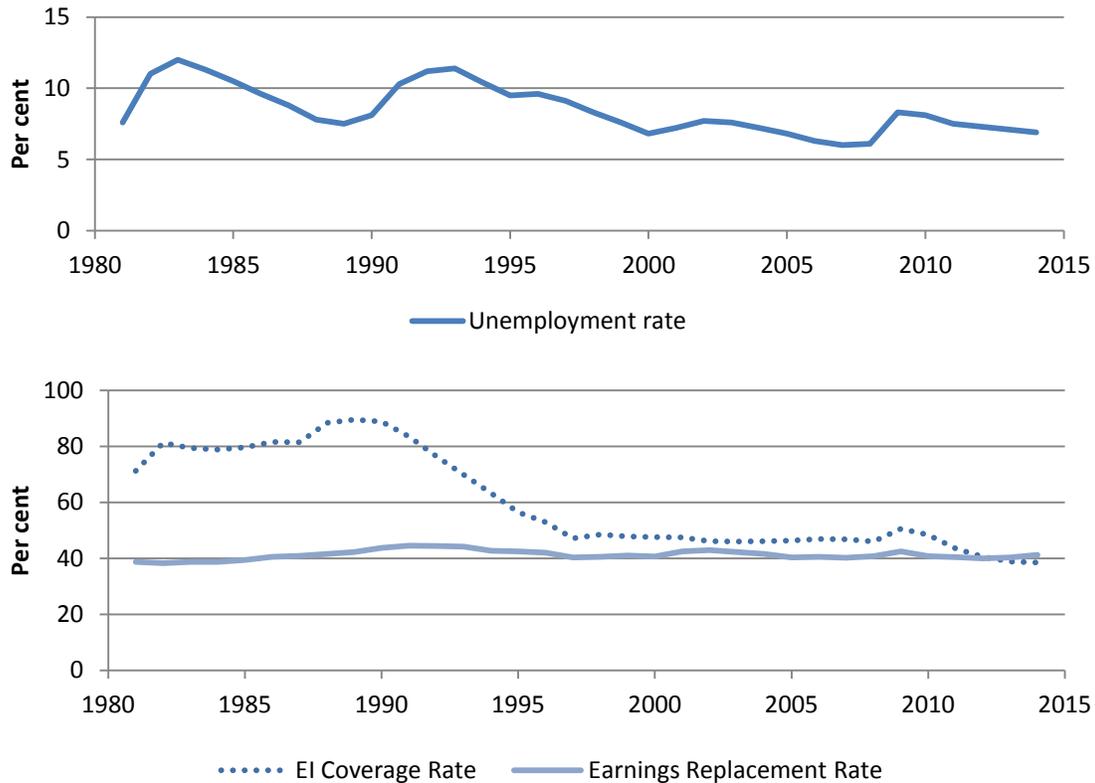
The unemployment rate was 6.9 per cent in Canada in 2014, somewhat higher than the lowest rate (6.1 per cent in 2007) attained during the 1981-2014 period (Chart 35). The unemployment rate rose in the early 1980s, peaking at 12.0 per cent in 1983 because of a recession, then fell during the recovery and the economic expansion during the rest of the decade. This pattern repeated itself in the 1990s, with the unemployment rate rising to 11.4 per cent in 1993 and then slowly unwinding to 6.8 per cent in 2000. Unlike the early 1980s and 1990s, the early 2000s did not experience a major economic downturn, so the unemployment rate was relatively stable between 2000 and 2008, peaking at 7.7 per cent in 2002 before falling to 6.0 per cent in 2007. During the 2009 recession, the unemployment rate rose 2.3 percentage points from its 2007 low, peaking at 8.3 per cent.

In 2014, the proportion of the unemployed receiving EI benefits in Canada was 38.4 per cent,²⁶ down from 71.2 per cent in 1981 and a peak of 89.5 per cent in 1989

²⁶ Strictly speaking the 38.4 per cent is the ratio of the number of persons receiving EI benefits to the number of unemployed. It is unlikely that all EI beneficiaries are classified as unemployed by the Labour Force Survey, especially in a region where there are few job prospects. And of course new labour market entrants may be unemployed but not eligible for EI benefits.

(Chart 35). The percentage of unemployed receiving benefits fell steadily since 1989 to 1997, stabilized around 46 per cent from 1997 to 2008, before there was a slight increase in the EI coverage rate during the recession in 2009. Over the 1981-2014 period, the lowest EI coverage rate was seen in 2014 at 38.4 per cent of all the unemployed.

Chart 35: Trends in the Unemployment Rate and the EI Replacement and Coverage rates, Canada, Per Cent, 1981-2014



Source: IEWB database.

The amount of earnings replaced by EI was relatively stable between 1981 and 2014. On average, EI benefits replaced 41.3 per cent of average weekly earnings in 2014 (Chart 35). This was 2.7 percentage points above the 1981 replacement rate of 38.6 per cent. EI benefits peaked at 44.4 per cent in 1991 and 1992.

The aggregation procedure for the variables that make up the risk of unemployment component of the economic security domain is complicated. First, the EI coverage rate and the EI benefits rate are multiplied to obtain an index for the financial protection from unemployment. This index fell 42.4 per cent between 1981 and 2014 for Canada. Second, both the unemployment rate and the financial protection index are scaled. Third, the scaled values of the two indexes are weighted to produce the overall index of security from the risk imposed by unemployment. Since low unemployment provides employment security by the relative ease of obtaining employment, the unemployment rate is considered considerably more important than the EI system as a source of economic security for the working population. Consequently, it is given a weight of four-fifths in the aggregation of the overall index to reflect the disutility of

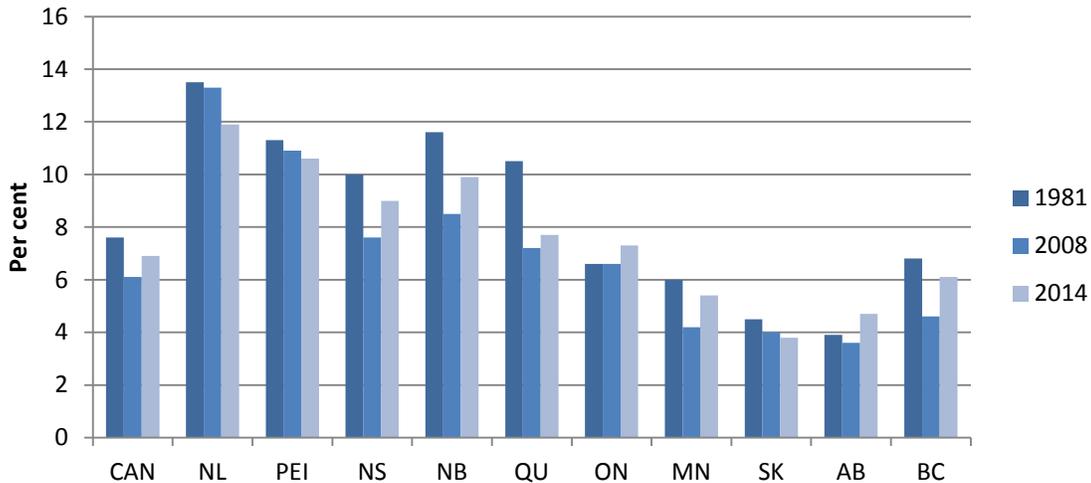
unemployment *per se* (Di Tella, MacCulloch, and Oswald, 2003). A weight of one-fifth is given to the financial protection variable. This methodology represents a significant change from the earlier methodologies where the unemployment rate and EI system were weighted equally.

The greater weight given to the unemployment rate (relative to the EI variables) produces the result that the scaled value of economic security for risk of unemployment in Canada, at 0.628, is 0.002 points (or 0.3 per cent) lower in 2014 than in 1981.

b. Provinces

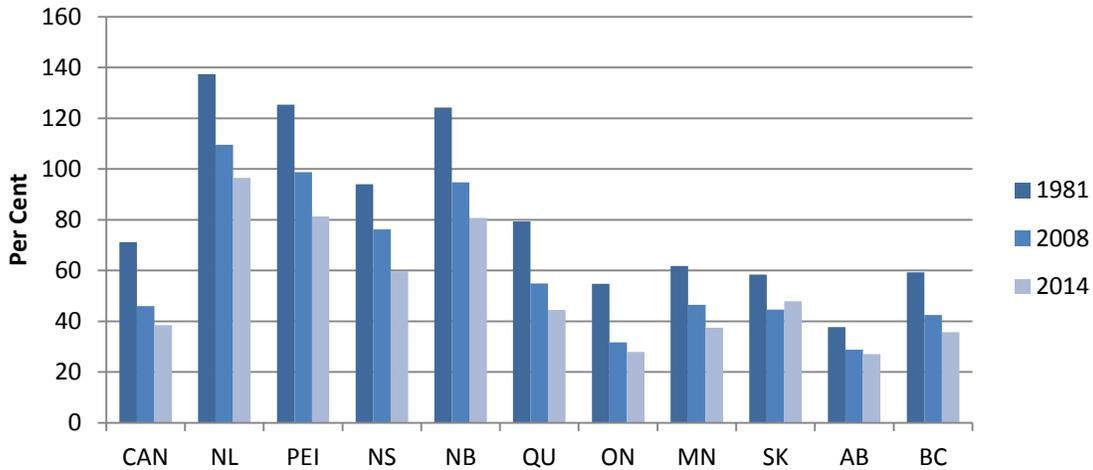
The Atlantic provinces had higher unemployment rates than the rest of Canada in 2014, led by Newfoundland and Labrador with 11.9 per cent and Prince Edward Island with 10.6 per cent (Chart 34). The lowest rates were in Saskatchewan and Alberta with 3.8 per cent and 4.7 per cent, respectively. Over the 1981-2014 period, the provinces generally followed a pattern similar to the national one, with unemployment peaking in the early 1980s, mid-1990s, and 2009 (in most provinces). The highest rate over the entire period was 20.2 per cent in Newfoundland and Labrador in 1985, while the lowest rate was 3.5 per cent in Alberta in 2006 and 2007.

