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CANADA'S PRODUCTIVITY AND STANDARD OF LIVING: PAST, PRESENT AND FUTURE

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EXECUTIVE SUMMARY

This document provides a brief history of business sector productivity and the standard of living in Canada over the past two and a half decades. It compares Canada's productivity and standard of living, both in terms of levels and growth rates, to those of other OECD countries, most notably the United States. Such an examination reveals that growth in Canada's standard of living has languished, both when compared to the past and to other OECD countries, even though our business sector has enjoyed relatively stable annual growth rates in productivity since the 1980s. The chief contributing factor here has been a poor-performing economy, in terms of both employment and labour force recruitment rates, in the 1990s.

Canadian productivity, however, is not problem-free. Relatively stable growth rates in a period when the performances of other countries have improved and surpassed that of Canada imply a poorer relative productivity record. As a consequence, Canada has had to rely heavily on a depreciating dollar, vis-à-vis the U.S. dollar, to maintain its business sector's competitive position in world markets. In a period of relatively weak domestic and foreign demand – the latter, mostly for commodities – a depreciating dollar has performed the critical short-term function of stabilizing aggregate demand for Canadian goods and services. Yet, in the longer term, the standard of living of any nation is inextricably linked to its productivity, and not its currency exchange rate – particularly so in a post-baby-boom era or an aging-worker economy.

Despite this chequered relative performance, positive economic signs have appeared in Canada since 2000, and this document offers a promising forecast of improved Canadian productivity growth rates in the coming years. It seems that Canada is on the cusp of joining other industrialized countries in a period of rapid and sustained productivity growth as a result of a technology-driven economic boom that is forging a knowledge-based society. Growth in Canada's standard of living is forecast to parallel that of productivity more closely than in the recent past. It is unclear, however, whether growth rates will be sufficient to reverse the widening Canada-U.S. standard-of-living gap that began in the late 1970s.

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WHERE WE ARE COMING FROM …

For most of the 20th century, Canadians have seen their standard of living improve steadily and at a breathtaking pace comparable to that of the United States. As a consequence, Canada emerged from World War II as the second-wealthiest industrialized country of the world. Indeed, those who look beyond the economic data to measure well-being, which would further include social indicators such as health and educational outcomes, as does the United Nations, often conclude that Canada is one of the best nations in which to live. But to a large extent these lofty rankings were attained through a combination of good luck – World War II did not take place on North American soil – and forward-looking investments and visionary policy directions of earlier decades. They are thus more a reflection of the past than a sign of the future. To gain a view of what the future may hold for Canada on this score, a detailed and focused investigation of current demographic and economic trends and the sources of growth is required.

When we strip away the social data and look solely at the current economic statistics relating to well-being, which is after all the fundamental building block of these social indices, a very different picture emerges today. Canada is no longer atop the economic pyramid, nor is it the world's second-wealthiest nation. Moreover, as health and educational outcomes are, in part, determined by health and education spending, which themselves depend on a country's economic performance, it is not surprising that Canada's social well-being ranking has recently fallen from first to third, according to the United Nations scoring system.(1) The more recent poor performance of Canadian productivity was clearly a harbinger of today's declining social welfare standing, and Canada risks further declines on both these scores unless productivity-enhancing actions are taken.

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(1) Any ranking of countries on these terms, however, is by its very nature subjective. This subjectivity is manifest in the weights and criteria chosen to establish a rank. A few analysts argue that Canada's declining rank may simply reflect a shift in the subjective view of the United Nations researchers, who have modified this index in the intervening years, rather than a material change in Canada's performance.

