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THE PRODUCTIVITY IMPERATIVE: WHY PRODUCTIVITY MATTERS TO CANADIANS

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EXECUTIVE SUMMARY

This document explores one of Canada's less-understood economic indicators, productivity, and its importance to Canadians. Although the public is largely unaware of the fact, an improvement of even one percentage point in the annual growth rate of productivity, sustained for an extended period, can significantly improve the daily lives of Canadians. It can mean a more comfortable home, a more luxurious car, improved health services, more leisure and/or a cleaner environment. All these and more are possible with an improved productivity performance, and the upcoming decades will increasingly highlight this fact. The following paper aims to demystify productivity, explain its relationship to both standard of living and quality of life, and demonstrate its effectiveness as a means for addressing two emerging social concerns: the gap between Canadian and American standards of living, and the economic implications of an aging society.

In the first instance, this document finds (as past research has also concluded) that a positive relationship exists between productivity and standard of living. That relationship is evident from both Canadian times-series data and comparisons with other countries. The cross-country comparisons also confirm a positive relationship between the narrowly defined economic standard of living indicator and the more broadly defined quality of life indicator. Together, these positive correlations debunk the public perception that the pursuit of higher productivity comes at the expense of leisure and/or environmental quality. Instead, these relationships support the more traditional economic proposition that workers' higher productivity permits their firms to pay them higher wages without the usual competitive disadvantages that accompany higher wage bills. Higher wages, in turn, provide these workers and their families with greater purchasing power and, therefore, permit greater consumer choice. At a national level, people leading more productive lives and possessing more individual consumption options translate into more desirable combinations of material wealth, good health, varied leisure opportunities and environmental quality for society as a whole. Higher productivity levels in Canada could therefore reduce, and possibly eliminate, the gap between Canadian and American standards of living.

In the second instance, this document investigates the implications of an aging society for living standards by focusing on the lower employment rate that this demographic

trend implies. It finds that the trend will strengthen the link between productivity and the standard of living. Canada's aging society will increasingly depend on growth in productivity to maintain and improve its standard of living and quality of life. At the same time, an aging society poses a number of new challenges to Canadians, in particular rapidly rising health care costs. The promotion of public policies that would stimulate productivity growth rates appears to be the best economic strategy for meeting these challenges.

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THE PRODUCTIVITY IMPERATIVE: WHY PRODUCTIVITY MATTERS TO CANADIANS

PRODUCTIVITY AND PUBLIC PERCEPTIONS …

As perceived by the public, productivity is an arcane economic statistic. News of the rising or falling growth rate of Canadian productivity, as well as updates on productivity issues of particular concern to Canada, have often been met with public indifference. In large measure, this indifference reflects a widely shared belief among Canadians that productivity is of little significance to them.

This perception, however, could not be more wrong. Even a small improvement in the annual growth rate of productivity, such as from the current 1% to 2%, when sustained for a number of years, has a profound impact on the daily lives of Canadians. It can mean a more comfortable home, a higher-quality car, the ability to purchase new computer-assisted technology equipment and services, improved health care, increased leisure and international travel, and a cleaner environment. One or all of these consumables can be obtained, in any number of combinations, with higher productivity levels.

In the absence of productivity growth, it is impossible to obtain more of one of these consumables without sacrificing some amount of the others, or having people work more hours, or having more people working. A world of zero productivity growth is, in reality, a zero-sum society in which mutually beneficial trades are relatively scarce. In such a world, government-financed services, notably high-priority services such as health care, can be expanded only at the expense of others – for example, by reducing funding for another government service, or by raising taxes and thereby discouraging private consumption, or by issuing debt and thereby crowding out prospective private investment. Such initiatives, however, are often politically contentious because they pit members of the public against each other. For all these reasons, stagnant productivity levels frustrate growth in the aggregate consumption of both private and public goods and services.

To understand why the public underestimates the importance of productivity, and to overcome the public policy dilemmas that this poses, it is necessary to look at how these public perceptions were formed. The public's view of productivity has been shaped mostly by individual experiences, and thus centres on how one person might put more effort or time into his or her job (often by taking work home during evenings and weekends) in order to produce more. Viewed in this way, where material consumption and leisure are traded off against each other, productivity issues and statistics on good or bad performance arouse little public enthusiasm.

Individual scepticism also extends to groups within society who share specific social concerns. Take, for example, the environmental community. Environmentalists have long understood that more industrial production usually results in more pollution and a filthier environment. From this perspective, investments in additional industrial equipment with the aim of stimulating production and productivity are seen as sacrificing environmental quality to obtain more material goods. Framed in this way, higher productivity is at best a mixed blessing and not readily accepted as an improvement in our quality of life.

Properly understood, however, productivity is not a matter of working longer or using more capital resources more intensively. Productivity measures the relationship between the physical volume of goods and services produced and the resources used to produce them. It is thus a measure of the efficiency with which labour, capital, natural resources and knowledge are combined in the economy. When an individual takes work home during evenings or weekends, he or she is by definition increasing the labour input. And raising the output of an economy (the numerator of the labour productivity measure) by increasing the labour input (the denominator of the measure) does not raise labour productivity.(1) Similarly, increased manufacturing output made possible by using more energy, natural resources and/or equipment does not necessarily raise productivity levels.(2)

Properly understood, productivity centres on how to get more output while using fewer resources (i.e., raising the numerator while lowering the denominator of the productivity measure). Productivity is about working smarter and more efficiently – for example, through

(1) In fact, depending on the activity and the technologies employed, increasing the number of hours worked beyond a certain level often leads to exhaustion and a lower average productivity rate. Working more intensively may also have the same effect on average productivity in the longer term, in addition to harming the workers' health.