Chart 36: Unemployment Rate in Canada and the Provinces, 1981, 2008, and 2014, per cent



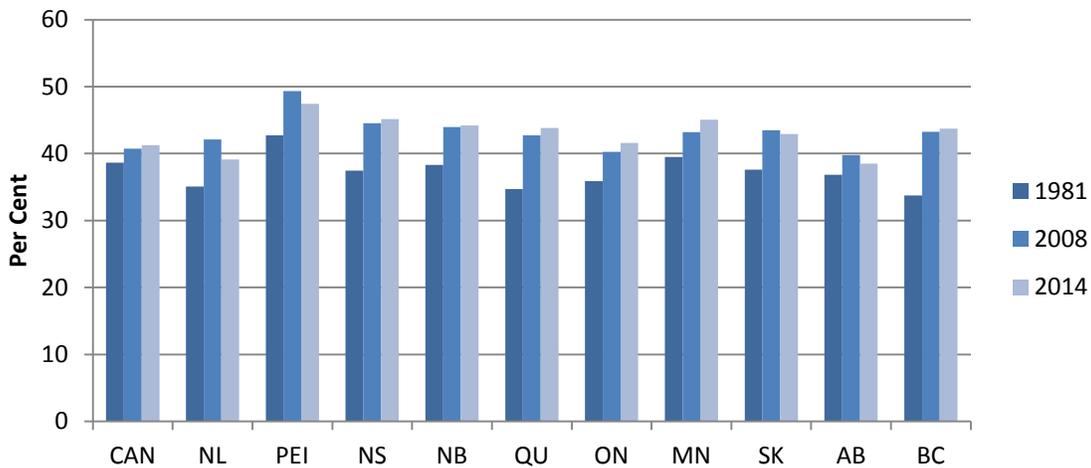
Source: IEWB database.

Chart 37: Employment Insurance Coverage Ratio, Canada and the Provinces, Per Cent, 1981, 2008, and 2014



Source: IEWB database.

Chart 38: Average Proportion of Earnings Replaced by EI Benefits, Canada and the Provinces, Per Cent, 1981, 2008, and 2014



Source: IEWB database.

The highest provincial EI coverage ratio in 2014 was 96.5 per cent in Newfoundland and Labrador. This indicates that EI recipients account for almost all of those who are technically classified as unemployed. However, the highly seasonal nature of the majority of employment in Newfoundland and Labrador severely inflates these numbers. The lowest coverage rate in 2014 was in Alberta, at 27.1 per cent. The large cross-province differences in the EI coverage ratios are a result of the structure of the EI system – the eligibility criteria for EI benefits and the duration of those benefits differ across regions of Canada depending on local labour market conditions. The EI system is more generous in regions of high unemployment, such as the Atlantic provinces, than in regions of low unemployment, such as Saskatchewan and Alberta.

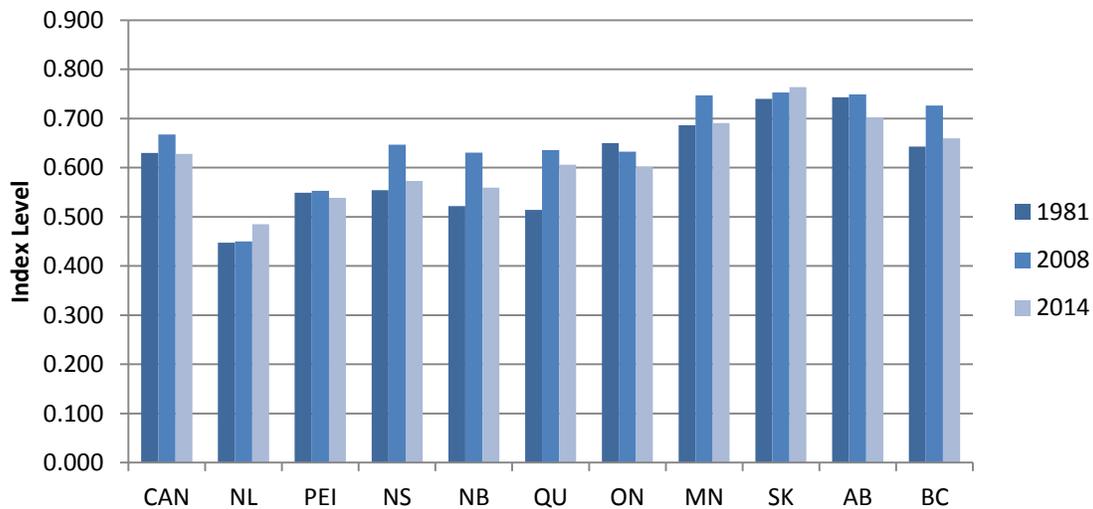
The EI coverage ratio declined in every province over the 1981-2014 period. It declined most in Prince Edward Island, falling 43.9 percentage points from 125.3 per cent

in 1981. Overall, the coverage ratio declined the least in Saskatchewan, falling only 10.5 percentage points from 58.4 per cent in 1981.

There was much less variation across provinces in the EI replacement rate. The rate was highest in Prince Edward Island in 2014, at 47.4 per cent, while Alberta's replacement rate of 38.5 per cent was lowest among the provinces (Chart 38). The largest increase in the replacement rate over the period was the 10.0 percentage point (29.7 per cent) increase in British Columbia.

Chart 39 shows that the scaled values of the index of security from unemployment were lower in 2014 than in 1981 for three of the ten provinces (Prince Edward Island, Ontario, and Alberta). The largest decline was in Ontario, which experienced a drop of 7.5 per cent in its index. The highest scaled value in 2014 was in Saskatchewan, at 0.764, with Alberta not far behind at 0.702. The lowest value was found in Newfoundland and Labrador at 0.485, followed by Prince Edward Island at 0.539. Over the entire period, Québec's index saw the most progress, growing 17.7 per cent.

Chart 39: Overall Index of Security from the Risk Imposed by Unemployment, Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

ii. Financial Risk from Illness

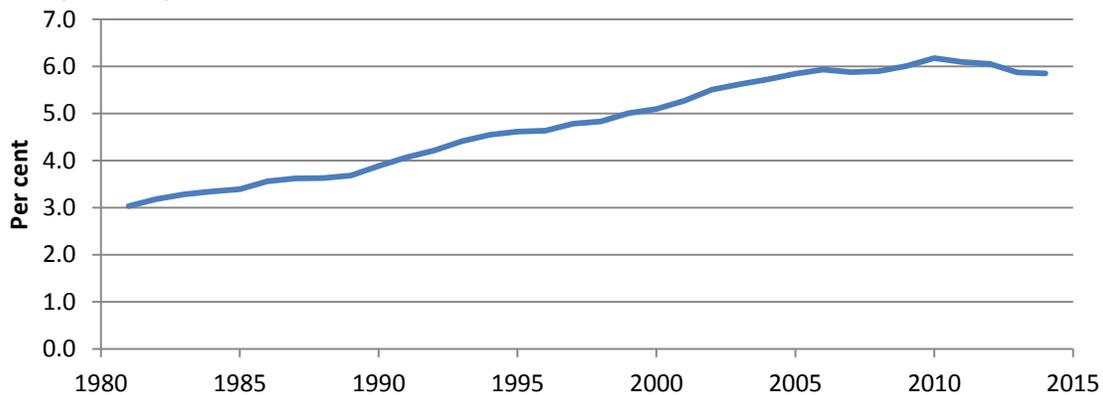
The second component of the economic security domain is the financial risk imposed by illness. In Canada, health care deemed medically necessary is provided free of charge to all citizens through public medicare programs. In this sense the financial risk imposed by illness is much less than in countries without such universal coverage like the United States. But there is still significant private expenditure on health care in Canada and these expenditures have been rising rapidly. Included are spending for dental care, prescription and non-prescription drugs taken outside hospitals, unlisted medical services such as acupuncture, and delisted medical services such as physiotherapy and vision care

in Ontario.²⁷ Also included are medically unnecessary procedures purchased by Canadians, such as plastic surgery.

a. Canada

Private non-reimbursed expenditure on health care in Canada rose from \$6.3 billion current dollars in 1981 to \$62.9 billion in 2014. This resulted in nearly a doubling of private health spending as a share of disposable income, from 3.04 per cent to 5.85 per cent (Chart 40). Increased private health expenditure imposed by poor health represents a growing financial burden particularly for low income Canadians. The growth rate of private health expenditures as a share of disposable income was fairly stable over the 1981-2014 period. The share grew 2.45 per cent per year over the 1981-1989 period, 2.99 per cent per year over the 1989-2000 period, but slowed to 1.85 per cent per year over the 2000-2008 period and actually fell 0.14 per cent per year over the 2008-2014 period.

Chart 40: Private Non-Reimbursed Medical Expenditures as a Proportion of Personal Disposable Income, Canada, Per Cent, 1981-2014



Source: IEWB database.

