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PER CAPITA GROSS DOMESTIC PRODUCT: AN APPROPRIATE MEASURE OF LIVING STANDARDS? THE CASE OF NEWFOUNDLAND AND LABRADOR

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INTRODUCTION

The basic preoccupation of economists is how to allocate finite resources in such a way as to satisfy infinite wants. In essence, therefore, the profession is devoted to the study of maximizing human welfare – arguably synonymous with standard of living.

The primary goal of the study of living standards in modern democracies is to provide a measure of social and economic performance to evaluate public policy choices.(1) This study and evaluation are meaningful only in a comparative sense; without a frame of reference, it is impossible to evaluate the meaning of growth or declines in living standards, and determine the effectiveness of policies aimed at improving those standards.

Living standards are a nebulous concept, often dominated by value judgments and personal tastes. Nonetheless, there is a general consensus on the type of change that might constitute an improvement in living standards. Possible examples include owning a newer or better car, living in a nicer neighbourhood, going on more vacations, eating out at restaurants more frequently, and so on. In other words, improvements in living standards are usually reflected in increased opportunities to make choices. And in the vast majority of cases, these choices share a common precondition – financial means. As a result, most widely used estimates of living standards focus largely or exclusively on measures of income or wealth.

Of the available measures of income, per capita Gross Domestic Product (GDP) has emerged as the most common indicator used to approximate living standards. Essentially, well-being in a given country is proxied by the size of each person's share of total economic production. The more a country produces on a per-person basis, the higher its living standards are assumed to be.

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(1) Centre for the Study of Living Standards (CSLS), *An Index of Economic Well-Being for the Canadian Provinces*, Ottawa, November 2000, p. 7.

While the use of per capita GDP in this capacity is widespread, the question of whether or not it is an *appropriate* measure of standard of living is frequently overlooked. Even aside from the more ethereal factors than can affect personal welfare, by focusing exclusively on market transactions, per capita GDP provides an incomplete picture of a society's living standards.

This paper is intended to stand as a word of caution against casual use of such broad interpretations of economic data. The following section examines the benefits of using per capita GDP as a measure of living standards and then focuses on some key shortcomings of that indicator. The third section turns to the case of Newfoundland and Labrador. It reviews that province's recent economic performance and illustrates how, when considered in isolation from other economic and social indicators of well-being and prosperity, per capita GDP can lead to an inaccurate perception of living standards. Section four concludes.

PER CAPITA GDP AS A MEASURE OF LIVING STANDARDS

A. Advantages

The justification for using per capita GDP as a measure of living standards is as follows: When real (inflation-adjusted) per capita GDP is rising, then more goods and services are being produced per person. If more is being produced, this implies that more is available to consume and that consumers are in a better position to buy those products, because economic growth tends to increase both personal income and employment. In a material sense, therefore, standard of living must be higher.

As a measure of living standards, per capita GDP has several advantages. In addition to the fact that it is the broadest measure of income in an economy, GDP figures are readily available for nearly all countries and many sub-national regions as well, making international comparisons relatively easy. As well, per capita GDP reflects a society's ability to consume without making judgments on the nature of that consumption. In addition, it has been argued that because per capita GDP includes such income sources as corporate profits, which can be distributed as dividends or reinvested to increase future consumption,[2] it reflects potential consumption opportunities not only in the present, but also in the future.

(2) CSLS, *Raising Canadian Living Standards: A Framework for Discussion*, Background paper for the TD Forum on Canada's Standard of Living, October 2002, p. 6.

