

Determinants of Trends in Living Standards in Canada and the United States, 1989-2000

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The gap between Canadian and U.S. living standards widened considerably in the 1990s. Americans, on average, were 16 per cent better off in terms of real personal income per capita in 2000 than in 1989, while Canadians experienced only a 5 per cent increase in real incomes. In the first half of this period the major source of the divergence in real income trends between the two countries was Canada's inferior labour market performance. Since the mid-1990s, in contrast, Canada's lagging productivity growth has been the key factor behind our relative income deterioration. This article documents these developments by examining trends in three measures of living standards in Canada and the United States.

GDP Per Capita

The most widely used definition of living standards is real GDP per capita. According to this measure, living standards in Canada advanced by 1.35 per cent per year over the 1989-2000 period, compared to 2.20 per cent in the United States (Table 1). This slower growth in Canada has meant that GDP per capita declined from 86.0 per cent of the U.S. level in

1989 to 78.5 per cent in 2000. The lion's share of the relative decline took place in the 1989-1996 period (Figure 1 and Table A1 in the appendix). Real GDP per capita rose only 0.28 per cent per year during this period in Canada, compared to 1.43 per cent in the United States, with Canada's relative income falling to 79.4 per cent of the U.S. level in 1996.¹ Since 1996 real GDP growth has rebounded in Canada advancing at 3.26 per cent per year. Real GDP per capita growth has also picked up in the United States, to 3.56 per cent), but the gap between growth rates has fallen from 1.15 percentage points in the 1989-1996 period to 0.30 points in the 1996-2000 period.

The rate of increase in per capita real GDP is determined by the rate of change in the number of workers in relation to the total population and the amount of output each worker produces or worker productivity. This former term can in turn be decomposed into the ratio of the working age population to the total population and the employment rate, that is the ratio of employment to the working age population. The employment rate is a function of the labour force participation rate and the unemployment rate.

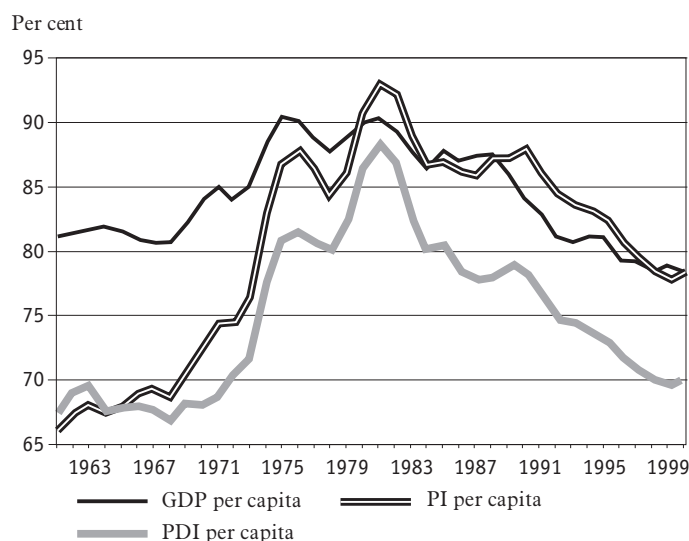
In Canada, the 1.35 per cent average annual increase in real GDP per capita in the 1989-00 period can be decomposed into a 1.20 per cent

Table 1:
Trends in Measures of Living Standards, 1989-2000
(average annual rate of change in real per capita terms)

	GDP	Personal Income	Disposable Personal Income
1989-2000			
Canada	1.35	0.41	-0.02
U.S.	2.20	1.39	1.08
Canada-U.S.	-0.85	-0.98	-1.10
1989-1996			
Canada	0.28	-0.41	-0.84
U.S.	1.43	0.67	0.58
Canada-U.S.	-1.15	-1.08	-1.42
1996-2000			
Canada	3.26	1.85	1.43
U.S.	3.56	2.66	1.96
Canada-U.S.	-0.30	-0.81	-0.53

Source: Statistics Canada, Bureau of Economic Analysis, and Bureau of Labor Statistics. Personal income and personal disposable income are deflated using the CPI.