The scaled value of the ‘risk imposed by illness’ component of the economic security domain for Canada fell 0.401 points from 0.808 in 1981 to 0.407 in 2014. In terms of the index of the scaled values, this represented a 49.7 per cent decrease. As will be discussed later in the report, this development accounted for the entire decline in overall economic security.

b. Provinces

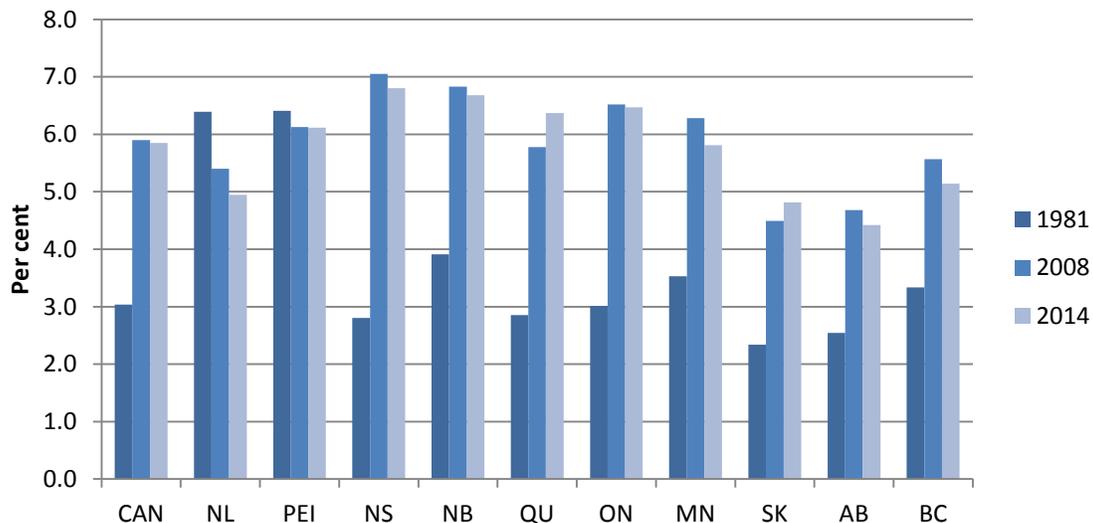
Nova Scotia had the highest proportion of private health care spending to personal disposable income in 2014 with 6.80 per cent, followed by New Brunswick and Ontario (at 6.68 and 6.47 per cent). The lowest proportion was Alberta’s 4.42 per cent. Since 1981, all provinces experienced positive growth in private health care spending as a share

²⁷ For all of these, private expenditure includes all out of pocket expenditures made by individuals for health care goods and services; health insurance claims paid to individuals by commercial and not-for-profit insurance firms, as well as the costs of administering those claims; non-patient revenues received by health care institutions, such as donations and investment income; private spending on health related capital construction and equipment; and health research funded by private sources.

of disposable income with the exception of Newfoundland and Labrador and Prince Edward Island, which saw declines of 22.7 per cent and 4.6 per cent respectively. Nova Scotia had the largest increase, at 142.7 per cent over the period, while several other provinces had growth in the 100 to 140 per cent range (Chart 41).

On the scaled value of the risk imposed by illness component of the economic security domain, Alberta had the highest level of security with 0.610 in 2014, followed by Saskatchewan with 0.554. Nova Scotia and New Brunswick had the lowest scores with 0.271 and 0.289 respectively. In Newfoundland and Labrador, measured security from the financial risk of illness increased by 62.7 per cent over the 1981-2014 period. Every province except Prince Edward Island saw declines over the period, the worst of which occurred in Nova Scotia and Ontario with 67.8 per cent and 60.7 per cent decreases, respectively.

Chart 41: Private Expenditure on Healthcare as a Proportion of Personal Disposable Income, Canada and the Provinces, 1981, 2008, and 2014, per cent



Source: IEWB database.

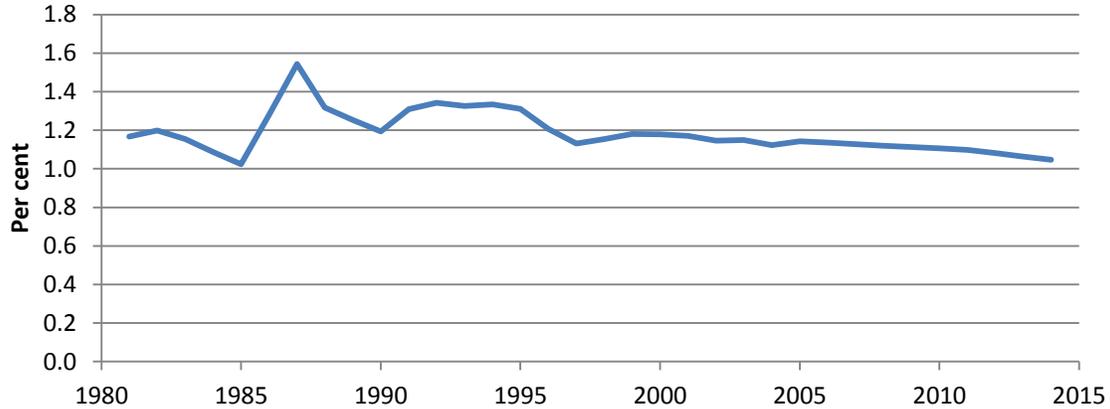
iii. Risk from Single-Parent Poverty

The third component of the economic security domain is the risk of single parent poverty. This component consists of three variables: the divorce rate (as divorce throws many people, especially women, into poverty), the poverty rate for lone parent families, and the poverty gap for these families. As in the equality domain, poverty is defined in terms of the LIMs produced by Statistics Canada. The poverty rate is the proportion of lone-parent families whose total after-tax incomes fall below fifty percent of the median equivalent income, and the poverty gap is the average difference between the poverty line and the incomes of those families.

a. Canada

The divorce rate for married couples, defined as the number of divorces divided by the number of married couples, was 1.05 per cent in Canada in 2014, the lowest rate in a quarter century (Chart 42).²⁸ The divorce rate rose from 1.17 per cent in 1981 to a peak of 1.54 per cent in 1987 and has since been on a downward trend reflecting possibly the aging of the population (the incidence of divorce declines after a certain number of years of marriage).

Chart 42: Divorce Rate, Canada, Per Cent of Legally Married Couples per Year, 1981-2014



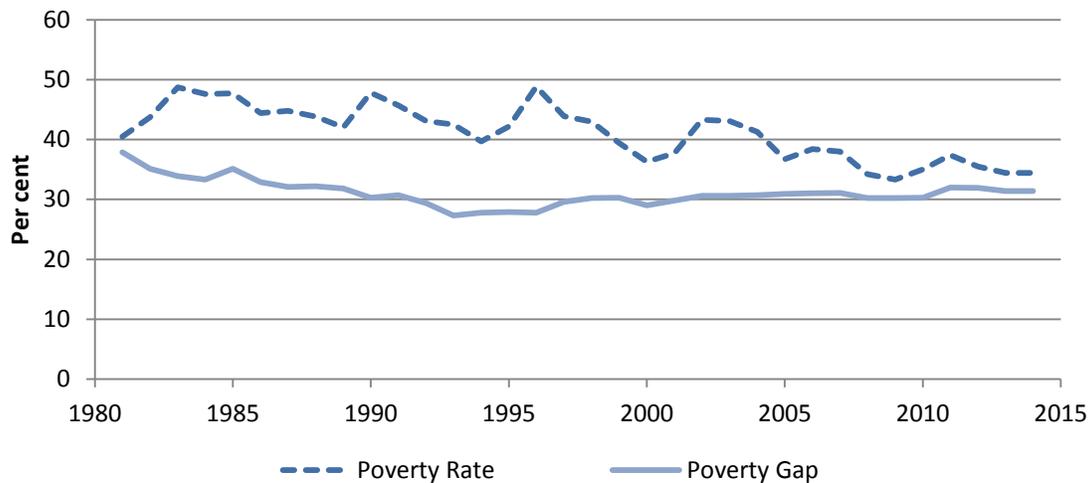
Source: IEWB database.

It is well known that the poverty rate is particularly high for lone parent families. In 2014, this rate was 34.4 per cent in Canada (Chart 41).²⁹ Lone-parent poverty rates generally ranged between 40 per cent and 50 per cent between 1981 and 1996. Since then, we have seen a general downward trend - from 48.8 per cent in 1996 to 34.4 per cent in 2014.

²⁸ The most recent year for which divorce data are available is 2005; values for subsequent years are extrapolated using the compound annual growth rate from the 2000-2005 period.

²⁹ Data on the single-parent poverty rate and poverty gap are available to 2013; the 2014 values are assumed to be equal to the 2013 values.

Chart 43: Poverty Rate and Poverty Gap for Single-parent Families, Canada, 1981-2014



Source: IEWB database.

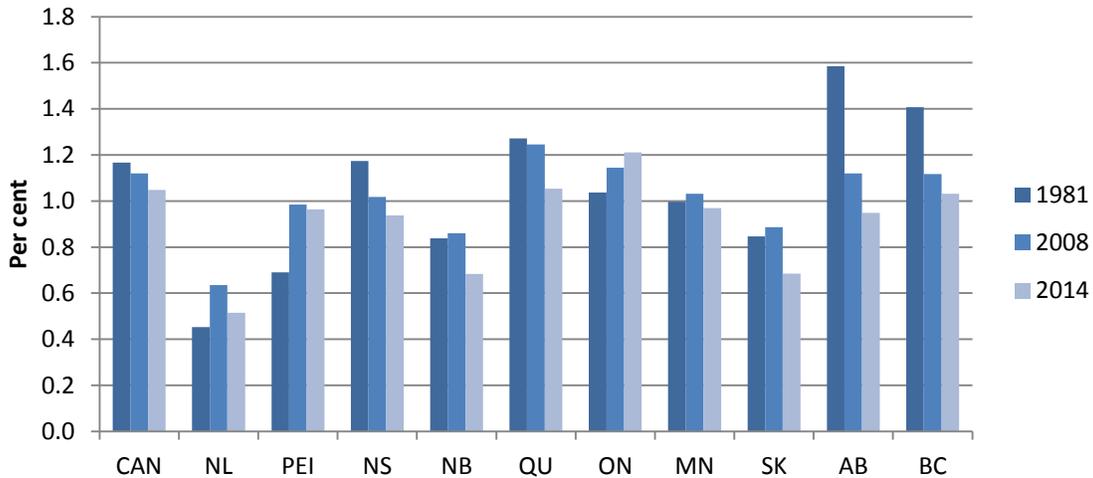
Like the overall poverty gap, the single-parent poverty gap fell over the 1981-2014 period in Canada (Chart 41). The gap was 31.4 per cent in 2014, 6.5 percentage points below its 1981 value of 37.9 per cent. Most of the decline occurred from 1981 to 1989, when the poverty gap fell 6.1 percentage points to 31.8 per cent. The decline slowed during the 1989-2000 period, as the gap only fell a further 2.8 percentage points. The poverty gap grew somewhat in the new millennium, growing 1.2 percentage points between 2000 and 2008 to 30.2 per cent in 2008 and growing a further 1.2 percentage points between 2008 and 2014.