Perhaps the greatest advantage to using per capita GDP as a measure of living standards is that it lends itself to detailed analysis, because it can be mathematically decomposed into intuitive constituent elements:(3)

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

In other words, the formula above states that per capita GDP is equivalent to: a measure of labour productivity (output per hour worked) multiplied by workers' effort (the average number of hours worked per employed person), multiplied by a measure of labour force employment,(4) multiplied by the labour force participation rate (the proportion of the population with a job or looking for a job). The fact that GDP per capita can be interpreted as a function of these four components makes it a valuable indicator to those researchers wishing to investigate the root cause of changes in relative living standards.(5)

B. Drawbacks

As mentioned above, GDP is a measure of the final value of goods produced in the economy.(6) By adding the value of market transactions, it provides a good encapsulation of the level of economic activity taking place. GDP is an invaluable tool for businesses and policy-makers in assessing the economic climate and prescribing appropriate policies.

However, GDP was never intended to be used as a measure of social welfare. Indeed, Simon Kuznets himself, the inventor of the System of National Accounts – used to calculate GDP – cautioned against such an interpretation of the statistic.(7) This sentiment was

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(3) D. Shaw, *Canada's Productivity and Standard of Living: Past, Present and Future*, PRB 02-23E, Parliamentary Research Branch, Library of Parliament, Ottawa, October 2002.

(4) In fact, this figure is more commonly referred to by economists as the inverse of the unemployment rate. The unemployment rate is equal to the number of unemployed (but actively looking for work) divided by the number of people in the labour force (the employed plus the unemployed). As such, in the equation above, the number of *employed* divided by the labour force is the same as 1 minus the unemployment rate.

(5) This methodology is very common in research on living standards and labour productivity. See, for example, Shaw (2002) and CSLS (2002).

(6) GDP measures only the value of final goods because if intermediate goods were included, they would be counted in GDP figures twice – once as intermediate goods and once as a component of a final product.

(7) B. Haggart, *The Gross Domestic Product and Alternative Economic and Social Indicators*, PRB 00-22E, Parliamentary Research Branch, Library of Parliament, Ottawa, December 2000, p. 6.

echoed more recently by U.S. Federal Reserve Chairman Alan Greenspan, who stated that while GDP "is still the best measure of market value of goods and services, it is not necessarily a measure of welfare, or even a significant measure of standard of living."(8) Some of the specific limitations of per capita GDP are discussed below.

1. GDP as a Measure of Economic Activity

While GDP may be the best *available* indicator of economic activity, it is nevertheless an imperfect tool of measurement. For example, since GDP accounts only for market transactions, it does not include the value of unpaid labour. In other words, a family that does its own housework and home repairs is not contributing to economic (GDP) growth, while a family that hires someone to perform those same tasks, is. Moreover, while GDP counts production as a positive economic event, many of the outcomes associated with production – such as environmental degradation and natural resource depletion – are not properly recorded as costs, leading GDP to overstate the value of economic activity. Furthermore, GDP fails to distinguish between positive and negative activities. War, crime, and natural disasters are all unambiguously good for GDP because they are catalysts for market transactions.

As a result, the pursuit of GDP growth as an end unto itself is not a sound economic strategy; GDP does not provide a complete picture of the costs and benefits of market transactions. It simply documents a selection of them. It says little about the implications of growth, the sustainability of growth or the long-term costs of that growth.

2. GDP as a Measure of Income

Related to the question of whether or not GDP accurately reflects economic activity is the question of whether it is an appropriate measure of income. As mentioned above, GDP is the broadest measure of income, including such earnings sources as investments and corporate profits, while at the same time subtracting the effects of depreciation on (businesses') capital assets.

Corporate profits are important to the long-run viability of an economy. Companies pay taxes on profits; profits can be distributed in the form of dividends or reinvested in research and development, machinery and equipment, plant expansion and so on. All these activities improve economic welfare in the long term.

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(8) *Ibid.*

However, the suggestion that each dollar in corporate profits contributes as much to national living standards as each dollar in wages and salaries is somewhat dubious. Even in cases where companies have many shareholders and profits are distributed in the form of dividends, only a small proportion of the population would be affected; the poor would not likely be among them. Furthermore, any effect that profits might have on future economic growth would be reflected in future employment, productivity and wage growth. For these reasons, some studies of living standards avoid per capita GDP as a measure of income and instead employ more direct instruments such as personal income or personal disposable income.