(2) In this case, reference is made to the multifactor productivity statistic; see footnote 3 for an explanation.

innovation and technological change – rather than working people and capital resources harder, longer and more intensively. Consequently, material well-being, good health, varied leisure opportunities and environmental quality can be made complementary to one another through higher productivity levels.

STANDARD OF LIVING IS DRIVEN BY PRODUCTIVITY …

Of the many factors that influence a country's standard of living, by far the most important is its productivity. Productivity is one of a number of key indicators of the vitality or resilience of an economy, and possibly the most fundamental determinant of long-term economic growth.(3) The positive relationship between productivity and living standards can be demonstrated from two perspectives: first, by comparing Canadian time-series data on standard of living with those on labour productivity; and second, by comparing data on Canada with those on other countries. The findings confirm that higher productivity levels drive higher standards of living.

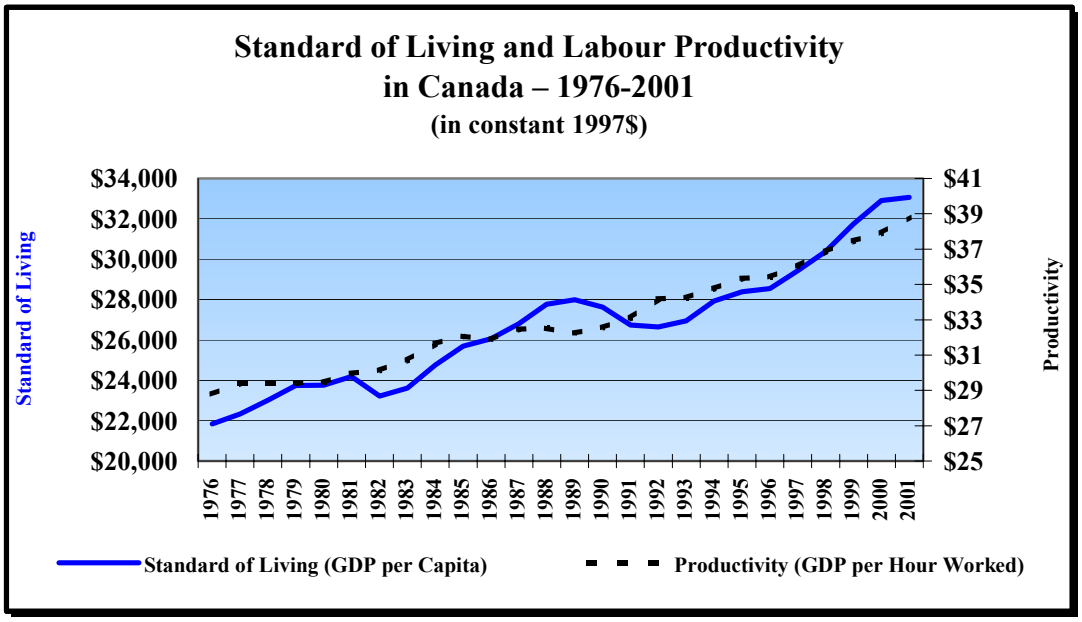
Figure 1 reveals that these two economic variables – standard of living and labour productivity – are closely related. They move in the same direction and fairly uniformly throughout the 1976-2001 period. Labour productivity in Canada, as measured by GDP in

(3) 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, or its gross domestic product (GDP), divided by the amount of labour employed (either in terms of working persons or hours worked) in that economy. Multifactor productivity is again defined by the amount of output produced by an economy, or GDP; but in this case, the output is divided by an index of all factors of production: not just labour, but also capital and purchased inputs, such as energy, raw materials and other goods and services.

Both productivity measures have strengths and weaknesses, suggesting that the choice of one over the other should be based on the issue at hand. The labour productivity measure can be influenced by the employment of other complementary factors of production, such as differential investment rates in physical capital; this introduces a measurement bias into cross-country comparisons. The multifactor productivity measure also has a number of methodological and statistical aggregation challenges to overcome before it is free of any measurement bias. For example, there are unresolved theoretical issues, such as the competitive model chosen, that affect the appropriate weights to assign to each factor of production (usually determined on the basis of its share in national income) and the determination of the value of the capital stock and its rate of depreciation, in order to properly calculate capital services charges.

The present paper focuses on the labour productivity statistic because it more closely tracks and explains standard of living than does multifactor productivity.