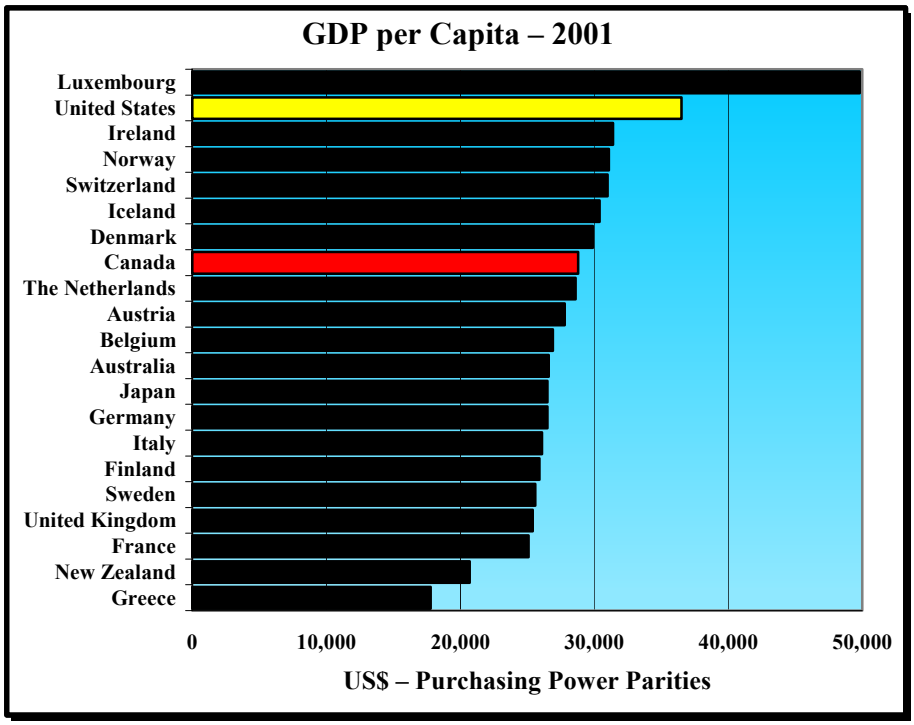
Since the 1980s, Canada has seen its standard of living erode relative to that of other advanced countries, such as many West European states, some "Asian Tiger" nations and the United States. There are two sources for this economic malaise: (1) a weak macroeconomic record and (2) a slower growth rate in productivity relative to these countries. To some extent, these poor performances have a public policy root. In comparison to several other advanced countries, Canada has in some respects been slow to adapt its institutional framework to the new economic environment, which is characterized by a process of globalization and the emergence of a knowledge-based economy. Canada's response to the former, with the adoption of the Canada-U.S. Free Trade Agreement and the North American Free Trade Agreement, has been widely judged as laudable; but its response to the latter has been considered late in coming, if not wanting. As a result, Canada – whose government does not advocate an economic strategy of a depreciating currency – may have nevertheless depended too heavily and for too long on a cheap dollar, vis-à-vis the U.S. dollar, as a means for the country's business sector to maintain its competitive position in world markets.

A depreciating dollar can often be a mixed economic blessing. A lower Canadian dollar has given rise, on one hand, to a more robust trade account and a lower unemployment rate, and on the other, to lower relative Canadian wages and incomes (i.e., Canadians have lowered the external value of their wages and incomes, and thus have less purchasing power). No country has ever gotten rich by instituting a national pay cut, which is essentially what a depreciating currency accomplishes in the longer term. Moreover, this economic strategy does not augur well for the broader social index of well-being – let alone for economic well-being – as we risk further losses in our long-standing ability to publicly fund our education and health systems, as well as redistribute our diminishing relative wealth.

WHERE WE ARE NOW …

Figure 1 provides a snapshot of living standards among the countries of the Organisation for Economic Co-operation and Development (OECD) in 2001, as measured by gross domestic product (GDP) per capita. Canada ranks eighth among the 21 countries chosen for comparison. Only Luxembourg and the United States have substantially higher standards of living than does Canada, but Ireland, Norway and Switzerland are also notably better off. Iceland and Denmark are ranked higher than Canada, but not significantly so, and thus can be considered equals in terms of standard of living. Though ranked lower than Canada, the Netherlands and Austria could also be considered equals to Canada on an income per capita basis. Overall, Canada compares well to the countries of Europe and Australasia.

Figure 1



Source: OECD, *OECD Observer2002/Supplement 1 – OECD in Figures, Statistics on the Member Countries*, 2002.