3. Leisure Versus Work

Another flaw in the use of per capita GDP as a proxy for living standards is the fact that it penalizes the choice of leisure over work. There is wide agreement amongst economists that productivity gains are key to the advancement of living standards (whether or not those standards are measured by per capita GDP). As labour productivity in a society increases, less work is required to produce any given level of output. That society can then choose to further increase output (and therefore income), or to decrease the workload. Most people would agree that either choice – more income or more leisure – represents an improvement in living standards.

However, the per capita GDP measure of living standards regards only one of these – income growth – as benefiting human welfare. Studies show that Belgium, Norway, France and the Netherlands all have more productive economies than the United States.(9) Nevertheless, since those countries have all chosen to increase leisure time instead of output,(10) the per capita GDP measure rates them all as having significantly lower standards of living than the United States.

4. Other Indicators of Living Standards

In the comparative study of living standards, per capita GDP provides an estimate of the consumptive potential of a given citizenry. A number of other statistics, however, also provide insight into a country's living standards. Among these are life expectancy, educational attainment, infant mortality and crime rates. It is often argued that as per capita GDP rises, so

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(9) CSLS (2002), Appendix, Table 12.

(10) Average hours worked per week in these countries are significantly lower than in the United States.

too does a country's capacity to make improvements in those areas. Indeed, there is a general relationship between per capita GDP and many of these other indicators. However, the *capacity* to improve life expectancy, for example, means little unless tangible results are evident. In the case of Canada and the United States, Canada's per capita GDP is only about 82% of the U.S. value. While this suggests that the United States has a greater capacity to improve social conditions domestically, it remains the case that Canadians have longer life expectancies, lower infant mortality rates, higher education enrolments and lower homicide rates.(11)

This failure to reflect quantifiable social indicators in an estimate of living standards is a much-cited criticism of per capita GDP. The criticism has contributed to the creation of a multitude of alternative indicators that attempt to incorporate some or all of these social indicators into a more comprehensive measure of well-being. The best-known of these is the United Nations Human Development Index, while two Canadian examples are the CSLS's Index of Economic Well-Being and the Genuine Progress Index developed by GPI Atlantic in Halifax.

The introduction of alternative indicators, however, has done little to resolve the debate. Health, education, lifespan, leisure and income are all closely interrelated and there is no consensus on the weighting of the various components of alternative indicators: is a long life more or less important than a high income? Is leisure time more or less valuable than health? Is living in a low-crime neighbourhood better than good access to job opportunities?

5. Income Distribution

Perhaps the most significant shortcoming of per capita GDP as a measure of living standards is that it is silent on the issue of income distribution. It simply divides total GDP by total population to arrive at an estimate of each person's share of total economic output. However, incomes are not distributed evenly in any country. According to 2001 Census data, the wealthiest 10% of Canadian families accounted for 28% of total income in 2000. By contrast, the poorest 10% made up only 2% of total income.(12)

The gap between the richest and the poorest in Canada has widened. From 1990 to 2000, the richest 10% of families have seen their average incomes grow by 14.6%, while incomes for the poorest 10% grew by less than 1% over the same period. However, since

(11) Data from the United Nations 2002 Human Development Index and the Canadian National Parole Board for homicide statistics.

(12) These figures refer to total family incomes, not to per capita GDP.

Canada has enjoyed relatively healthy GDP growth in recent years, the GDP per capita measure tells us simply that Canadians' standard of living has improved; whether that income accrues to the poorest or the richest makes no difference to the bottom line.

Because a small segment of the population accounts for a relatively large proportion of total income in most countries, a simple average measure such as per capita GDP paints a misleading picture of the typical level of income. Wealthy outliers earning hundreds or thousands of times the average income can skew that average. For large sample sizes, therefore, the *median* income – the level at which half the population earns more and half earns less – is a more representative measure. Unfortunately, however, median per capita GDP figures (or other median income statistics) are not reliably available for many countries.