Figure 1



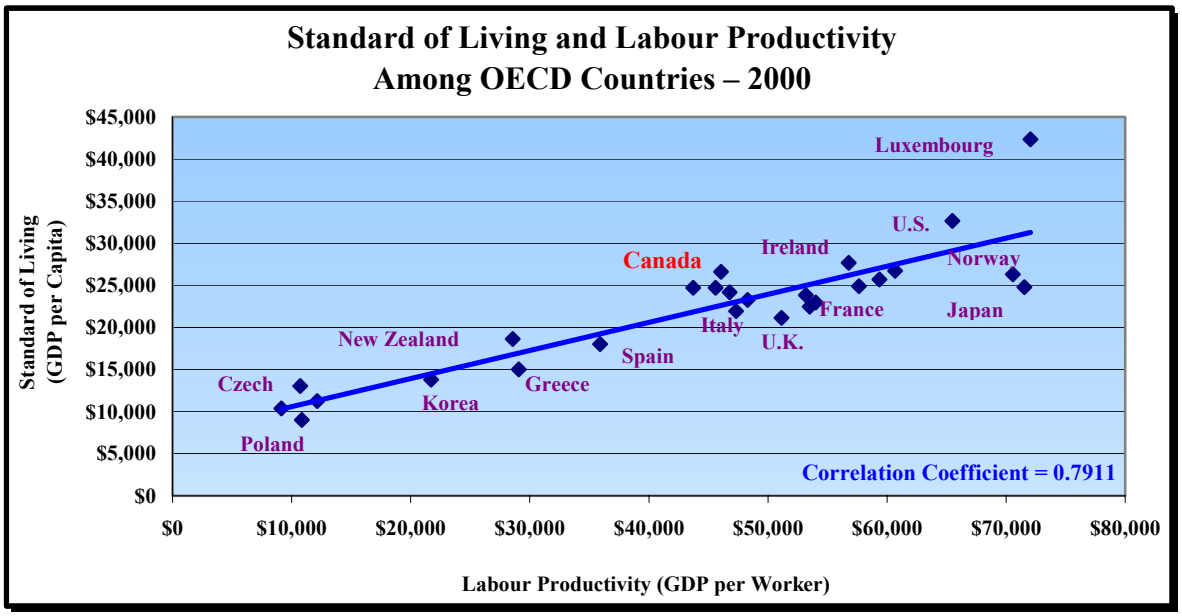
Source: Statistics Canada, *GDP Data – CANSIM*, 2001; Centre for the Study of Living Standards, *Income and Productivity Data, Personal Income and Productivity Trends: Canada vs. United States*, 2002, www.csls.ca.

constant 1997 dollars per hour worked, was $28.79 in 1976; by 2001, it amounted to $38.81. Over the past 25 years, the average compound annual growth rate of labour productivity was 1.2%. Similarly, standard of living in Canada, 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% average compound annual growth rate over the past 25 years. The difference in the growth rates of the two variables suggests that factors other than productivity also influence standard of living, such as the number of people working or the number of hours each works – issues that will be addressed below.

Figure 2 is a scatter diagram that maps any statistical relationship that might exist between labour productivity and standard of living in various OECD countries. For each country, one point represents both its average productivity level, as measured by GDP per worker in U.S. dollars at prevailing prices and currency exchange rates, and its average standard of living, as measured by GDP per capita at prices and purchasing power parity (PPP) in U.S. 1995 dollars. The solid line represents the correlation between the standards of living and labour productivities among all these countries. The slope of this line is clearly positive; the correlation

between the two variables is significant and robust. This relationship suggests that higher productivity levels translate into higher standards of living.

Figure 2



Source: OECD, *National Accounts of OECD Countries,* Volumes 1 and 2, 1989-2000, 2002.

Figure 2 also indicates, however, that in some cases higher productivity levels do not translate into greater material well-being. Luxembourg clearly leads all countries in terms of both labour productivity per worker and standard of living, but Japan and Norway, with the second and third most productive labour forces in the world, respectively, do not have the second- and third-highest standards of living in terms of material well-being. In the case of Norway, the labour productivity indicator is biased upward relative to those of North American and Australasian countries because Norway, like most European countries, legislates more paid holidays and other more generous employee benefits (e.g., job security) for its labour force than do North American and Australasian countries. This factor leads its industry to substitute more capital for labour. Higher capital-labour ratios in Norway (and Europe generally) than in North America and Australasia result in relatively higher labour productivity levels, but also in relatively lower capital productivity levels. Because this bias leads to a less efficient allocation of resources, it partly explains Norway's poorer performance, when compared to other countries, in terms of standard of living relative to labour productivity. Other reasons include the direct

effects of the above-mentioned greater holiday and job security benefits provided to its labour force. Norwegians (and Europeans generally) choose to consume more of their labour productivity in the form of more leisure and greater income security relative to material well-being than other countries. Some commentators further suggest that Norway (and Western Europe generally) regulates its industry more intensively in terms of its environmental impact than does North America. If so, then Norway is also choosing to consume more of its productivity in the form of greater environmental quality relative to material well-being than are other countries.