Figure 1:
Relative Aggregate Income Trends in Canada
(Canada as per cent of US)



rise in output per worker and a slight increase of 0.15 per cent in the share of employment in the total population (Table 2). The stability of this latter variable reflects two offsetting trends, the increasing share of the population of working

age (0.26 per cent) and the decreasing employment-population ratio (-0.11 per cent) arising from a 0.18 percentage point fall in the labour force participation rate (Table 3).

In the United States, the 2.20 per cent average annual rate of increase in real GDP per capita over the 1989-00 period can be decomposed into a 1.88 per cent increase in output per worker and a 0.31 per cent increase in the proportion of the total population at work. This latter term in turn reflects a 0.10 per cent increase in the relative importance of the working age population and a 0.22 increase in the employment rate or employment/working age population ratio. The decline in the unemployment rate and the rising labour force participation each contributed equally to the growth of the employment rate.

Of the 0.85 percentage points slower real GDP per capita growth over the 1989-2000 period in Canada relative to the United States (2.20 per cent versus 1.35 per cent per year), about 40 per cent of the differential was due to the relative worsening of labour market conditions in Canada (-0.33 points) and 80 per cent was due to slower productivity growth (-0.67 points). More favourable trends in demographic structures in Canada offset somewhat (0.16 points or 20 per cent) these two negative developments.

The relative importance of these factors varied significantly between the first and second parts of the decade. In 1989-1996, the deterioration of Canada's labour market was by far the most important factor in the deterioration of living standards. In 1996-2000, in contrast, lagging productivity relative to that experienced in the United States was the driving force behind the widening of the Canada-U.S. income gap.

In 1989-96, the 0.28 per cent average annual increase in real GDP per capita in Canada can be decomposed into a 0.98 per cent rise in output per worker, offset by a 0.69 percentage point

drop in the share of employment in the total population, driven by the 0.87 point fall in the employment ratio. In the United States, the 1.43 per cent rise in real GDP per capita can be decomposed into a 1.34 per cent increase in output per worker and a 0.09 per cent increase in the employment/total population ratio (0.05 per cent for the employment rate). Consequently, about 70 per cent of Canada's slower growth in real GDP per capita during this period can be accounted for by labour market factors, primarily the falling employment rate, and 30 per cent by slower productivity growth.

In 1996-2000, real GDP per capita in Canada advanced at a very strong 3.26 per cent average annual rate, with output per worker up 1.60 per cent and the employment rate a very strong 1.23 per cent (1.64 per cent for the employment/total population ratio). In the United States, real GDP per capita increased 3.56 per cent per year, with output per worker growth accounting for the lion's share of the gains (2.83 per cent), and the 0.51 per cent rise in the employment rate accounting for most of the rest. All of the gap in growth in real GDP per capita between Canada and the United States in 1996-2000 (0.30 percentage points) can thus be accounted for by slower relative productivity growth in Canada (1.27 points), with our faster employment rate growth (0.72 points) and more favourable demographic situation (0.21 points) offsetting much of this development.

It is important to note that the greater importance of the productivity growth gap in accounting for the rising income gap between Canadians and Americans in the second half of the 1990s relative to the first half does not reflect an absolute deterioration in Canada's productivity performance. Indeed, total economy output per worker growth actually picked up from 0.98 per cent per year in 1989-96 to 1.60 per cent in 1996-2000.

Table 2:

Sources of GDP Per Capita Growth in Canada and the United States, 1989-2000
(average annual rate of change)

	Canada	United States	Canada-U.S.
1989-2000			
GDP per capita	1.35	2.20	-0.85
Output per Worker	1.20	1.88	-0.67
Employment/Total Population	0.15	0.31	-0.16
Working Age Population /Total Population	0.26	0.10	0.16
Employment/WAP	-0.11	0.22	-0.33
1989-1996			
GDP per capita	0.28	1.43	-1.15
Output per Worker	0.98	1.34	-0.34
Employment/Total Population	-0.69	0.09	-0.78
Working Age Population /Total Population	0.18	0.04	0.14
Employment/WAP	-0.87	0.05	-0.92
1996-2000			
GDP per capita	3.26	3.56	-0.30
Output per Worker	1.60	2.83	-1.27
Employment/Total Population	1.64	0.71	0.93
Working Age Population /Total Population	0.40	0.19	0.21
Employment/WAP	1.23	0.51	0.72

Source: Statistics Canada, Bureau of Economic Analysis, and Bureau of Labor Statistics.