The overall ‘risk of single-parent poverty’ component is calculated in a multiplicative manner as the product of the divorce rate, the poverty rate for single parents and the poverty gap for single parents. This indicator for Canada fell 36.8 per cent over the 1981-2014 period. The index is then scaled. Canada’s score in security from single-parent poverty was 0.672 in 2014, up 43.0 per cent from 0.470 in 1981 (Chart 45).

b. Provinces

Among the provinces, the highest divorce rate in 2014 was in Ontario, at 1.21 per cent, followed by Québec at 1.05 per cent (Chart 44). The lowest rate was 0.52 per cent in Newfoundland and Labrador. The divorce rate decreased over the 1981-2014 period in every province except for Newfoundland and Labrador, Prince Edward Island, and Ontario; in those provinces, the rate increased by 13.6 per cent, 39.7 per cent, and 16.8 per cent respectively.

Chart 44: Divorce Rate, Canada and the Provinces, Per Cent, 1981, 2008, and 2014

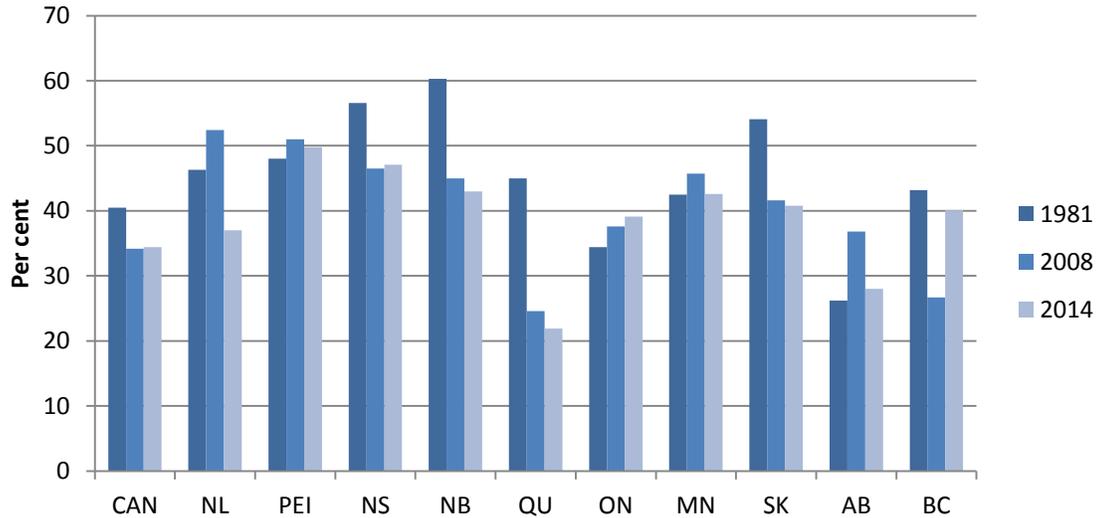


Source: IEWB database.

In 2014, the poverty rate for single-parent families ranged from a low of 21.9 per cent in Québec to a high of 49.8 per cent in Prince Edward Island (Chart 43). Most provinces experienced a drop in the poverty rate in 2014 compared to the 1981 level, with the exception of Ontario (13.7 per cent), Alberta (6.9 per cent), Prince Edward Island (3.7 per cent), and Manitoba (0.2 per cent). The biggest decline over the period occurred in Québec, falling 51.3 per cent.

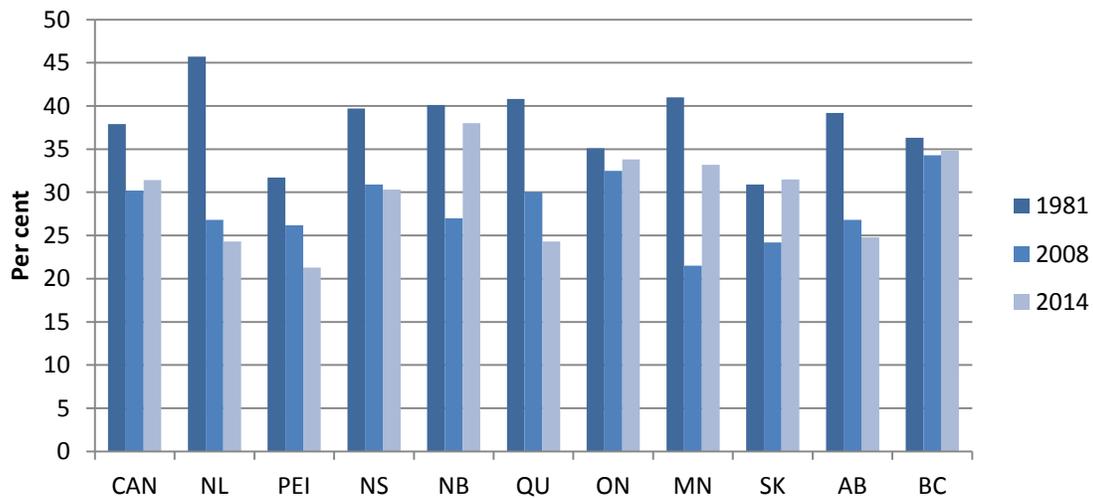
New Brunswick had the largest average poverty gap for single-parent families among the provinces in 2014 at 38.0 per cent, followed by British Columbia and Ontario, at 34.8 per cent and 33.8 per cent respectively (Chart 46). Prince Edward Island had the lowest poverty gaps at 21.3 per cent. Over the 1981-2014 period, Newfoundland and Labrador enjoyed the most significant drop in per cent terms, falling 46.8 per cent, while Saskatchewan was the only province where the gap actually increased over the period, growing 1.9 per cent.

Chart 45: Poverty Rate among Single-Parent Families, Canada and the Provinces, Per Cent, 1981, 2008, and 2014



Source: IEWB database.

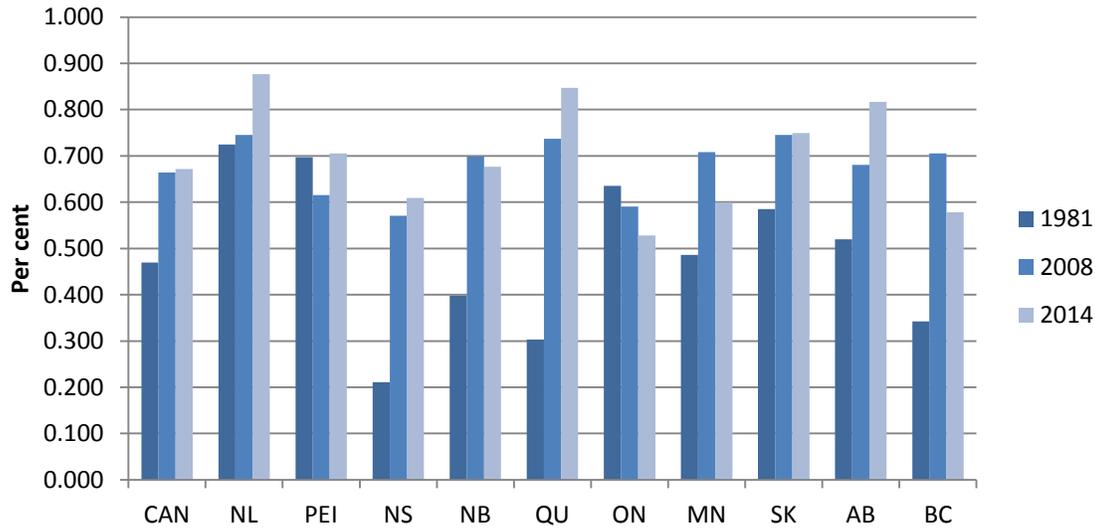
Chart 46: Average Poverty Gap among Single-Parent Families, Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

Newfoundland and Labrador had the highest score on the index of security from single-parent poverty in 2014, at 0.877 (Chart 45). Québec followed, with a score of 0.847. Ontario's score of 0.528 was lowest among the provinces. Every province except Ontario experienced improvement in the index of security from the risk of single-parent poverty. The strongest improvement came from Nova Scotia, with a 188.7 per cent gain, followed by Québec with a 179.2 per cent improvement. Ontario's index of security from single-parent poverty fell 16.8 per cent from its 1981 value.

