Catalogue no. 11-626-X — No. 001
ISSN 1927-503X
ISBN 978-1-100-19672-5

Analytical Paper

Economic Insights

Economic Growth in North America: Is Canada Outperforming the United States?

by Ryan Macdonald
Economic Analysis Division

Statistics Canada Statistique Canada

Canada

How to obtain more information

For information about this product or the wide range of services and data available from Statistics Canada, visit our website at www.statcan.gc.ca, e-mail us at infostats@statcan.gc.ca, or telephone us, Monday to Friday from 8:30 a.m. to 4:30 p.m., at the following numbers:

Statistics Canada's National Contact Centre

Toll-free telephone (Canada and United States):

Inquiries line	1-800-263-1136
National telecommunications device for the hearing impaired	1-800-363-7629
Fax line	1-877-287-4369

Local or international calls:

Inquiries line	1-613-951-8116
Fax line	1-613-951-0581

Depository Services Program

Inquiries line	1-800-635-7943
Fax line	1-800-565-7757

To access this product

This product, Catalogue no. 11-626-X, is available free in electronic format. To obtain a single issue, visit our website at www.statcan.gc.ca and browse by "Key resource" > "Publications."

Standards of service to the public

Statistics Canada is committed to serving its clients in a prompt, reliable and courteous manner. To this end, Statistics Canada has developed standards of service that its employees observe. To obtain a copy of these service standards, please contact Statistics Canada toll-free at 1-800-263-1136. The service standards are also published on www.statcan.gc.ca under "About us" > "The agency" > "Providing services to Canadians."

Published by authority of the Minister responsible for Statistics Canada

Cette publication est aussi disponible en français.

Standard symbols

The following symbols are used in Statistics Canada publications:

.	not available for any reference period
..	not available for a specific reference period
...	not applicable
0	true zero or a value rounded to zero
0^s	value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
^{p}	preliminary
^{r}	revised
x	suppressed to meet the confidentiality requirements of the *Statistics Act*
^{E}	use with caution
F	too unreliable to be published
*	significantly different from reference category ($p < 0.05$)

Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued co-operation and goodwill.

Economic Growth in North America: Is Canada Outperforming the United States?

By Ryan Macdonald

This *Economic Insight* looks at commonly-used measures that are employed to compare the relative economic performance of Canada and the United States. It is based on research undertaken at Statistics Canada aimed at improving information about how and why Canadian and U.S. economic progress differs.

There are a number of output and income measures that are produced by statistical agencies that can be used to examine the relative economic performance of national economies. This paper examines the key measures of economic performance, highlights the information contained in each measure, and brings them together to provide an overview of the relative economic performance of the Canadian and U.S. economies over the last decade.

Measures used for comparison

The measures most frequently employed to compare the economic progress of Canada and the United States are rooted in the production concepts that are used to estimate measures of aggregate income. The ones that often garner the most attention are measures of productivity. Comparisons of productivity growth between Canada and the United States show Canada falling behind and are often the focus of headlines.

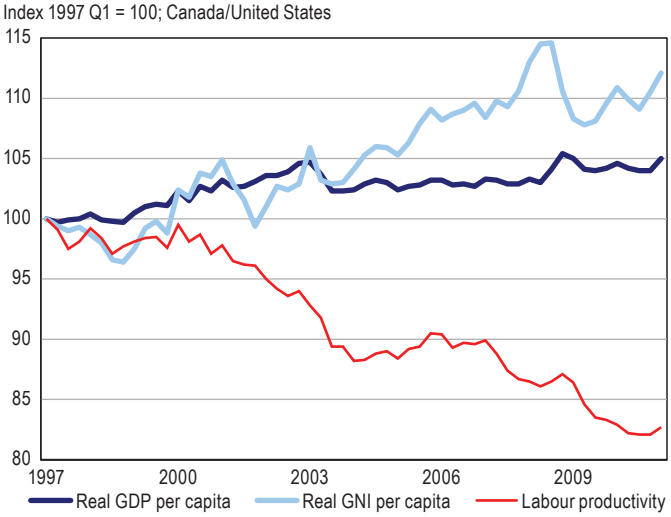
Canadian economists worry about lagging productivity growth in part because productivity growth is traditionally viewed as the source of real wage growth. Higher productivity growth is often translated via competition into slower increases in consumer prices relative to wages. As a result, purchasing power rises. Without productivity growth, real wages and living standards can stagnate. If Canadian productivity growth falls behind that of the United States, then Canadian standards of living may also fall behind.

Including economic factors beyond productivity

In an economy that does not trade, productivity growth is the primary force that raises overall living standards. However, when nations trade, there are other routes that can raise living standards. Trading nations can transform their stock of assets (knowledge, capital, resources) into the goods and services they want to consume by exchanging them with other nations. If the terms at which one nation can trade with another improve, then that nation can transform its exports into a greater flow of imported goods and services, thereby increasing its living standards. If a country's trading partner raises its productivity and its prices begin to fall, then the home country can benefit from this productivity growth through lower import prices. And if the prices of the goods that the home country sells rise because of increasing demand for its exports in world markets, its citizens can purchase more goods and services on world markets without sending more units of its exports across the border. These types of benefits are referred to as terms of trade improvements.

Terms of trade improvements lead to real wage growth, but they are not captured by productivity statistics. Productivity statistics are designed to measure changes in productive

Chart 1
Economic performance of Canada relative to the United States, 1997 Q1 to 2011 Q1



Source: Statistics Canada; U.S. Bureau of Economic Analysis; and U.S. Bureau of Labour Statistics

efficiency, not changes in citizens' ability to buy goods and services. Similarly, the most commonly-employed real income statistic, real GDP per capita, is a production-based measure that does not treat changes in the terms of trade as increases or decreases in real income. To understand real income growth in a trading economy, it is necessary to use a real income metric, referred to as real gross national income (GNI) per capita, which combines changes in production and productivity with changes in the terms of trade. Real GNI is a measure of the purchasing power of the income that accrues to Canadians through the production process, regardless of where that production occurs.