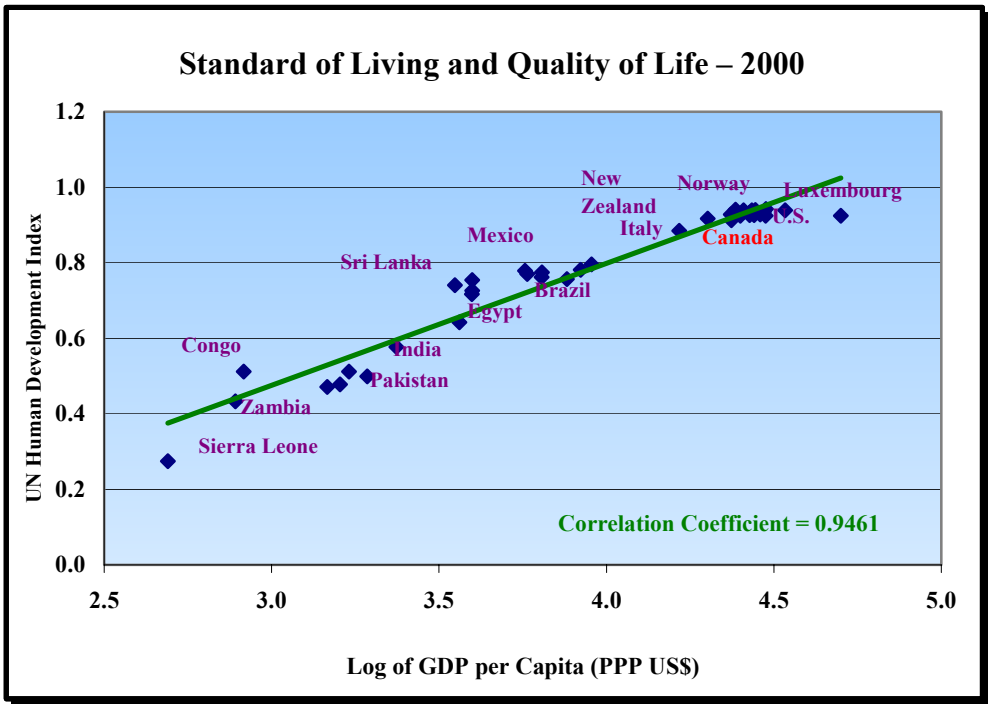
Japan's poorer performance in terms of standard of living relative to labour productivity can partly be explained by its lower labour participation rate. For cultural reasons, women's participation in the labour market is significantly lower in Japan than elsewhere. Japan also has a higher proportion of elderly persons relative to its working-age population than most countries. A poorer macroeconomic performance relative to that of other countries is also a factor. Together these three factors mean a lower employment rate – an economic problem that cannot entirely be overcome by higher productivity levels.

QUALITY OF LIFE AND STANDARD OF LIVING GO HAND IN HAND …

Standard of living, as measured by GDP per capita, is evidently not the sole indicator of quality of life. Non-economic factors such as good health, longevity, leisure, income and personal security, income equality, human rights and a healthy environment are also important. Although there are many difficulties associated with the construction of an index of the quality of life, including issues of criterion selection, appropriate indicators of the criteria, indicator weights, and the perennial problem of obtaining consistent data across different countries, it is nevertheless instructive to compare the relationship of these two indicators across countries. Figure 3 maps a composite quality of life indicator against that of standard of living across many countries in 2000. The indicator incorporates the United Nations Human Development Index (HDI), which combines adult literacy with primary, secondary and post-secondary school enrolment ratios to produce an education index. Other indexes are then added: one based on life expectancy at birth, and the other based on GDP per capita at PPP in U.S. dollars (i.e., the economic standard of living indicator). The solid line in Figure 3 represents the

correlation between the two variables across the countries. This correlation is clearly positive, significant and robust.

Figure 3



Source: United Nations, *Human Development Report 2002*, 2002.

The United Nations HDI puts Norway on top and Sierra Leone at the bottom. Canada places third, just behind Sweden and marginally ahead of the United States, Belgium and Australia, which all tie for fourth place.

Certain obvious conclusions can be drawn from Figure 3. First, when it comes to quality of life as measured by the HDI, there is not much difference in being placed first or twentieth.(4) The twentieth-placed country, Italy, has a quality of life very comparable to that of the first-placed country, Norway; the differences are virtually indiscernible in the figure. This observation usually goes unreported by the media. Although the media did report that Canada

(4) To some extent, this conclusion is the artefact of the UN researchers' decision to create an index whereby a country's performance is fitted on an asymptotic curve – the asymptote being 100 on an index of 0 to 100 – based on the notion that each incremental dollar earned, or each additional expected year lived, or each additional year of education received, is of decreasing value.

has recently dropped from first to third place, nowhere was it said that this decline meant little to the quality of life in Canada, both when measured absolutely and relative to other countries.(5)

Second, although the quality of life may be about the same across the 20 countries of the world that score highest on the HDI, the composition of this quality is not. For example, while literacy rates are virtually the same across the top 20, combined primary, secondary and post-secondary enrolment ratios differ substantially. On this score, Belgium places first, Italy places twentieth, and Canada places in the middle of this group at eighth. In terms of life expectancy at birth, the greatest difference lies between the performances of Japan and Denmark. The average Dane can expect to live 76.2 years, while the average Japanese can expect 81 years of life. So, while the average Japanese has a standard of living that is almost equivalent to that of the average Dane – PPP US$26,777 vs. PPP US$27,627, respectively – the Japanese will enjoy it for four years longer. The average Canadian, by contrast, can expect 78.8 years of life, which puts Canada in sixth place among the top 20 in terms of this factor.