Chart 47: Overall Index of Security from Risk Imposed by Single Parent Poverty, Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

iv. Risk of Poverty in Old Age

The fourth component of the economic security domain is the risk of poverty in old age. This component uses the poverty rate and poverty gap of families headed by persons 65 and over as a proxy measure for old age poverty rates. Once again, these concepts are defined in terms of the LIMs calculated by Statistics Canada.

a. Canada

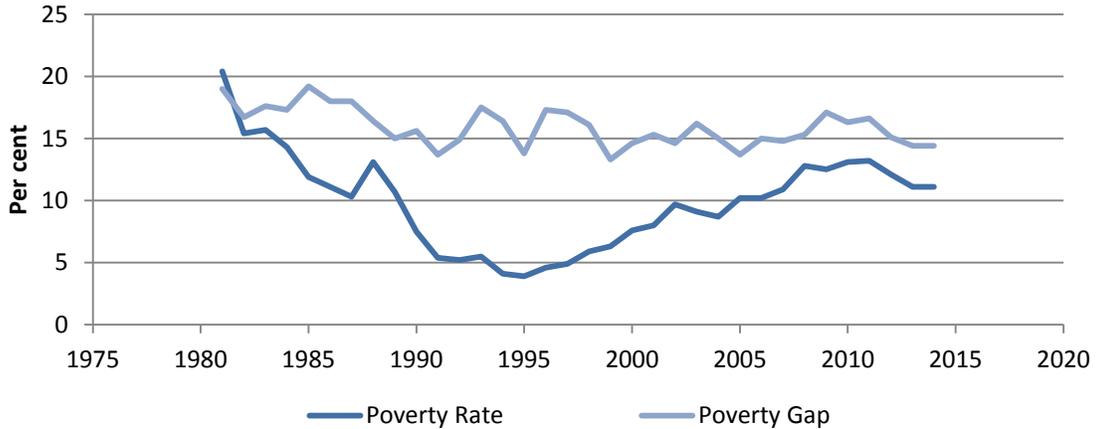
The poverty rate among elderly families in Canada was 11.1 per cent in 2014, down 9.3 percentage points (45.6 per cent) from 20.4 per cent in 1981 (Chart 48).³⁰ The poverty rate fell 7.75 per cent per year over the 1981-1989 period, and also declined at a rate of 3.06 per cent per year over 1989-2000. The downward trend reversed in the 2000-2014 period, as the elderly poverty rate increased at a rate of 2.74 per cent per year.

The elderly poverty gap followed a pattern similar to that of the elderly poverty rate. In Canada as a whole, the gap was 14.4 per cent in 2014, down 4.6 percentage points (24.2 per cent) from the 1981 gap (Chart 48). While the elderly poverty gap was decreasing across the three sub-periods, over time the gap has fallen more slowly. The elderly poverty gap decreased 2.91 per cent per year in the 1981-1989 period and 0.25 per cent per year in the 1989-2000 period. The gap increased 0.59 per cent per year during the 2000 to 2008 period before returning to its downward trend in the 2008 to 2014 period, decreasing 1.01 per cent per year.

³⁰ Data on the poverty rate and poverty gap among elderly families are available only to 2013; the 2014 values are assumed to be equal to the 2013 values.

The overall ‘risk of poverty in old age’ component is the scaled value of the elderly poverty intensity (the product of the poverty rate and the poverty gap). In Canada, elderly poverty intensity declined by 2.65 per cent per year over the 1981-2014 period. In scaled form, security from old-age poverty stood at 0.709 in 2014, up 106.6 per cent from its 1981 value of 0.343 (Chart 51).

Chart 48: Poverty Rate and Poverty Gap for Elderly Families, Canada, 1981-2014



Source: IEWB database.

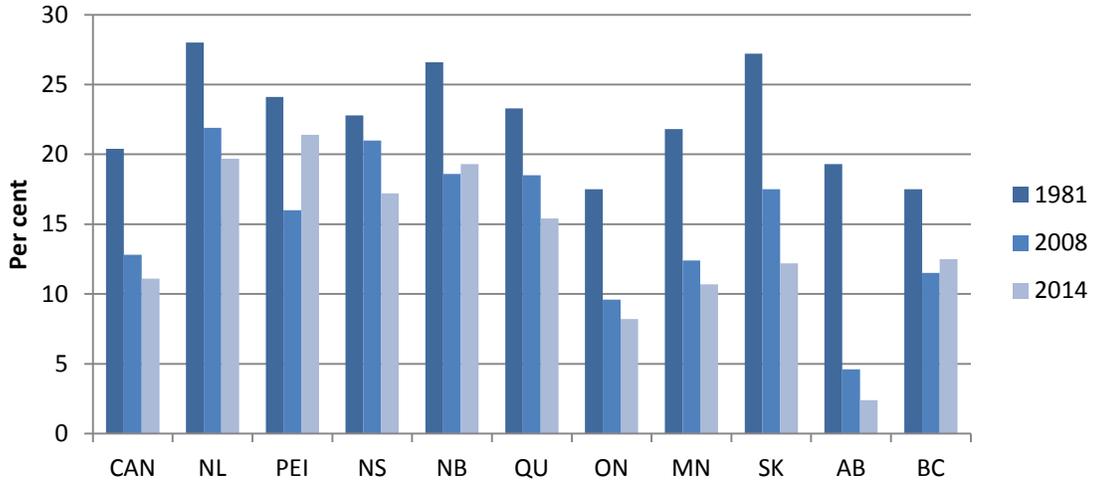
b. Provinces

Among the provinces, the highest elderly poverty rate in 2014 was 21.4 per cent in Prince Edward Island, followed by 19.7 per cent in Newfoundland and Labrador (Chart 49). The lowest rate was 2.4 per cent in Alberta. Over the 1981-2014 period, the elderly poverty rate fell significantly across the board. While Prince Edward Island experienced the smallest drop at 11.2 per cent, the elderly poverty in most of the provinces fell more than 30 per cent. Alberta enjoyed the largest drop, from 19.3 per cent in 1981 to 2.4 per cent in 2014, an 87.6 per cent change.

Alberta had the largest elderly poverty gap in 2014 at 34.0 per cent. The lowest was in Newfoundland and Labrador at 9.3 per cent. Every province except Alberta saw a decrease in the elderly poverty gap over the 1981-2014 period. The largest decrease was in Newfoundland and Labrador, where the gap fell 43.6 per cent from 16.5 per cent in 1981 to 9.3 per cent in 2014. The sole increase was in Alberta, where the poverty gap increased by 61.9 per cent, from 21.0 per cent in 1981 to 34.0 per cent in 2014.

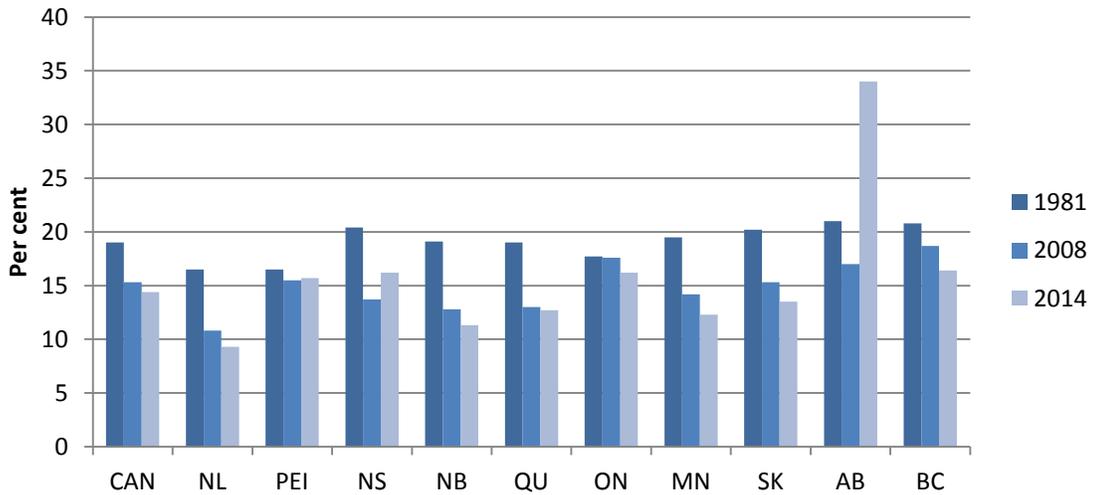
In 2014, Alberta had the highest index score for security from the risk of poverty in old age at 0.834, followed by Manitoba at 0.754 (Chart 51). Prince Edward Island had the lowest value at 0.426. Security from old-age poverty increased in every province over the 1981-2014 period, led by Saskatchewan's incredible 741.3 per cent increase. The next largest increase in security over the period was 310.8 per cent in New Brunswick.

Chart 49: Poverty Rate for Elderly Families, Canada and the Provinces, 1981, 2008, and 2014, per cent



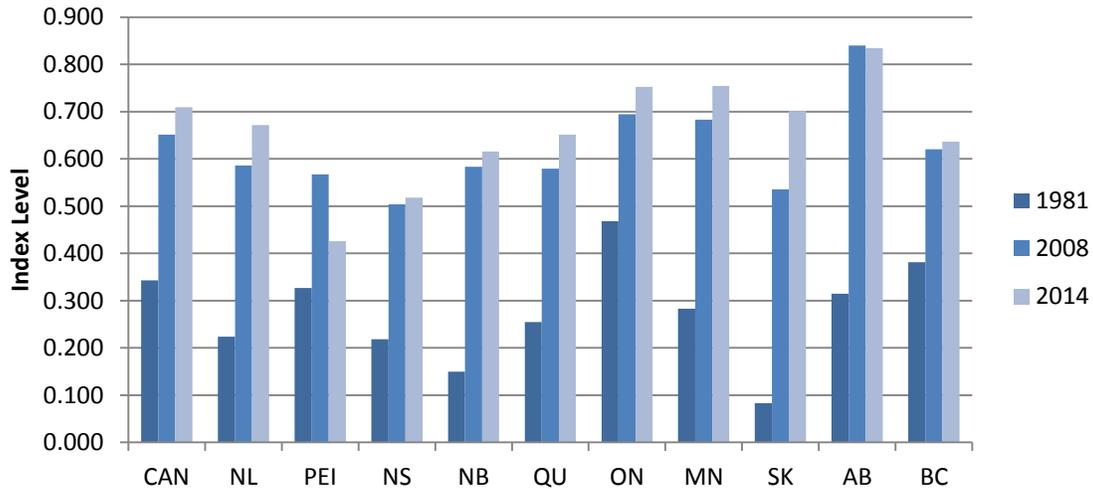
Source: IEWB database.