THE CASE OF NEWFOUNDLAND AND LABRADOR

A. Recent Economic Performance

The shortcomings of per capita GDP as an indicator of living standards is demonstrated in a case study of the recent economic performance of Newfoundland and Labrador. The development of the offshore oil and gas industry in that province has triggered a period of virtually unparalleled economic growth. Led by production at the Hibernia and Terra Nova deposits, Newfoundland and Labrador has been Canada's fastest-growing province in economic terms over the past five years. From 1997 to 2002, provincial GDP rose by 35.7%, well above that of the next strongest province, Ontario, which grew by 24.4% over the same period.

On a per capita basis, the performance of the Newfoundland and Labrador economy appears all the more remarkable. While most provinces have growing populations, chronic emigration from Newfoundland and Labrador to other provinces has resulted in nearly 10 consecutive years of population decline. As a result, per capita GDP growth in Newfoundland and Labrador has been even higher than total GDP growth. Per capita GDP in that province increased by 41.4% from 1997 to 2002, compared to 18.1% for Quebec – the province with the next-highest growth – and 14.9% nationally.

This surge in economic activity has dramatically improved Newfoundland and Labrador's relative economic strength in Canada. The province's per capita GDP is now the highest in Atlantic Canada and is approaching the levels seen in Manitoba, Saskatchewan and British Columbia.

Indeed, the improvement in economic conditions in the province is evident in a wide range of indicators. Labour markets, personal incomes, government revenues and private investment – to name a few – have all seen healthy growth in recent years, while expected developments in the mining and energy sectors point to continued strong growth for several years to come.

B. Relating Per Capita GDP Growth to Living Standards

Without diminishing the significance of the economic advances in Newfoundland and Labrador, it would be misleading to suggest that the dramatic growth in the province's per capita GDP translates into an equivalent rise in living standards. Undoubtedly, the province's standard of living has improved. An improvement of over 41% in only five years, however, is not only highly improbable; it does not withstand even a cursory examination of the details underlying that growth.

1. Labour Markets

Since the development of the Newfoundland and Labrador offshore resources began, the province has seen a gradual improvement in its labour market conditions. Nearly 27,000 jobs were created from 1997 to 2002. These new jobs drove down the unemployment rate while at the same time creating renewed optimism in employment prospects in the province; record numbers of Newfoundlanders are looking for work. The provincial employment rate (the proportion of the working-age population with a job) is at its highest level on record.

Nonetheless, this improvement is not in proportion to the increased levels of economic activity in the province. While 27,000 new jobs have been created, GDP has risen by close to $3.8 billion, implying that – all else being equal – each new job has increased GDP by about $139,000. This high figure is a reflection of the capital-intensive nature of the offshore oil and gas industry. Recovering offshore energy requires significant investment in machinery, equipment and structures. However, once construction of facilities is complete, the long-run employment benefits of the offshore oil and gas industry are relatively low compared to other, more labour-intensive industries.

In other words, while Newfoundland and Labrador's per capita GDP has improved by over 41%, its labour market conditions have improved to a much lesser extent and remain far below the levels seen in other provinces. Newfoundland and Labrador still has the highest unemployment rate, the lowest employment rate and the lowest labour force participation rate of any province.

2. Source of GDP Growth

Although wages, salaries and other labour income make up the lion's share of GDP in Newfoundland and Labrador, a significant proportion of the province's recent economic growth has come in the form of corporate profits. From 1997 to 2001, labour income (as a source of GDP) in the province grew by just under 21%. However, corporate profits (as a source of GDP) increased by about 176% over the same period. Corporate profits accounted for about 12.6% of GDP in Newfoundland and Labrador in 2001, compared to 10.6% nationally.