Overall, the most important conclusion is that the statistical relationship between standard of living and quality of life is a positive one. A high standard of living clearly means a high quality of life, and vice versa. Simply put: the richer a country is, the longer its citizens can expect to live and the more literate, educated and skilled they are likely to be.(6) Trading off one quality of life criterion for another also appears more possible.(7) Moreover, since three different countries have held the top quality of life ranking (Switzerland, Canada, and now Norway) in the past five years and, by the same token, three different countries have held the top standard of living ranking (the United States, Switzerland, and now Luxembourg) in this same period, national improvement is clearly possible. Therefore, combining these findings with that of the previous section – that higher productivity translates into a higher standard of living – the inescapable conclusion is that material well-being, good health and longevity, leisure and environmental quality are the fruits of a productive economy. Being more productive provides

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(5) Any ranking of countries on these terms is, by its very nature, subjective. This subjectivity is manifest in the weights and criteria chosen to establish a rank. In fact, Canada's declining rank may simply reflect a shift in the subjective view of the UN researchers, who have modified this index over the years, rather than a material change in Canada's performance.

(6) Because only a correlation, and not causality, has been established between these socio-economic variables, the direction of impact from one indicator to the other has not been determined. However, conventional economic theory suggests that productivity drives both these variables.

(7) Some trade-offs in the quality of life criteria may not be obvious, due to custom and cultural influences.

more choice in these fruits. The next section will suggest just how much more of them can be obtained by even the smallest improvements in a nation's labour productivity growth rate.

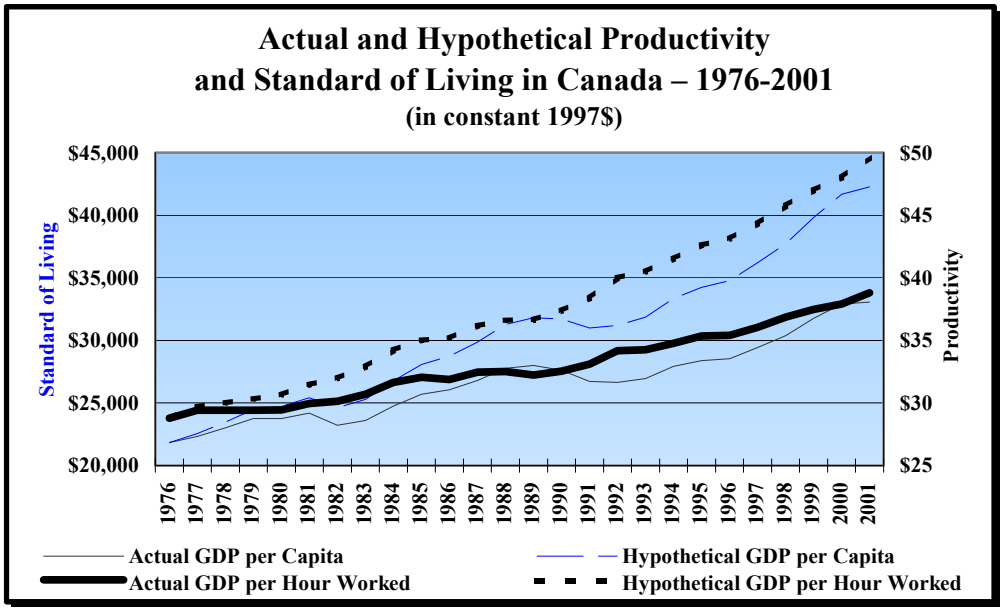
WHAT A RISE OF 1% IN CANADA'S PRODUCTIVITY GROWTH RATE MIGHT BUY …

It is one thing to suggest that productivity drives the standard of living and quality of life, and that just a 1% increase in the annual growth rate of labour productivity in Canada would be sufficient to make us measurably better off. It is quite another thing to demonstrate how our lifestyles could change and improve in a tangible way because of such a miniscule improvement. After all, 1% is just that: a very small number, not much different from zero.

The key to understanding this conundrum is to consider the length of time over which an annual 1% improvement may take place. If it is for just one year, Canadians' lifestyles will be largely unaffected. If it extends over a full working career, which is usually about 35 years, then Canadians' lifestyles will be hugely affected. Since the mid-1970s, Canada's annual rate of growth in labour productivity has hovered at about the 1% level. A 1% increase in this performance would in effect double the annual growth rate to 2%. A 2% growth rate per annum in labour productivity would mean that the average labour productivity level in Canada would double every 36 years, not every 72 years as it does with a 1% growth rate. And if Canada's labour productivity level were to double every 36 years, then (in the absence of significant demographic variations) so would Canada's standard of living.

Compare two scenarios: one where Canada's average annual growth rate in labour productivity is 1.2% for 25 years, and the other where it is 2.2% over this period. Instead of forecasting these scenarios out into some speculative future – speculative in part because other unexpected events may inadvertently weigh into these otherwise isolated scenarios – let us undertake the easier and more reliable exercise of forecasting the past. Canada's average annual rate of growth in labour productivity, or GDP per hour worked, was 1.2% between 1976 and 2001. This trend is represented in Figure 4 as the bold solid line. This productivity performance and other factors led to an average annual growth rate in the standard of living of 1.67% in the same period. Standard of living or GDP per capita, represented by the narrow solid line, thus rose from $21,840 in 1976 to $33,059 in 2001. These are historical facts.