Chart 50: Average Poverty Gap for Elderly Families, Canada and the Provinces, Per cent, 1981, 2008, and 2014



Source: IEWB database.

Chart 51: Overall Index of Security from Risk Imposed by Poverty in Old Age, Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

v. Weighting of the Components in the Index of Economic Security Domain

The scaled values of the four components of the economic security domain are aggregated to obtain an overall scaled index for the domain. The weights used for this aggregation procedure are constructed from the relative sizes of the populations subject to each risk.

In terms of the risk of unemployment, it is assumed that the entire population aged 15 to 64 years is subject to this risk. In 2014, this was equivalent to 68.2 per cent of the total population in Canada. In terms of the financial risk associated with illness, it is assumed that 100 per cent of the population is at risk. In terms of the risk of single parent poverty, it is assumed that persons in couples and their children who are under 18 are at risk. In 2014, this group represented 35.8 per cent of the Canadian population. In terms of the risk to poverty in old age, it is assumed that the population between the ages of 45 and 64 are most concerned about the risk of poverty in old age. This group represented 28.1 per cent of the Canadian population in 2014. The component-specific weights are generated by summing the four proportions of the population subject to the four risks and then standardizing to unity by dividing each proportion by that sum.

Because of demographic shifts, the proportion of the population affected by the different risks, and hence the weights, vary over time. With the aging of the Canadian population, the proportion of the population in the 15-64 age group has increased from 68.1 per cent in 1981 to 69.5 per cent in 2007 (but has since declined to 68.2 per cent in 2014, and will likely continue to decline), the proportion of the population aged 45-64 rose from 18.9 per cent to 28.1 per cent, and the proportion of persons in couples with children under 18 (and their children) fell from 53.2 per cent to 35.8 per cent.

The contribution of each component is the product of its scaled value and weight. For example, in Canada in 2014 the contribution of the risk of unemployment was 0.185

(0.628×0.29); from the financial risk from illness, 0.175 (0.407×0.43); from the risk of single parent poverty, 0.104 (0.709×0.15); and from the risk of poverty in old age, 0.086 (0.672×0.12). Aggregating the contributions gives 0.463, which is the value of the overall economic security domain for Canada in 2010.

vi. Trends in the Economic Security Domain

a. Canada

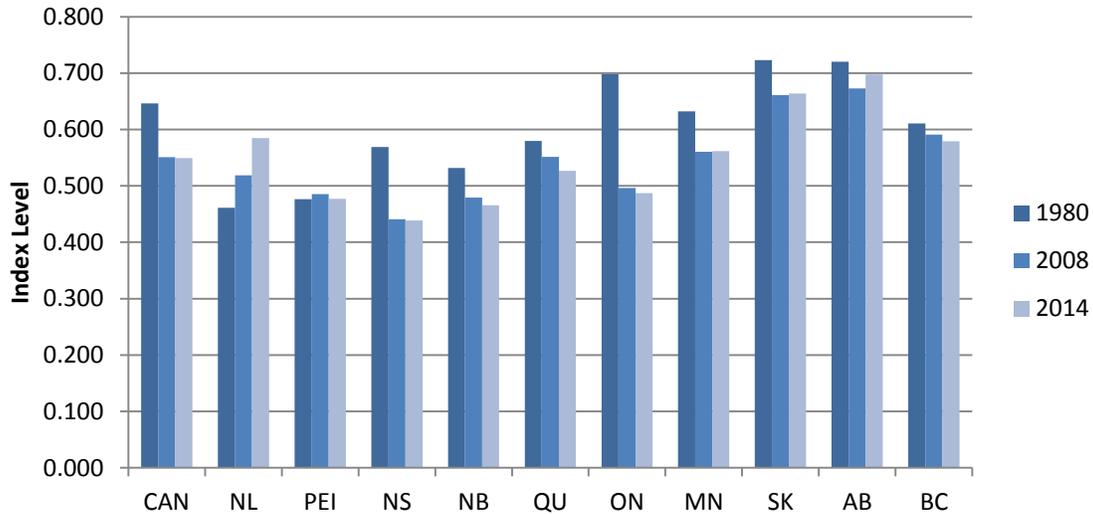
The overall index of economic security for Canada fell 0.097 points (or 15.0 per cent) from 0.646 in 1981 to 0.549 in 2014. The scaled values of two of the components of economic security increased between 1981 and 2014: the risk from single parent poverty by 0.202 points and the risk of poverty in old age by 0.366 points. During the same period, the index from the financial risk from unemployment was essentially unchanged, decreasing only 0.002 points. As such, the decline in overall economic security in Canada over the 1981-2014 period was driven almost exclusively by the decrease in security from the financial risk from illness, which fell by 0.401 points (or 49.7 per cent). The large weight assigned to this risk amplified its role in determining the evolution of the overall economic security domain.

As was noted earlier in the report, the fall in the security domain dampened the overall upward trend in the Index of Economic Well-being arising from the increase in the consumption flows and stocks of wealth domains. Simply put, the more than doubling of the share of personal disposable income going to health care had the most major negative effect on economic well-being in Canada in the 1981-2014 period, as measured by the Index of Economic Well-being.

b. Provinces

Alberta and Saskatchewan were the provinces with the highest scores in the economic security domain in 2014, with scores of 0.697 and 0.664 (Chart 52). Between 1981 and 2014, measured economic security declined in every province except Newfoundland and Labrador and Prince Edward Island, where it increased 26.9 per cent and 0.1 per cent, respectively. The largest decline was 30.3 per cent in Ontario. Newfoundland and Labrador's increased economic security reflects the fact that it was one of two provinces in which security from the financial risk of illness increased over the 1981-2014 period (Chart 52). Prince Edward Island saw a smaller improvement in security from financial risk of illness than Newfoundland and Labrador, which reflected in the marginal improvement of its index of economic security. The declines in economic security in every other province were all driven by rising out-of-pocket expenditures on health care.

Chart 52: Index of the Security Domain in Canada and the Provinces, 1981, 2008, and 2014



Source: IEWB database.

III. Sensitivity Analysis

In this section, we explore the sensitivity of our results to the choice of the weights that are assigned to the four domains of well-being. In the literature, most composite indices assign equal weight to each component. The best known example is probably the Human Development Index, which assigns equal weight to sub-indices of education, health and access to resources (i.e. the log of GDP per capita). The main baseline results we report continue in this tradition, but there is no objective sense in which this weighting scheme is preferable to all others. The choice of weights is a value judgment, and the IEWB is designed to make that judgment as transparent as possible. There are defensible alternative weighting schemes, and we would like to know the robustness of our qualitative findings to changes in the weights.

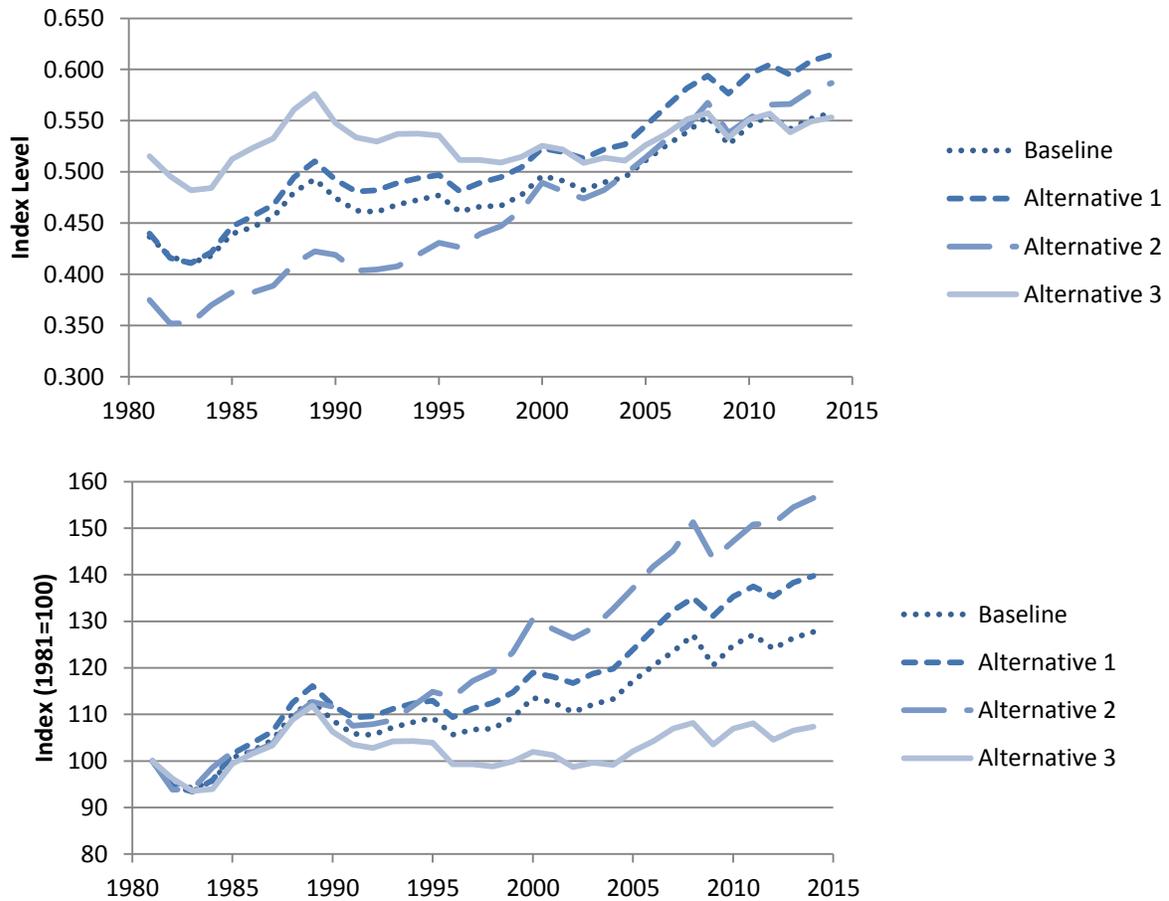
Exhibit 4: Weighting Schemes for Sensitivity Analysis