If we look beyond one year's performance and consider the post-World War II period, a more complete picture emerges, with a slightly different perspective. Given that Europe and Japan were significantly poorer than North America in the aftermath of World War II, their growth rates in living standards must have been consistently higher than that of Canada and the United States in this period. Such a catch-up was largely expected as Europe and Japan rebuilt and modernized their industrial complexes and reorganized their business sectors, which in time would become highly productive and competitive with the North American business sector – much as they were before World War II. Particularly striking are the performances of Luxembourg and Ireland – the latter in just the past decade. Luxembourg is the wealthiest nation in the world today, surpassing the United States by a margin of 36% and outstripping also Switzerland, which had occupied this pinnacle position for most of the late 1990s. Ireland was the poorest country in Western Europe in terms of standard of living at the start of the 1990s. By the end of the decade, however, it placed third among OECD member countries, earning its nickname as the "Celtic Tiger."

Such remarkable performances, as well as the fact that no fewer than three different countries (the United States, Switzerland and now Luxembourg) have held the top

economic ranking in the past five years, clearly demonstrate that no country is guaranteed a place at the top of the economic pyramid; it has to be earned, year in and year out. A world leader cannot rest on its laurels because eager rivals are ready and able to take its place. Equally notable, as so vividly demonstrated by the "Celtic Tiger," no country is condemned to remain at the bottom either.

HOW WE GOT HERE …

A number of factors influence a country's standard of living, but by far the most important is its productivity. Productivity is one of a number of key indicators of the vitality or strength of an economy, and possibly the most fundamental determinant of long-term economic growth. It measures the relationship between the physical volume of goods and services produced and the resources used in the production processes adopted by that economy. In lay terms, productivity is a measure of the efficiency with which labour, capital, natural resources and knowledge are combined in the economy.

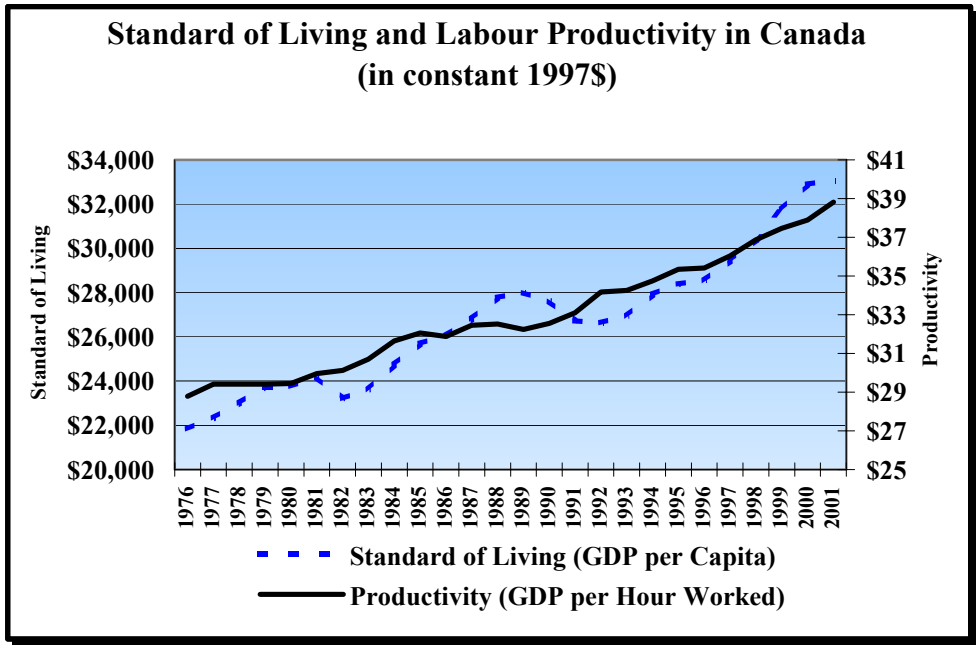
There are two widely accepted measures of productivity: labour productivity and multifactor productivity. Labour productivity is simply the amount of output produced by an economy divided by the amount of labour employed (either in terms of working persons or hours worked) in that economy. The present discussion will focus on this measure, since it more closely tracks standard of living.[(2)]

Figure 2 demonstrates that these two economic variables – standard of living and labour productivity – exhibit a close relationship. They move in the same direction and fairly uniformly throughout the 1976-2001 period. Labour productivity in Canada, as measured by GDP in constant 1997 dollars per hour worked, was $28.79 in 1976; by 2001, it amounted to $38.81. Although this performance points to increasing labour productivity levels in the economy over the past 25 years, the implied growth rate is not stellar; the average compound annual growth rate was only 1.2%. By contrast, post-World War II to pre-1973 growth rates in