Figure 4



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*, Table 1, 2002, www.csls.ca.

Under the second, hypothetical, scenario, labour productivity rises annually by 2.2% throughout the 1976-2001 period. (Such an event is not inconceivable; in fact, Canada's labour productivity grew at an even greater average rate from the 1950s through to the mid-1970s, and Ireland's did still better from the late 1980s to 2001.) In this case, labour productivity of $28.79 per hour in 1976, which actually grew to $38.81 in 2001, would instead have grown to $49.63 (see the bold dashed line). Given the same demography and no other non-historical economic influences, Canada's standard of living of $21,840 in 1976 would have risen to $42,273 in 2001, representing a 2.68% average compound growth rate (see the narrow dashed line).(8)

Under the second scenario, Canada's standard of living in 2001 would have been $9,214 per annum above the actual historical level. Cumulatively, it would have been $99,601

(8) It is likely that the increased income earned under this scenario would have attracted more people into the labour market than was in fact the case over the past 25 years, and a larger labour force would have raised Canada's GDP still higher. Assuming an unchanged fertility rate, still higher GDP would translate into a still higher living standard than is modelled under the second scenario.

higher over the 25-year period.[9] Over the entire period, the average Canadian's standard of living would have been $3,984 higher per annum. The relevant question is: What could have Canadians bought with this extra $99,601? The answer is, many things.

The average Canadian, in 1975, could have afforded a house worth $5,900 more than the one he or she had bought, financing this expenditure entirely by a 25-year mortgage bearing a 12% interest rate. He or she could have afforded an additional family vehicle worth $33,200 (assuming an average operating life of eight years). The average Canadian, who in 2001 spent $3,298 on health care (by way of both private and public expenditures), [10] could have more than doubled this expenditure; hence, the waiting lines for various medical treatments that were experienced at that time could have been avoided, given that the additional funds would have been properly managed. Alternatively, $3,984 per capita spent on pollution abatement to meet tougher environmental standards in any number of industrial activities, or to comply with more stringent emission standards for automobiles, would have delivered a cleaner and healthier environment over the past 25 years. Finally, the average Canadian, who worked 37.5 hours per week in 2001, could have afforded the same lifestyle he or she enjoys today but worked only 30 hours per week (for example, 5 days at 6 hours per day, or 4 days at 7.5 hours) in this period. Alternatively, with a 32-hour workweek (e.g., 4 days at 8 hours per day), he or she could have afforded both a more leisurely lifestyle and more foreign travel while on vacation.

Under this second scenario, the controversial productivity gap between Canada and the United States could have been eliminated and even reversed. Assuming an unchanged U.S. productivity performance – not an unreasonable assumption, given that Canada's greater purchasing power and the resulting increased imports from the United States would have an infinitesimally small impact on overall American exports – Figure 5 shows that Canada's productivity would have been 3.8% higher than that of the United States in 2001. Moreover, although it is unlikely that Canadians would have chosen to consume all of their increased productivity under this second scenario in the form of goods and services, had they done so the Canada-U.S. standard of living gap might have been reversed: Canada's standard of living might have been 5.3% higher than that of the United States in 2001.[11]

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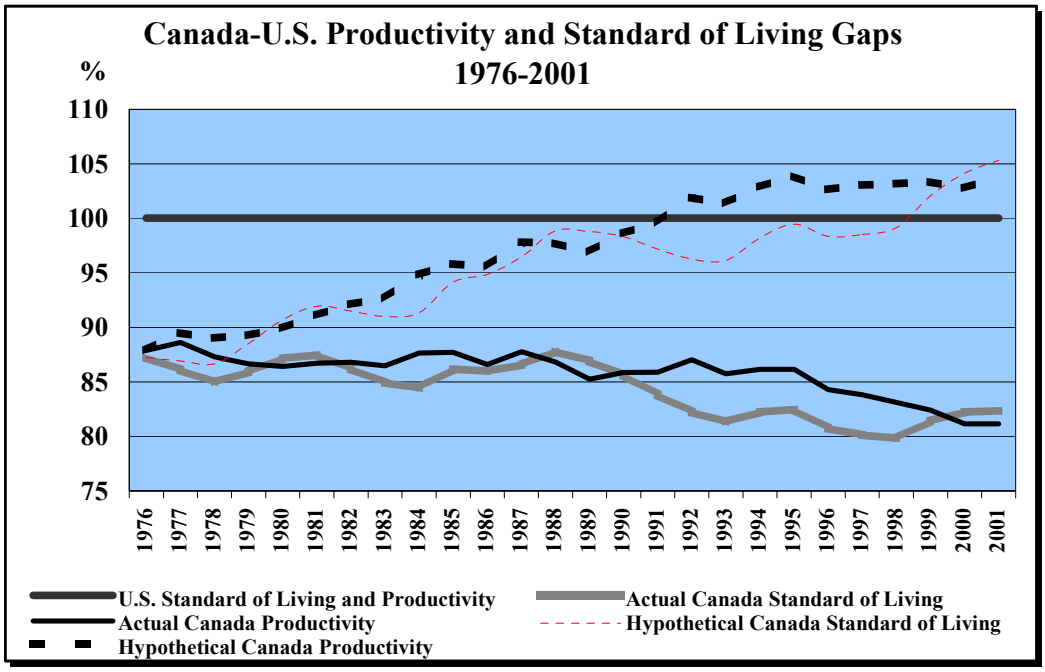
(9) The greater income earned prior to 2001 had greater purchasing power than that earned in 2001. In real terms – that is, adjusted for purchasing power differences – the cumulative value of greater annual income over the period would be approximately $117,321 in constant 2001 dollars.