Rather, it reflects the much greater acceleration in U.S. productivity growth from 1.34 per cent to 2.83 per cent. Indeed, the productivity acceleration was nearly three times greater in the United States than in Canada between the periods (1.49 points versus 0.56 points).

Personal Income

The most relevant measure of income trends from a living standards perspective is probably personal income per capita measured in real terms (excluding inflation). In 2000, per capita personal income in Canada was up 4.6 per cent from the level of 1989 (Table 1) and 7.6 per cent higher than in 1996. During the second half of the 1990s (1996-2000), Canadians enjoyed a 1.85

Table 3

Labour Market Developments in Canada and the United States, 1989-2000

(average annual rates of change unless otherwise indicated)

	Canada 1989-2000	U.S. 1989-2000	Canada 1989-96	U.S. 1989-96	Canada 1996-2000	U.S. 1996-2000
Working Age Population	1.37	1.08	1.40	1.05	1.33	1.12
Participation Rate	-0.18	0.10	-0.54	0.07	0.46	0.14
Labour Force	1.19	1.18	0.85	1.13	1.80	1.27
Employment	1.26	1.30	0.52	1.11	2.59	1.64
Unemployment Rate (total percentage point change)	-0.73	-1.26	2.09	0.13	-2.82	-1.39
Employment-Pop Ratio	-0.11	0.22	-0.87	0.05	1.23	0.51
Real Output	2.48	3.20	1.52	2.46	4.18	4.51
Output Per Worker	1.20	1.88	0.98	1.34	1.60	2.83

per cent average annual increase in living standards, compared to a decline of 0.41 per cent in 1989-1996. In the United States, per capita personal income rose 16.4 per cent or 1.39 per cent per year during the 1989-2000 period, with an average annual increase of 0.67 per cent in 1989-1996 and 2.66 per cent in 1996-2000.

With the more rapid growth of personal income in the United States, personal income in Canada fell from 87.2 per cent of that in the United States in 1989 to 80.8 per cent in 1996 to 78.3 per cent in 2000 (Figure 1 and Table A1 in the appendix).

Real personal income growth was considerably slower than per capita GDP growth in both Canada and the United States in all periods. This discrepancy is largely explained by the greater increase in the Consumer Price Index (CPI), which is used to deflate personal income, than in the GDP deflator, which is used to deflate GDP. For example, in Canada, the CPI grew at a 0.52 per cent faster pace than the GDP deflator (2.24 per cent versus 1.72 per cent) between 1989 and 2000 because of the fall in the price of investment goods, driven by very large price declines in computers. Slightly more rapid nominal GDP

growth than personal income growth also accounted for some of the discrepancy between real GDP per capita and real personal income per capita in Canada.

Disposable Personal Income

A third definition of living standards is per capita personal disposable income, or income after taxes. One limitation of this definition is that it only captures the private consumption possibilities, as it excludes the provision of public services such as health and education that are financed with tax revenues. Individuals are not necessarily worse off when tax increases lower disposable income but result in a greater supply of public services.

According to this definition, there was even less progress in raising Canadian living standards in the 1990s than registered by personal income trends. Real disposable income per capita was basically stagnant (-0.02 per cent per year) between 1989 and 2000. The gap between growth in personal income and personal disposable income (0.43 points) is explained by the rising proportion of personal income going to taxes

in the 1990s (Figure 2). There were very divergent trends in personal disposable income in Canada within the 1989-2000 period. From 1989 to 1996, it fell at a rate of 0.84 per cent per year, and has since advanced at a 1.43 per cent average annual rate.

In the United States real disposable personal income increased at a 1.08 per cent average annual rate in 1989-2000, with much more rapid growth taking place in the 1996-2000 than in 1989-1996 (1.96 per cent versus 0.58 per cent).²

In absolute terms, personal disposable incomes in Canada fell from 79.3 per cent of the U.S. level in 1989 to 71.8 per cent in 1996, to 70.3 per cent in 2000.