(2) Both the labour productivity measure and the multifactor productivity measure are subject to a certain degree of bias. Labour productivity can be influenced by the employment of other complementary factors of production, such as differential investment rates in physical capital. Multifactor productivity, which relies on an index of resources used, is methodologically challenged in terms of the appropriate weights to assign to each factor of production (usually determined on the basis of its share in national income) and in determining the value of the capital stock and its rate of depreciation in order to properly calculate capital services charges.

labour productivity averaged more than 2.5% per year, or more than double today's rates. Similarly, standard of living, as measured by GDP in constant 1997 dollars per capita, was $21,840 in 1976; by 2001, it was $33,059. This represents a 1.67% annual compound growth rate and is far below the rate witnessed in the post-World War II to pre-1973 period.

Figure 2



Source: Statistics Canada, *GDP Data – CANSIM*, 2001.

Figure 2 also reveals two facts that a casual review of the raw statistics could not. First, standard of living was more volatile – that is, subject to greater swings within each business cycle – than was labour productivity between 1976 and 2001. Second, the growth rate of Canada's standard of living was superior to that of labour productivity in this period. These two differences suggest that factors other than labour productivity affect standard of living. Let us turn to them for further insights.

Although there is a definite link between productivity and standard of living, it is not a direct one. A precise mathematical formula does exist to explain this relationship. Standard of living, or GDP per capita, is equal to: (1) productivity, or GDP per hours worked, multiplied by (2) the average number of hours worked per employed person, multiplied by (3) the employment rate (i.e., the number of employed persons relative to the size of the labour force, with the latter defined as those 15 years of age and older who are willing and able),

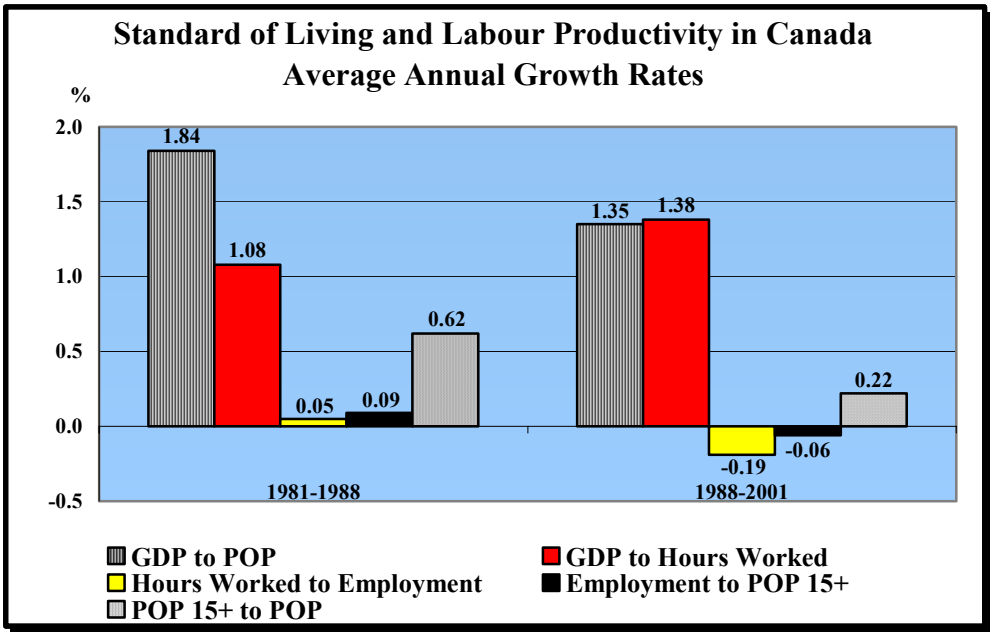
multiplied by (4) the labour force to population rate (a type of labour participation rate measure). In algebraic form, we have:

$$\frac{\text{GDP}}{\text{Hours Worked}} \times \frac{\text{Hours Worked}}{\text{Employment}} \times \frac{\text{Employment}}{\text{Labour Force}} \times \frac{\text{Labour Force}}{\text{Population}} = \frac{\text{GDP}}{\text{Population}}$$

Output per capita (the last term) and output per hours worked (the first term) should behave similarly in direction and magnitude unless something significant happens to the second, third and/or fourth terms of this equation.