The point has already been made that a dollar in corporate profits is unlikely to have the same effect on living standards as a dollar in wages and salaries. In the case of Newfoundland and Labrador, moreover, a large proportion of the companies responsible for the province's economic growth are headquartered in Calgary, Texas or elsewhere outside the province. As a result, while profits are registered as accruing to Newfoundland and Labrador, it is likely that at least a portion of these profits is repatriated to the company's head office location. Thus, although profitable operations in Newfoundland do improve the prospects for future offshore developments, and therefore future economic growth, they do not produce an immediate and significant improvement in the standard of living in the province.(13)

3. Personal Income Growth

A more explicit indication that Newfoundland and Labrador's standard of living has not risen by 41% in the past five years is the wide gap between GDP growth and personal income growth. Personal income per capita in Newfoundland and Labrador increased by 20.0% from 1997 to 2001 – a strong rate of growth, but not significantly higher than the national average growth rate of 17.7%.(14) Taking into account the effects of taxation, the difference between Newfoundland and the national average is even smaller. Personal disposable income in the province grew by 18.7% from 1997 to 2001, compared to the national average of 17.6%.

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(13) The situation is analogous to Ireland's recent economic boom. That, too, is somewhat overstated, although to a lesser degree, because of the repatriation of profits by large multinational corporations operating in that country.

(14) Personal income data for 2002 are unavailable. Unlike GDP growth rates, personal (disposable) income figures do not take into account the effects of inflation.

Moreover, although average personal income growth in the province has been strong, that growth is not evenly distributed. The oil and gas industry is capital-intensive and thus creates relatively few jobs, many of which are in relatively high-paying fields such as engineering, construction and specialized trades. Attracting and retaining these types of knowledge-based, skilled workers is of critical importance to the long-run economic potential of the province. However, the increase in average income resulting from the creation of such jobs does not raise the living standards of the majority of residents.

4. Population and Migration

As a final point: since GDP per capita in Newfoundland is now higher than in Nova Scotia, New Brunswick or Prince Edward Island, one would expect that the new-found affluence of Canada's easternmost province would attract Canadians from other areas, eager to take advantage of the higher standard of living. Indeed, there is some evidence that this is happening. Between 1998 and 2002, the number of Canadians moving to (or returning to) Newfoundland and Labrador increased by 58%, while the number of Newfoundlanders leaving the province fell by 16%. However, even this improvement in migration statistics could not stem the tide of net emigration from the province: in 2002, a net total of 2,500 people left Newfoundland and Labrador for elsewhere in Canada. At the same time, Prince Edward Island – now the province with the lowest per capita GDP in Canada – has been the most consistent of any province in attracting a net *inflow* of interprovincial migrants.(15)

CONCLUSION

Since the invention of the System of National Accounts, GDP has emerged as the most widely accepted measure of economic output. As GDP measures the market value of all final goods and services produced, it has also become synonymous with a broad definition of income: a country is considered wealthy if it produces valuable products.

Using the argument that as wealth increases, so too does a society's capacity to improve itself, many economists and social scientists have extended this interpretation of GDP to mean that the more a given society produces, the better off that society must be in a material sense. As a result, the per-person share of economic output – per capita GDP – has gained widespread acceptance as a measure of living standards.

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(15) Prince Edward Island has had a net outflow of interprovincial migrants only once in the past 10 years. Alberta has the next-best record of attracting migrants, with a net outflow in only 3 of the past 10 years.

This paper demonstrates that although per capita GDP is a broad measure of economic production, it is a crude measure of living standards, especially when employed in isolation from other economic and social indicators. While growth in per capita GDP can increase prosperity, it does not necessarily translate into an equivalent growth in living standards. This is evident in the example of Newfoundland and Labrador. Although per capita GDP growth in the province has surged by over 41% from 1997 to 2002, it would be highly misleading to suggest that that figure corresponded directly to the improvement in living standards over the past five years. Such casual interpretation of per capita GDP can lead to the mistaken conclusion that GDP growth is an end unto itself, rather than a means to an end.

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