Productivity Trends

As noted earlier, productivity, defined as output per person employed in the aggregate economy, rose at a 1.20 per cent average annual rate in Canada in the 1989-2000 period (Table 2). Productivity growth was weak in the early years of the decade because of the recession, but picked up in the second half of the decade when stronger economic growth resumed (Figure 3).

In the United States, productivity advanced at a 1.88 per cent average annual rate over the 1989-2000 period. Between 1989 and 1996 it advanced at a tepid 1.34 per cent average annual rate. Since 1996, it has picked up to a very strong 2.83 per cent rate. This development is seen by many observers as evidence of an upward structural shift in trend productivity associated with the information technology revolution and is discussed in the articles by Jack Triplett and Barry Bosworth and Kevin Stiroh in this issue. Canada has not yet seen this burst in productivity growth, which may in part account for the stronger employment growth.

Figure 2:
Personal Disposable Income as Share of Personal Income in Canada and US

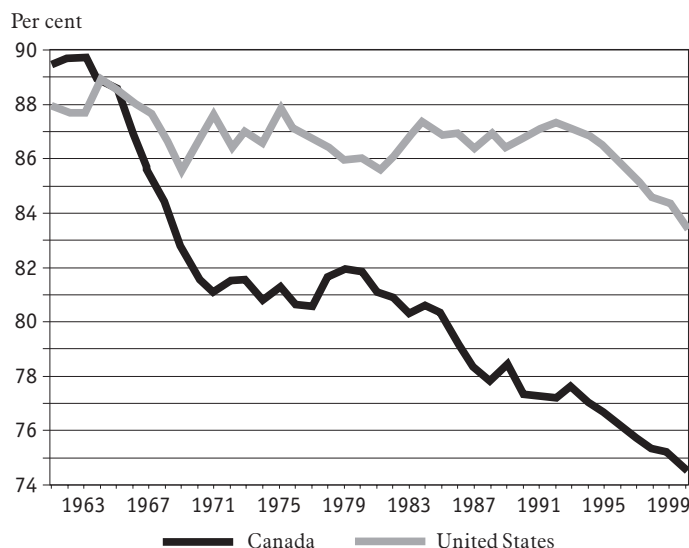
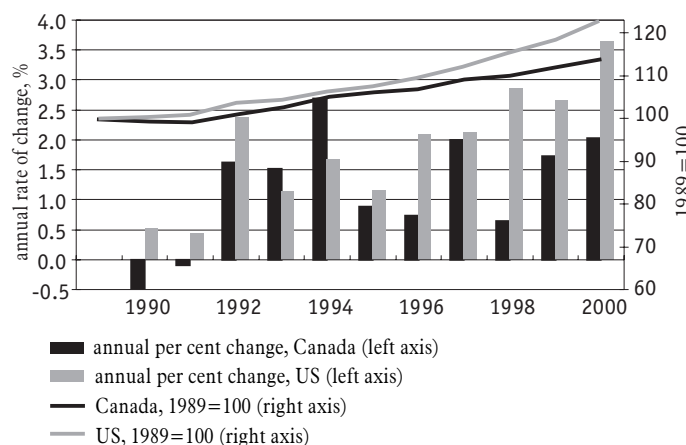
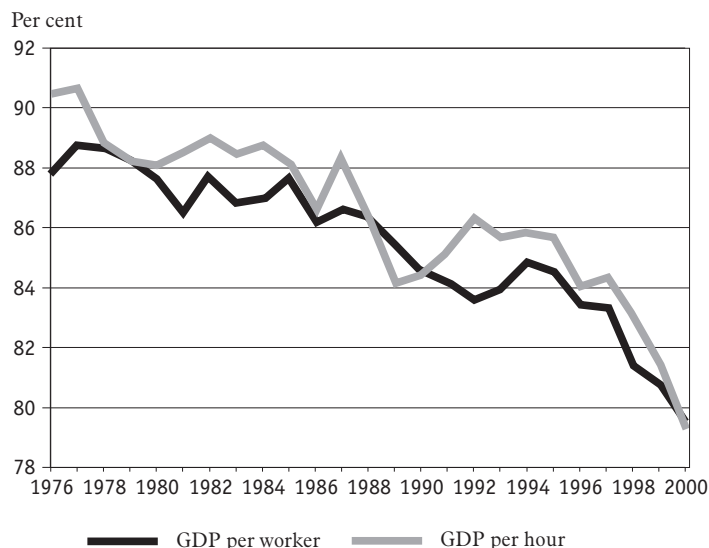