Using the above mathematical formula, Figure 3 illustrates the growth rates in Canada's productivity and standard of living over the past two business cycles, and helps to explain the factors contributing to the decline in the annual growth rate of Canada's living standards in the 1990s (from 1.84% to 1.35%). As can be seen by the heights of the bars, the growth rate of GDP per capita (see the bars labelled "GDP to POP") is the sum of the growth rates of labour productivity ("GDP to Hours Worked"), the hours worked per employed person ("Hours Worked to Employment"), the employment rate ("Employment to POP 15+"), and the labour force to population rate ("POP 15+ to POP"). This additive feature allows us to attribute relative contributions to the different economic or demographic factors.

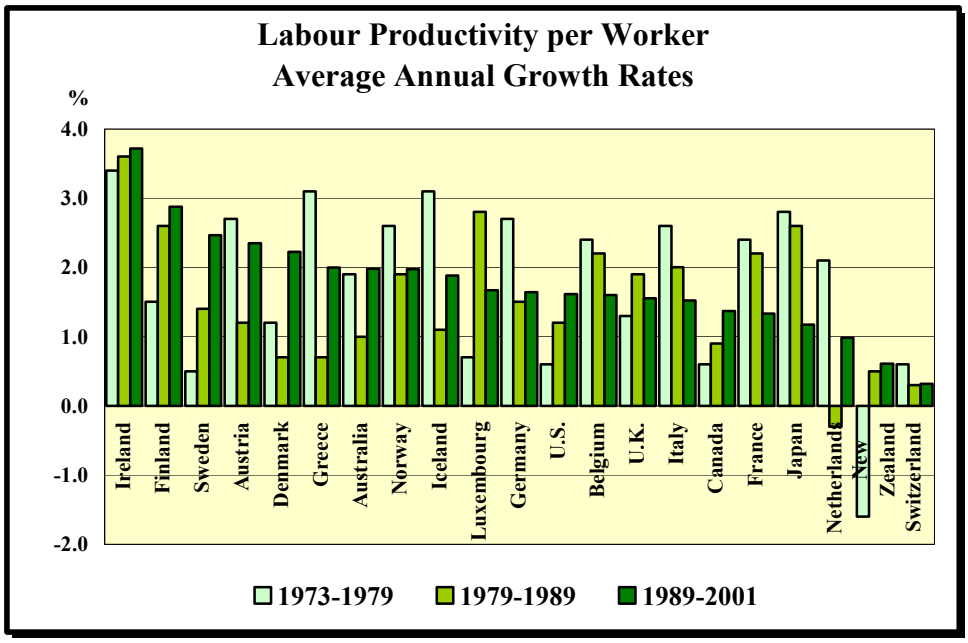
Figure 3



Source: Statistics Canada, *GDP Data – CANSIM*, 2001; Centre for the Study of Living Standards, *Income and Productivity Data, Personal Income and Productivity Trends: Canada vs. United States*, www.csls.ca, 2002.

The data are unambiguous: it is not because the growth rate of Canadian productivity deteriorated that the growth rate of Canada's standard of living declined in the past decade. Indeed, Canada's labour productivity growth rate improved slightly in this period (from 1.08% to 1.38%). Lower growth rates in the number of hours worked per employed person (from 0.05% to -0.19%) and in the employment rate (from 0.09% to -0.06%), and – most important – a lower growth rate in the labour force to population rate (from 0.62% to 0.22%), are responsible. Delving deeper, we can further determine that the lower fertility rates among "baby boomers" since the 1970s are at the root of the declining growth rates in standard of living in the 1990s, because those lower fertility rates resulted in lower labour force recruitment rates.