Weights	Consumption	Wealth	Equality	Security
Baseline	0.25	0.25	0.25	0.25
Alternative 1	0.40	0.10	0.25	0.25
Alternative 2	0.33	0.33	0.00	0.33
Alternative 3	0.20	0.10	0.40	0.30

We compute the Index of Economic Well-being under three alternative weighting schemes. They are outlined in Exhibit 4. The baseline results are those reported earlier in this report, with each domain given equal weight. Alternative 1 keeps the weights for equality and security unchanged, but shifts weight from wealth stocks to consumption flows. This is reasonable if it is believed that people value current consumption more than accumulated stocks of wealth. Note that these were the weights that we used in the original estimates of the Index (Osberg and Sharpe, 1998). Although these weights do not

exactly reflect the proportion of national income that Canadians collectively choose to invest rather than consume in a typical year, the implied 4:1 ratio of the value of consumption relative to savings is far closer than the 1:1 ratio in the baseline IEWB. Alternative 2 assigns zero weight to distributional concerns; the weight placed on both inequality and poverty is set to zero.³¹ Alternative 3 was used by the French business magazine *L'Expansion* (Dedieu, 2009). It assigns high weights to economic equality and security and lower weights to consumption and wealth.

Chart 53: Index of Economic Well-being under Baseline and Alternative Weights



Source: IEWB database.

A. Alternative 1: Consumption Weighted More Heavily than Wealth

i. Canada

Under Alternative 1, the scaled value of the overall Index of Economic Well-being for Canada was 0.614 in 2014, up from 0.440 in 1981 (Chart 53). Recall that the baseline estimates for 1981 and 2014 were 0.437 and 0.558, respectively. Shifting weight from wealth to consumption raised the level of the Index in 2014 by 0.056 points

³¹ If emphasizing distributional issues is thought to be 'left-wing', then putting zero weight on such issues might be thought to be an extreme 'right-wing' perspective.

(or 10.0 per cent), and increased the absolute growth of the Index over the 1981-2014 period from 0.121 points to 0.174 points. These changes reflect the fact that the consumption domain index experienced strong growth over the period and was substantially greater in value than the other domain indices in 2014 (Chart 7). Since consumption grew faster than wealth over the period (0.545 points versus 0.187 points), and since the scaled values of consumption for Canada exceed the scaled values of wealth (0.795 versus 0.416 in 2014),³² it is unsurprising that shifting weight from the wealth domain to the current consumption domain increases both the value and the growth rate of the overall Index.

ii. Provinces

The change in weighting (that is, giving greater weight to consumption at the expense of wealth) has no effect on the ranking of provinces with the highest and lowest Index values in 2014. As before, Alberta had the highest 2014 overall Index value, at 0.784. This value is very close to the value of 0.754 that was computed for Alberta under the baseline weighting scheme. Prince Edward Island and New Brunswick remain the two provinces with the lowest Index values in 2014, with overall Index scores of 0.551 and 0.563 respectively. The change in weights does have a more significant impact on the levels of the Index, as the baseline estimates were 0.494 and 0.508 for Prince Edward Island and New Brunswick respectively. Despite changing levels, the ranks of the bottom provinces are not affected by changing weights. This reflects the fact that Alberta has similar scaled values for consumption and wealth, whereas consumption is significantly larger than wealth (in scaled terms) in Nova Scotia and New Brunswick.

The ranking of the remaining provinces by IEWB level does change somewhat under the alternative weights (Exhibit 5). The most noteworthy change among these provinces is that Nova Scotia's 2014 Index value increases from 0.516 to 0.603 when the weight on consumption is increased, moving it from eighth to fifth among all provinces in terms of overall well-being. Nova Scotia's scaled consumption value is slightly above the Canadian average, while its scaled wealth value is significantly below the average. As a result, shifting weight from wealth to consumption improves Nova Scotia's measured well-being. The opposite effect is observable in Saskatchewan, where shifting some weight from wealth to consumption drops its well-being ranking from second to fourth.

³² Note that the actual dollar value of per-capita wealth is larger than the dollar value of per-capita consumption flows. The reverse is true of the *scaled* values because of the linear scaling technique; the range of values for wealth is larger than the range of values for consumption because there is greater cross-provincial variation in wealth than in consumption per capita. This results in lower scaled wealth values than scaled consumption values for Canada.

Exhibit 5: Ranking of Provinces According to Economic Well-being under Baseline and Alternative Weights

		<u>Level, 2014</u>			
		Baseline	Alternative 1	Alternative 2	Alternative 3
Highest well-being		Alberta	Alberta	Alberta	Alberta
		Saskatchewan	Newfoundland and Labrador	Saskatchewan	Newfoundland and Labrador
		Newfoundland and Labrador	Canada	British Columbia	Saskatchewan
		Canada	British Columbia	Newfoundland and Labrador	Manitoba
		Manitoba	Saskatchewan	Manitoba	Canada
		British Columbia	Nova Scotia	Canada	Québec
		Québec	Manitoba	Ontario	Nova Scotia
		Ontario	Ontario	Nova Scotia	New Brunswick
		Nova Scotia	Québec	Québec	British Columbia
		New Brunswick	New Brunswick	New Brunswick	Prince Edward Island
Lowest well-being		Prince Edward Island	Prince Edward Island	Prince Edward Island	Ontario

		<u>Growth Rate, 1981-2014</u>			
		Baseline	Alternative 1	Alternative 2	Alternative 3
Fastest IEWB growth		Newfoundland and Labrador	Newfoundland and Labrador	Newfoundland and Labrador	Newfoundland and Labrador
		New Brunswick	New Brunswick	Prince Edward Island	New Brunswick
		Prince Edward Island	Prince Edward Island	New Brunswick	Prince Edward Island
		Saskatchewan	Nova Scotia	Québec	Saskatchewan
		Nova Scotia	Manitoba	Nova Scotia	Manitoba
		Manitoba	Québec	Canada	Nova Scotia
		Québec	Saskatchewan	Manitoba	Alberta
		Canada	Canada	British Columbia	Québec
		Alberta	Alberta	Saskatchewan	Canada
		British Columbia	British Columbia	Ontario	British Columbia
Slowest IEWB growth		Ontario	Ontario	Alberta	Ontario

Source: IEWB database.

Over the 1981-2014 period, every province experienced faster growth in measured well-being under Alternative 1 than under the baseline weighting scheme. This reflects the strong growth of consumption relative to wealth in every part of Canada. However, the differences in the growth of the baseline Index and the Alternative 1 Index

are not large in magnitude. As noted above, the growth of the Index for Canada as a whole over the 1981-2014 period was 0.121 points under the baseline weights and 0.176 points under Alternative 1 – a difference of just 0.055 points in growth. At the provincial level, the largest difference in growth over the period was 0.066 points in Nova Scotia. In terms of provincial comparisons of growth, Alternative 1 affects the rankings relative to the baseline almost imperceptibly. Most provinces maintained within one rank of their position under the baseline. Saskatchewan was the only province to move more than one spot, slipping from fourth overall in growth under the baseline to seventh under Alternative 1. Under both weighting schemes, Newfoundland and Labrador, New Brunswick, and Prince Edward Island boasted the three fastest growing indexes. Alberta, British Columbia, and Ontario also ranked in the bottom three positions under both weighting schemes.

Overall, the results are mostly robust to the change from the baseline weights to the Alternative 1 weights. Rankings among the provinces are broadly consistent under either scheme, though Saskatchewan does somewhat falter. A final noteworthy effect of the change is that the annual growth rate of the Index of Economic Well-being for Canada under the Alternative 1 weights is 1.02 per cent per year over 1981-2014, which is much closer to the annual growth rate of per-capita GDP (unscaled) over the period. The consumption domain is the main driver of the Index and consumption is itself a large component of GDP, so it is no surprise that placing greater weight on the consumption domain brings the Index more in line with per-capita GDP. This reinforces the idea that per-capita GDP growth can be a proximate indicator of growth in well-being *if* one places significant value on per-capita consumption relative to other dimensions of well-being. Or, put another way: the more one values things *other than* consumption, the less appropriate is per-capita GDP as an indicator of economic well-being.

B. Alternative 2: No Weight Given to Economic Equality

i. Canada

Under Alternative 2 it is assumed that inequality and poverty do not matter to average economic well-being. As such, no weight at all is given to the equality domain, and equal weights are given to each of the remaining three domains. In 2014, this version of the overall Index took a value of 0.587 for Canada as a whole, up 0.212 points from 0.375 in 1981 (Chart 53). For reference, the baseline Index increased by 0.121 points from 0.435 in 1981 to 0.558 in 2014. As before, the alternative weights lead to a greater measured improvement in well-being over the 1981-2014 period because the fast-growing consumption and wealth domains are more heavily weighted under Alternative 2 than under the baseline weights. However, Alternative 2 also places a greater weight on the economic security domain than the baseline weights do. Since the scaled index of economic security declined from 0.646 to 0.549 over the period, increasing that domain's weight from 0.25 to 0.33 further amplifies its downward influence on measured well-being and partly offsets the positive impact of the higher consumption and wealth weights on the growth of the Index.

ii. Provinces

Alberta and Saskatchewan remain the two provinces with the highest measured well-being under Alternative 2, with index values of 0.784 and 0.605 respectively. The magnitude of Alberta's lead over second place has remained stable relative to the baseline Index at 29.5 per cent more than Saskatchewan. This reflects Alberta's particularly high score in the economic security domain, a result driven by its low unemployment risk and low poverty rates for single parent families and elderly families, and Saskatchewan's relatively low score in economic equality. The combination of both of these effects causes the index in both provinces to increase at approximately the same rate.