(10) Statistics Canada, *Health Care in Canada*, 2002, p. 29.

(11) This comparison assumes that Canada's purchasing power parity bundle of goods and services consumed and the Canada-U.S. currency exchange rates remain unchanged over the period. These assumptions are unlikely, so caution should be exercised when comparing the standards of living of these two countries.

Figure 5



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*, Table 1, 2002, www.csls.ca; Library of Parliament.

AN AGING SOCIETY WILL INCREASINGLY RELY ON PRODUCTIVITY GROWTH …

The most prominent demographic trend at the beginning of the third millennium is an aging society. Statistics Canada reports that the ratio of the elderly (65 years and older) relative to those of working age (15-64) has grown from 13% in 1971 to 18% in 2002 and will rise rapidly to 33% by 2025. Today, Canada's economy employs five working-age persons for each elderly one; in 25 years, only three working-age persons will be employed per elderly person.

The greying of the population has a number of consequences for society as a whole, most notably with regard to the affordability of certain services particularly important to the elderly, such as health care. However, an aging society will also mean declining per capita RRSP contributions and educational expenses (even if each new recruit to the labour market seeks more years of formal education in response to the exigencies of the "knowledge-based society"). The former trend will result in a higher tax yield to the federal government; the latter

will mean lower annual expenditures for provincial governments. It is unclear, however, whether these and other offsetting effects will be sufficient to ensure that current levels of health care can be maintained and afforded by governments and taxpayers without sacrificing other publicly provided services.

Some industry analysts claim that an aging society will mean a labour or work skills shortage, as retirees outnumber new recruits to the labour force in the very near future. This may indeed be possible, and even probable for some job classifications. Moreover, even if these predictions do not materialize, an aging society will have major implications for Canada's standard of living and the importance of its productivity performance. Consider the fact that per capita improvements in standard of living can be attained in only three ways:

1. More people working (a higher employment rate among the population);
2. People working more hours (less leisure); and/or
3. Increased levels of output (GDP) per hour worked (higher productivity levels).

These three sources of an improved standard of living can be expressed by a simple mathematical formula, as shown by the first equation in Figure 6. The standard of living, or GDP per capita (the first term of the first equation), is equal to: (1) the increase in productivity, or GDP per worker (the second term), multiplied by (2) the increase in the average number of hours worked per employed person (the third term), multiplied by (3) the increase in the employment rate (i.e., the number of employed persons relative to the population; the fourth term).

Figure 6

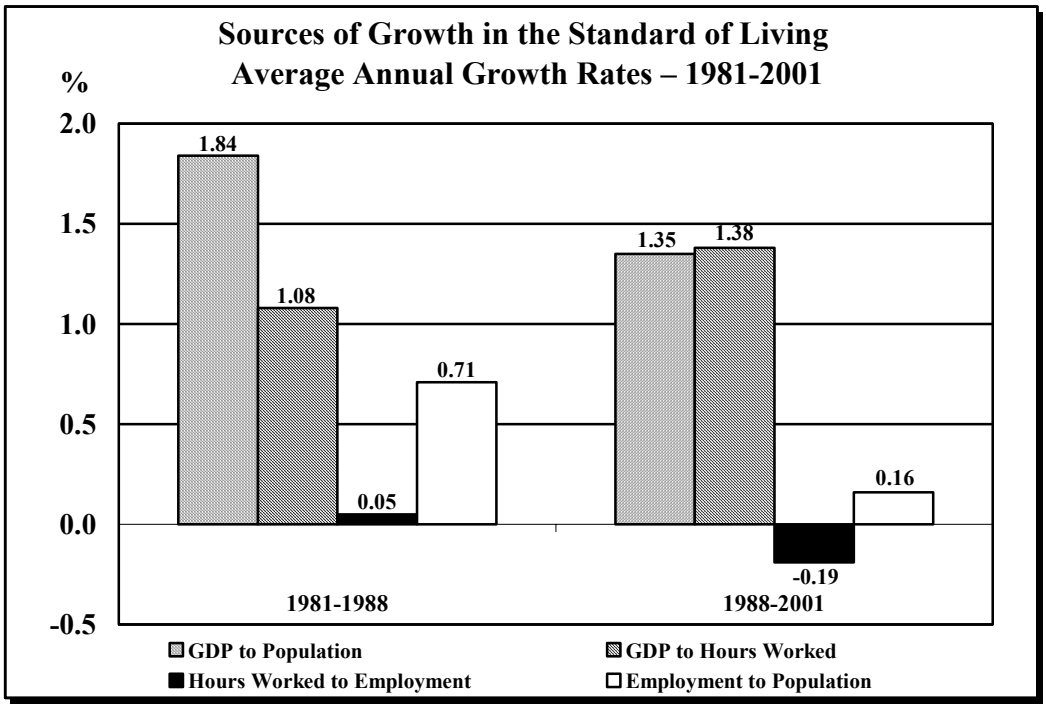
Sources of Growth in the Standard of Living