Figure 3:
Real GDP per worker in Canada and the United States, 1989-2000



Canada's weaker productivity growth in both the first and second halves of the 1990s resulted in a decline in our aggregate productivity level relative to that in the United States (Figure 4). Output per worker fell from 85 per cent of the US level in 1989 to 83 per cent in 1996, then plummeted to 79 per cent in 2000 as the gap between Canadian and US productivity growth expanded with the acceleration of U.S. productivity growth. Trends in relative output per hour have followed a similar pattern.

Figure 4:
Relative Labour Productivity Trends in Canada
(Canada as per cent of US)



Conclusion

The precipitous decline in Canada's standard on living since 1989 relative to that in the United States has its roots in our weaker productivity performance, and to a lesser degree, in our inferior labour market performance. In terms of the decline in the relative level of real GDP per capita over the 1989-2000 period, about four fifths is directly attributable to weaker productivity growth and two fifths to the relative decline in the employment/working age population ratio or employment rate. The positive contribution of a greater increase in the relative size of the working age population in Canada reduced the gap by one fifth.

The falling employment rate associated with our more severe economic slowdown was particularly important in the first half of the 1990s in accounting for the widening Canada-U.S. income gap. The strong employment growth registered by the Canadian economy in the second half of the 1990s has however reversed much of these income losses. In contrast, Canada's relative productivity performance has deteriorated steadily through the 1990s, with the pace of deterioration accelerating after 1996 with the productivity acceleration in the United States.

Notes

* This paper draws from "A Comparison of Canadian and U.S. Labour Market Performance, 1989-2000, CSLS, March 2001 (posted at www.csls.ca under the International Productivity Monitor). Email csls@csls.ca.

- 1 International comparisons of real income or living standards levels are more difficult than comparisons of growth rates (which use domestic or own-country currencies) because they require the use of purchasing power parity exchange rates, which are subject to a margin of error. According to Statistics Canada, the bilateral Canada-U.S. purchasing power parity in 1992, the base year, was 1.23 Canadian dollars per U.S. dollar (\$0.813 U.S. per Canadian dollar). This PPP has been used in the comparisons in this article.
- 2 It is interesting to note that the personal tax burden increased at a faster rate in the United States than in Canada over the 1996-2000 period. The share of taxes in personal income (1-PDI/PI) rose 1.2 percentage points from 23.0 per cent in 1996 to 24.2 per cent in 2000 in Canada while it advanced 2.3 points in the United States from 13.3 per cent to 15.6 per cent.

Appendix

Table A1:

Relative Aggregate Income Trends in Canada and the United States

Year	Canada			United States			Canada as % of US		
	GDP per capita, 1992 US\$	PI per capita 1992 US\$	PDI per capita 1992 US\$	GDP per capita 1992 US\$	PI per capita 1992 US\$	PDI per capita 1992 US\$	GDP per capita	PI per capita	PDI per capita
1961	9,851	7,293	6,599	12,140	10,992	9,768	81.14	66.35	67.55
1962	10,327	7,699	6,971	12,677	11,404	10,101	81.47	67.51	69.01
1963	10,655	7,940	7,189	13,036	11,654	10,316	81.73	68.13	69.69
1964	11,141	8,208	7,369	13,602	12,165	10,920	81.91	67.47	67.48
1965	11,646	8,676	7,762	14,292	12,777	11,436	81.49	67.90	67.87
1966	12,184	9,206	8,080	15,057	13,359	11,876	80.92	68.91	68.03
1967	12,322	9,546	8,256	15,266	13,749	12,180	80.71	69.43	67.78
1968	12,775	9,867	8,420	15,836	14,352	12,579	80.67	68.75	66.94
1969	13,262	10,368	8,675	16,158	14,727	12,732	82.08	70.40	68.14
1970	13,422	10,721	8,844	16,000	14,832	12,988	83.89	72.28	68.10
1971	13,864	11,208	9,200	16,328	15,099	13,374	84.91	74.23	68.79
1972	14,316	11,868	9,789	17,031	15,900	13,890	84.06	74.64	70.48
1973	15,163	12,717	10,492	17,843	16,603	14,598	84.98	76.59	71.87
1974	15,571	13,561	11,102	17,576	16,310	14,270	88.59	83.15	77.80
1975	15,689	13,999	11,525	17,341	16,080	14,265	90.47	87.06	80.79
1976	16,330	14,666	11,989	18,133	16,685	14,700	90.05	87.90	81.55
1977	16,695	14,898	12,188	18,785	17,209	15,095	88.88	86.57	80.74
1978	17,201	15,109	12,505	19,612	17,868	15,611	87.70	84.56	80.10
1979	17,750	15,432	12,807	20,014	17,873	15,527	88.69	86.34	82.48
1980	17,774	15,772	13,078	19,734	17,375	15,102	90.07	90.77	86.60
1981	18,084	16,201	13,326	20,021	17,446	15,087	90.33	92.86	88.33
1982	17,344	15,978	13,112	19,427	17,335	15,071	89.28	92.17	87.01
1983	17,644	15,751	12,832	20,085	17,717	15,547	87.84	88.90	82.54
1984	18,469	16,202	13,229	21,359	18,710	16,498	86.47	86.60	80.19
1985	19,288	16,715	13,601	21,984	19,220	16,877	87.74	86.97	80.59
1986	19,604	17,011	13,633	22,528	19,748	17,354	87.02	86.14	78.55
1987	20,150	17,306	13,729	23,087	20,155	17,597	87.28	85.86	78.02
1988	20,848	18,014	14,203	23,833	20,678	18,163	87.47	87.12	78.20
1989	21,011	18,339	14,565	24,438	21,042	18,372	85.98	87.16	79.28
1990	20,749	18,500	14,466	24,609	21,058	18,440	84.31	87.85	78.45
1991	20,107	17,854	13,975	24,232	20,735	18,245	82.98	86.10	76.60
1992	20,047	17,822	13,923	24,704	21,108	18,618	81.15	84.43	74.78
1993	20,264	17,654	13,850	25,093	21,105	18,567	80.75	83.65	74.60
1994	20,983	17,777	13,840	25,854	21,390	18,765	81.16	83.11	73.76
1995	21,329	17,897	13,878	26,298	21,702	18,978	81.11	82.47	73.12
1996	21,425	17,817	13,726	26,988	22,055	19,125	79.39	80.79	71.77
1997	22,129	18,033	13,797	27,917	22,626	19,466	79.27	79.70	70.88
1998	22,659	18,483	14,074	28,861	23,513	20,106	78.51	78.61	70.00
1999	23,499	18,751	14,269	29,798	24,017	20,466	78.86	78.07	69.72
2000	24,363	19,174	14,529	31,036	24,494	20,673	78.50	78.28	70.28

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Table A1 con't

Canada			United States			Canada as % of US			
Average annual rates of growth, %									
61-73	3.66	4.74	3.94	3.26	3.50	3.40	0.39	1.20	0.52
73-81	2.23	3.07	3.03	1.45	0.62	0.41	0.77	2.44	2.61
81-89	1.89	1.56	1.12	2.52	2.37	2.49	-0.62	-0.79	-1.34
89-00	1.35	0.41	-0.02	2.20	1.39	1.08	-0.82	-0.97	-1.09
89-96	0.28	-0.41	-0.84	1.43	0.67	0.58	-1.13	-1.08	-1.41
96-00	3.26	1.85	1.43	3.56	2.66	1.96	-0.28	-0.78	-0.52

Source: Statistics Canada, Bureau of Economic Analysis and Bureau of Labor Statistics.

Note: Personal income and personal disposable income values are deflated using the CPI.

Data for GDP per capita for US recalculated from 1996\$ into 1992\$ with GDP price deflator ratio 1992/1996=0.917.

Data for PI and PDI per capita for US recalculated from 1996\$ into 1992\$ with CPI ratio 1992/1996=0.8942.