In other provinces, results were not much more sensitive to the change of weights. Prince Edward Island has the lowest measured well-being for 2014 under Alternative 2, at 0.482, just as it did under the baseline weights, at 0.494. Similarly, New Brunswick still ranks in second last among the provinces under Alternative 2 as it did under the baseline.

In every province but Saskatchewan, measured economic well-being grew faster under Alternative 2 than under the baseline weights over the 1981-2014 period. Newfoundland and Labrador experienced the largest absolute change over the period under both weighting schemes – 0.323 points under the baseline and 0.342 points under Alternative 2. Saskatchewan's economic well-being grew at nearly the same rate with either weighting scheme, 0.185 points under the baseline and 0.184 points under Alternative 2. The largest difference in overall growth between the two weighting schemes was 0.148 points in British Columbia.

Overall, Alternative 2 changes the results (relative to the baseline weights) no more than did Alternative 1. The exclusion of economic equality from the Index only decreased the measured well-being of Prince Edward Island and New Brunswick. Interestingly, the compound annual growth rate of the overall Index for Canada over the 1981-2014 period was 1.37 per cent per year – higher than the growth rate of per-capita GDP over the same period (1.30 per cent per year). This reverses the prior result that the growth rate of per-capita GDP exceeded that of the IEWB (under the baseline weights). This impressive growth is driven by the fact that placing less weight on one dimension of well-being implicitly requires placing more weight on other dimensions of well-being. In particular, Alternative 2 places greater weight on the fast-growing consumption and wealth domains at the expense of the economic equality domain, which had negative annual growth over the period. To the normative reader who does not consider income distribution and poverty to be an important consideration for the measurement economic well-being, this result in particular suggests that the economic well-being of Canadians is improving even faster than real per-capita GDP growth would imply.

C. Alternative 3: High Weights Given to Economic Equality and Security

i. Canada

As shown in Exhibit 4, Alternative 3 gives greater weights to economic equality (0.4) and security (0.3) than to consumption (0.2) and wealth (0.1). Under these weights, the value of the overall Index in 2014 was 0.553, up 0.038 points from 0.515 in 1981 (Chart 53). By comparison, the baseline Index increased by 0.121 points from 0.437 in 1981 to 0.558 in 2014.

It comes as no surprise that the 2014 Index value under Alternative 3 is substantially lower than the 2014 baseline value. The scaled index of economic equality declined from 0.621 to 0.470 between 1981 and 2014, and the index of the economic security domain declined from 0.646 to 0.549 over the same period. In contrast, the indices of the consumption and wealth domains both grew over the period, and in 2014 the index of the consumption domain had the largest value of any of the four domain indices at 0.795. Shifting weight away from consumption and wealth and toward equality and security therefore dampens the growth of the overall IEWB and leads to lower measured well-being. On the other hand, measured well-being in 1981 is higher under Alternative 3 than under baseline weighting. This is due to the high values of the scaled indices of security and equality and the low values of the scaled indices of consumption and wealth in 1981. This occurs due to the negative growth of equality and security over the 1981-2014 period and the positive growth of consumption and wealth over the same period. Therefore, this observation is not surprising.

For Canada as a whole, the compound annual growth rate of the overall Index under Alternative 3 was 0.22 per cent per year over the 1981-2014 period, well below the growth rates computed under the other weighting schemes and below the growth rates of per-capita GDP (1.30 per cent per year) and the baseline Index (0.74 per cent per year).

ii. Provinces

Alberta is once again the top province in terms of measured well-being, with an IEWB value of 0.741 under Alternative 3. Alberta's scores in the equality and security sub-indices are above the Canadian average, so deemphasizing the consumption and wealth components (where Alberta also scores very highly) does not affect its ranking relative to the other provinces. Albeit, Alberta's overall Index value is lower in magnitude under Alternative 3 than under the baseline and the other Alternatives.

Ontario has the lowest IEWB score for 2014 under Alternative 3 at 0.512. The next lowest provinces were Prince Edward Island and British Columbia, at 0.520 and 0.524 respectively. Ontario placed no lower than seventh under the other two alternatives and the baseline, but was pulled down by its second last place in the index of equality and eighth place in the index of security. While British Columbia was the province with the lowest score in the economic equality index by a substantial margin, it was somewhat supported by a relatively high score in the index of economic security. Notably, this was the only weighting scheme where Prince Edward Island did not rank last, bolstered by its strong showing in the index of equality.

In every province, the growth rate of the IEWB over the 1981-2014 period was lower under Alternative 3 than under the baseline. In two provinces, Ontario and British Columbia, Alternative 3 saw negative growth in the IEWB. This result is driven by the shift in weight away from fast-growing consumption and wealth and toward the equality and security domains, which have experienced negative growth in most parts of the country.

D. Overall Summary of Sensitivity Analysis

Normative judgments regarding the importance of the different domains of economic well-being can matter, but in the alternative scenarios presented here, they had few significant effects on the rankings of provinces according to the Index of Economic Well-being. The baseline IEWB results are fairly robust to the alternative weighting schemes we have examined. Under all four weighting alternatives, measured well-being is improving in all provinces, with the exception of Ontario and British Columbia under Alternative 3. It is improving most quickly in Newfoundland and Labrador, Prince Edward Island, and New Brunswick under all four alternative weighting schemes, largely because these three provinces had the lowest levels of well-being at the beginning of the period. Alberta has the highest level of economic well-being for 2014, while New Brunswick and Prince Edward Island rank second last and last respectively under three of the four weighting schemes. As Chart 53 illustrates, the pattern of the Index over time is quite similar under all the weighting schemes.

Some quantitative results are sensitive to the change of weights. In particular, the comparison between the IEWB and per-capita GDP is affected by the choice of weights. The growth gap between per-capita GDP and the IEWB over the 1981-2014 period is smaller when the consumption domain receives a larger weight. The fact that different weighting schemes affect trends in the overall index reflects the fact that the IEWB is designed so as to make it possible for different people to compute a composite index of overall well-being in accordance with their personal values. Individuals have the right to differ in their preferences over the dimensions of well-being, and it is natural that such differences should affect their assessment of measured well-being. Because the Index of Economic Well-Being accommodates such differences in a transparent way it enables observers to assess for themselves how much differing values matter for the perception of trends in economic well-being.

IV. Conclusion

This report presents revised estimates of the Index of Economic Well-being for Canada and the provinces for the 1981-2014. Our results show that since 1981, the economic well-being of Canadians has improved considerably. The overall Index of Economic Well-being rose 0.122 points from 0.435 in 1981 to 0.557 in 2014 in Canada. This amounts to a 28.0 per cent total increase over the period, or growth of 0.75 per cent per year.

The increase in well-being was driven by robust growth in consumption and stocks of wealth. The index of the consumption domain increased 3.63 per cent per year over the 1981-2014 period, while the index of the wealth domain grew 1.83 per cent per year.

However, the growth of economic well-being was hindered by declines in economic equality and security. The index of the economic equality fell by 0.152 points (or 0.84 per cent per year) over the 1981-2014 period, due to increased poverty intensity. The index of the economic security declined by 0.097 points (or 0.49 per cent per year) over the same period, largely as a result of rising out-of-pocket healthcare expenditures.

Among the provinces, Alberta and Saskatchewan had the highest levels of economic well-being in 2014. New Brunswick and Prince Edward Island had the lowest levels. Economic well-being increased in every province over the 1981-2014 period, driven by rising consumption and wealth. As in the case of Canada as a whole, growth in economic well-being in the individual provinces was somewhat held back by declining economic security.

Sensitivity analyses show that our key baseline results are fairly robust to the use of different weights for the four domains. Under all four of the weighting alternatives we examined, economic well-being improved in Canada and in all provinces over the 1981-2014 period, with the exception of Ontario and British Columbia under Alternative 3. It improved most quickly in Newfoundland and Labrador across all of the alternatives. Alberta always had the highest level of economic well-being in 2014, while Prince Edward Island ranked last under three of the four alternative weighting schemes.

The 2009 recession caused declines in both real GDP per capita and the IEWB. In 2009, real GDP per capita fell 4.05 per cent from its 2008 value and the IEWB estimate fell 5.03 per cent. The recession also caused declines in the real GDP per capita of nine of the ten provinces and declines in the IEWB for eight of the ten provinces. By 2014, two provinces (Newfoundland and Labrador and New Brunswick) still had not reach the levels of real GDP per capita below they had set in 2008. Two other provinces (Alberta and British Columbia) had still not attained their respective 2008 levels of economic well-beings, as measured by the Index, largely due to losses in the equality domain. Evidently, the two paint very different pictures of well-being.

Future updates of the Index for Canada and the Provinces should continue to discuss any lasting effects of the 2009 recession. Extending the scope of the study to 2015 and beyond will help the Index study new shocks which have hit the Canadian economy since 2014, such as the fall of the loonie versus the greenback and the steep drop in the price of oil to below \$40 a barrel.

The Index remains a work in progress. It will undoubtedly undergo further modifications as research on the conceptualization of economic-well-being, and ways to capture these concepts empirically, evolves. For example, CIHI now releases a disaggregated series on private health care expenditures which will allow future iterations

to be more selective regarding which components we choose to include in our out-of-pocket healthcare expenditures. Future iterations of the Index should also strive to improve our regrettable expenditures component of the consumption domain, as our current measure is based on a limited data series. Our measure of greenhouse gas emissions in the wealth domain could also be improved by broadening its scope to the costs of more sources of pollution (e.g. water pollution). The wealth domain could also include some measure of financial wealth, as financial instruments such as pension funds affect future consumption and therefore well-being. Nonetheless, the Index captures more aspects of economic well-being than does real GDP, and is therefore a step in the right direction.

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