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

Standard of Living Growth Rate = Productivity Growth Rate + Hours Worked Growth Rate + Employment Growth Rate

The second equation in Figure 6 expresses the same terms in growth rate form; the growth rates of the second, third and fourth terms sum to the growth rate of the first term. This additive formula is shown graphically in Figure 7. As can be seen by the heights of the bars, the growth rate of GDP per capita ("GDP to Population") is the sum of growth rates of labour productivity ("GDP to Hours Worked"), the hours worked per employed person ("Hours Worked to Employment"), and the employment rate ("Employment to Population"). The performances of these statistics are grouped into two periods corresponding to respective business cycles to capture the trends in the sources of growth of Canada's standard of living due to demographics, rather than to cyclical timing aspects of the economy.

Figure 7



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*, 2002, www.csls.ca.

Figure 7 indicates that the growth rate in Canada's productivity (the GDP to Hours Worked bar) increased slightly from the first to the second period, from 1.08% to 1.38%; but the growth rate in the standard of living (the GDP to Population bar) nonetheless fell, from 1.84% to 1.35%. The causes of the fall were the declining number of workweek hours (from 0.05% to -0.19%) and the declining growth rate in employment (from 0.71% to 0.16%). In the

1980s, productivity growth contributed to 59% of the standard of living increase; employment accounted for the remaining 41%. In the 1990s, productivity growth accounted for almost all of the standard of living increase. The obvious inference is that the lower fertility rates among "baby boomers" since the 1970s led to lower labour force recruitment rates by the 1990s, and thus to a significantly reduced growth rate in the proportion of the working-age population to total population. Those lower fertility rates, which resulted in lower labour force recruitment rates, are, therefore, at the root of the reduced growth rate in the standard of living in the 1990s.

Although the future remains as difficult to predict today as it always has been, some developments seem destined to occur. Workweeks, which averaged 64 hours in the 1870s, 58.6 hours in 1901, 43.6 hours in 1951 and 37.5 hours today, are likely to continue their decline.(12) Each generation has demanded and received more leisure than the one before it, and this trend is likely to continue. Fortunately, changes in this variable are likely to have little impact on the growth rate of the standard of living in Canada in the foreseeable future. However, this is not true of the employment rate. The declining rate of growth in employment is not only likely to continue over the next decade, it may even turn negative as growing numbers of "baby boomers" retire.(13) This leaves us with only productivity growth as a source of growth in the standard of living, not only in the upcoming decade but also over the next three decades.(14) Canada's future standard of living thus seems inescapably tied to its productivity performance – even more so than in the past.

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(12) Andrew Sharpe, "The Contribution of Productivity to Economic Well-being in Canada," in Industry Canada, *Productivity Issues in Canada*, 2002, p. 856.

(13) Further exacerbating this demographic trend is the possibility that Canada's NAIRU (that is, the non-accelerating inflation rate of unemployment) may reverse course and begin to rise as "baby boomers" retire. This possibility reflects the fact that the NAIRU, which some people call the economy's natural rate of unemployment, is affected by the structure and age composition of the labour force. The increasing rate of retirement of elderly workers, who enjoy relatively lower rates of unemployment than others, will lead to higher national levels and rates of unemployment. This suggests an additional impetus for further declines in the country's employment rate.

(14) A higher productivity growth rate may provide an additional benefit beyond higher standards of living. It may result in more employed persons in the economy. This development can be deduced from the fact that higher-trend productivity growth rates are negatively correlated with the NAIRU. Therefore, a higher-trend productivity growth rate leads to a lower unemployment rate, or conversely a higher employment rate, which will attenuate the adverse employment effects implied by higher retirement rates.

CONCLUSION

Although it is commonly regarded by the public as uninteresting and of little consequence to citizens' daily lives, a country's productivity is the key determinant of the standard of living and the quality of life of its citizens. Small improvements in productivity sustained for an extended period make a huge difference in standard of living and quality of life. Indeed, increased Canadian productivity is the only effective option for reversing the growing standard of living gap between Canada and the United States. Moreover, productivity will prove to be the most important factor in addressing the current and upcoming challenge of the sustainability and financial viability of Canada's government-financed health care services sector as increasing numbers of "baby boomers" retire in the next two decades.

Canada actually surpassed the United States in terms of its productivity growth performance between 1960 and the mid-1970s. Favourable demographics were on Canada's side then, as its relatively larger "baby boom" generation entered the labour market in the early 1960s and was the chief contributor to its better performance relative to the United States. Now, however, the demographics have turned against us. Canada will soon be affected by relatively higher labour force retirement rates as the "baby boomers" get older. Canada's productivity performance will be pivotal, therefore, in determining Canadians' standard of living and quality of life over the next three decades.