Figure 4

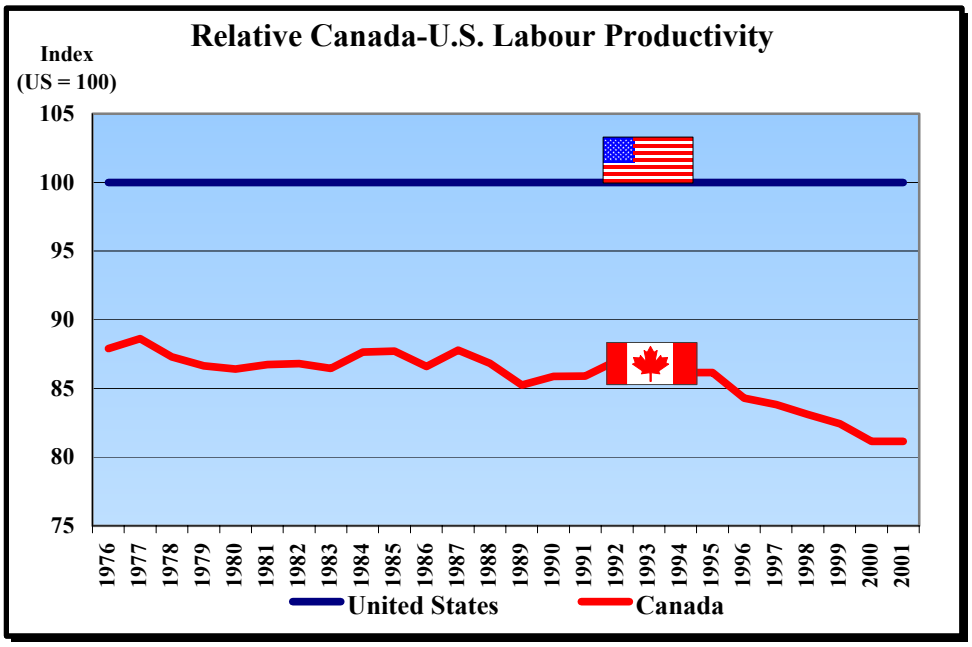


Source: OECD, *OECD Observer 2002/Supplement 1 – OECD in Figures, Statistics on the Member Countries*, 2002.

The fact that Canada's growth rate in labour productivity in the 1990s improved slightly over that reported in the 1980s does not mean that Canada's productivity record is without fault when it comes to the country's decline in relative standard of living among OECD countries. Indeed, Canada's productivity performance was inferior to most OECD countries over the past two decades, as is shown in Figure 4. Canada placed sixteenth among 21 OECD countries in terms of

its growth rate in labour productivity per worker between 1973 and 2001. As a result, Canada fell from second to fourth in the OECD productivity rankings between 1976 and 2001.(3)

Figure 5



Source: Centre for the Study of Living Standards, *Income and Productivity Data, Personal Income and Productivity Trends: Canada vs. United States*, Table 7, www.csls.ca, 2002.

Canada's poor relative performance over the longer term has led many analysts to express concern at the Canada-U.S. productivity gap, one that has been widening and getting worse from a Canadian perspective. Figure 5 displays the Canada-U.S. productivity gap over the past 25 years, as measured by GDP per hour worked. Canadian labour productivity under-performed relative to that of the United States from 1976 to 2001. The average Canadian worker, who produced slightly less than 90% of what the average American produced in 1976, now produces little more than 80% of what the average American worker produces.

This Canada-U.S. productivity gap translates into an income or standard of living gap between the two countries. In comparable dollar terms, using Statistics Canada's 1998 purchasing power parity formula (CAN$ = US83¢) and 2001 GDP implicit price deflators,

(3) Industry Canada, *Trends in Canadian Productivity and Living Standards*, 11 June 2002.

Industry Canada estimates that Canadians are, on average, $8,200 poorer than Americans. This estimate is calculated as the difference in GDP per capita of the United States ($43,142) and Canada ($34,942).[4]

WHAT THE FUTURE HOLDS …

At first glance, it is tempting to break down the recent growth rate performance of Canadian productivity into two or three sub-periods, emphasizing any apparent trend or, in the alternative, the lack of any evident trend. However, data on productivity growth are very susceptible to large fluctuations with even modest differences in the timing and duration of the business cycle. Without the ability to control for such differences, any projection founded on sub-period trends would probably be misleading. To overcome this methodological obstacle, one might simply extrapolate Canada's longer historical performance out a decade or so, using data from the past two or three business cycles. However, some very influential demographic factors continue to manifest themselves in ways that will significantly affect standard of living projections in a manner different from that of the past record. New and emerging technologies and economic trends that are altering the productivity numbers and established relationships will also confound any simple forecast based on the historical record. Both these observations suggest that a forecast built on an extrapolation of the past ought to be supplemented by a consideration of emerging demographic and economic factors.

Growth in Canadian living standards, as was shown above, is closely related to growth in productivity. Indeed, other factors affecting changes in living standards in ways different from those suggested by changes in productivity are losing influence. In Figure 3, we observed the growth rate in living standards (GDP per capita, or "GDP to POP") converging on the growth rate in productivity ("GDP to Hours Worked") from the 1981-1988 to the 1988-2001 periods. The principal cause was a declining fertility rate among "baby boomers" since the 1970s that, by the 1990s, led to lower labour force recruitment rates and thus to a significantly reduced growth rate in the proportion of the working-age population to total population. This trend is likely to continue, not only in the upcoming decade but also over the next three decades. Statistics Canada reports that the ratio of the elderly (65 years and older) relative to those of

(4) Industry Canada, *op. cit.*, 11 June 2002.

working age (15-64 years) has grown from 13% in 1971 to 18% in 2002 and will rise rapidly to 33% by 2025. Today, the economy employs five working-age persons for each elderly one, but in 25 years only three working-age persons will be employed per elderly person. Therefore, the growth rate in the proportion of the working-age population to total population will likely turn negative in the forthcoming years. Furthermore, as "baby boomers" increasingly reach retirement age, the growth rate in the employment rate will increasingly turn negative as well.(5) These two demographic factors must be added to the long-standing decline in terms of trade (the relative price of exports to imports) that Canada is facing; that decline means the purchasing power of Canadians is slowly slipping, taking the Canadian dollar with it. Overall, the next decade does not look promising for Canadian living standards. Given this situation, the growth rate in the Canadian standard of living in the next decade will decidedly depend on growth in productivity.

The most recent resurgence of the Canadian productivity growth rate in the past year (2.4% in 2001), as well as that of the first half of this year (3%, annualized, in 2002) is encouraging. However, whether this development is the beginning of a trend or is merely cyclical in nature remains an open question. One-year wonders of 3.3% and 2.3% in 1992 and 1998, respectively, have marked Canada's productivity record. The long-term productivity growth trend, as established over the past two business cycles, suggests a modest increase should be expected – something more than the 1.1% to 1.4% rates experienced by the business sector in the 1981-1988 and 1988-2001 periods, respectively.

The economic trends tend to support such a forecast. If one ignores the impact that demographic changes have on productivity,(6) there are many positive economic factors that either are developing today or are on the immediate horizon. Investment in physical capital (most notably machinery and equipment), which is a known driver of productivity, is growing much more rapidly than in the early to mid-1990s. On the policy front, federal income tax cuts scheduled over the next few years (in contrast to tax increases and the adoption of surtaxes in the

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(5) The retirement decision is not without economic influence. Higher wage offerings in job categories experiencing the more acute shortages will help mitigate, but are not likely to overcome, this demographic fact of life.

(6) A younger labour force is usually associated with lower productivity. The productivity-age profile of the labour force is positive (except as one's age approaches the age of retirement) principally because of the greater on-the-job training received and experience acquired by older workers. Working against this long-standing relationship is that labour force entrants today have more formal education than retirees.

late 1980s and early 1990s) are expected to boost real disposable personal income and private demand for goods and services. Finally, the implied increase in labour demand from these new economic conditions is unlikely to be met by a proportional increase in labour supply. That is, although an excess supply of workers does exist in a number of labour skill categories today, the labour market in general will become increasingly tight in the next decade, as those who retire will outnumber new recruits by a significant margin. All told, these economic developments are likely to propel labour productivity growth rates upward from what we observe today.

Canadian living standards will undoubtedly increase in the next decade, but their average growth rate will probably be less than that of labour productivity due to demographic factors. In all probability, the growth rates in American living standards will continue to outpace Canadian growth rates; this suggests that the widening gap in living standards between Canada and the United States may be expected to continue for some time to come.