Perceptions of progress depend on the measure used

Research[1] has shown that the assessment of Canadian economic progress relative to the United States for the last 15 years depends largely on whether productivity is viewed in isolation, or whether all sources of real income growth are considered.

When labour productivity[2] is used as a measure of economic progress, Canada falls 17% relative to the United States between 1997 Q1 and 2011 Q1 (Chart 1). This measure alone suggests that Canada's standard of living is not rising as quickly as that of the United States. However, based on real GDP per capita, Canada's living standards improved relative to the United States by 5% over the same period. And when real GNI per capita is used, Canada's living standards rose even more sharply—by 12%—relative to that of the United States.

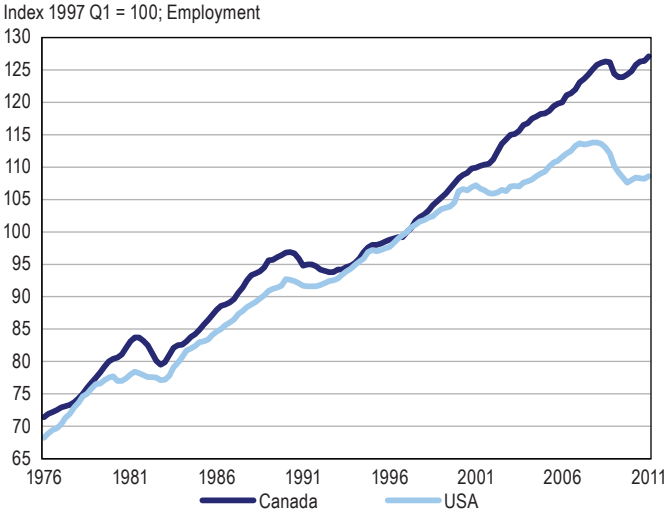
Which measure is best?

The marked divergence between these results begs the question, "Which is right?" Unfortunately, as with so much in economics, the answer is "it depends." If the focus is the efficiency of Canadian production, then labour productivity is preferable. However, if the focus is the income Canadians are producing, real GDP per capita is more relevant. To move from comparing labour productivity to real GDP per capita, adjustments related to labour input and the labour force are made. These adjustments show that a large part of the difference in the trajectories of labour productivity and GDP per capita between Canada and the United States is due to better job growth in Canada (Chart 2, Table 1). More people working raises real GDP per capita, but it also raises the number of hours worked, and therefore, lowers labour productivity. Canada's lower productivity growth relative to that of the United States occurred at the same time that Canada experienced stronger employment growth. Therefore the measure of real income produced that is generated from a comparison of GDP per capita is more favourable for a Canada/U.S. comparison than are relative productivity measures.

Finally, if the focus is on what Canadians can buy with their income, real GNI per capita should be used. Real GDP per capita measures income based on what is being produced: the number of coffees sold, barrels of oil extracted, cars made, or bushels of wheat harvested. However, in a market economy such as Canada which trades extensively, that production can be turned into imports (computers, electronics, cars, clothes and machinery) for consumption or investment. To capture the full effect of that trade, it is necessary to incorporate international price movements—most importantly, the terms of trade. Real GNI combines production (real GDP) with income changes from non-merchandise trade-related international activity (things like international investment and relative price movements). Importantly, it includes changes in the terms of trade.

Overall, real GNI offers the most comprehensive picture of a country's economic performance and changes in living standards. It includes the impact of productivity growth, employment growth, capital investment, and changes in the terms of trade. All these factors influence the economic and material comfort of a nation. Basic economic measures like real consumption per capita or real personal disposable income per capita, both of which are contained in real GNI, and both of which accrue to households, show stronger growth from 1997 Q1 to 2011 Q1 in Canada than in the United States (Table 1). International comparisons based on real GNI offer a more comprehensive picture of changes in living standards between Canada and the United States that shows the advances that have occurred in relative living standards in Canada over the last decade and a half.

Chart 2
Employment indexes - Canada and the United States



Source: Statistics Canada; and U.S. Bureau of Labour Statistics

1. See for example: Macdonald 2008b, 2010.
2. Labour productivity is measured as real GDP per hour worked. It is a partial measure of productivity, because it does not account for improvements in the efficiency with which labour is employed in the production process. A more comprehensive measure, Multi Factor Productivity (MFP), accounts for improvements in labour and capital utilization. Measures of MFP are not available at a quarterly frequency, and for that reason, were not used here. If MFP is used instead of labour productivity there are some numerical differences, but the basic result remains that Canada's productivity growth has not kept pace with that of the United States.

Table 1
Quarterly Annualized Growth Rates

	1997 Q1 to 2011 Q1	1997 Q1 to 2001 Q1	2001 Q1 to 2001 Q4	2001 Q4 to 2007 Q4	2007 Q4 to 2009 Q2	2009 Q2 to 2011 Q1
	percent					
Labour Productivity						
Canada	1.3	2.6	2.8	0.7	-0.7	1.5
USA	2.7	3.5	5.3	2.4	0.9	2.9
Real GDP Per Capita						
Canada	1.6	3.6	-0.2	1.7	-3.5	2.2
USA	1.3	2.8	-0.1	1.7	-4.3	1.8
Real GNI Per Capita						
Canada	2.2	2.5	-5.6	3.4	-5.7	3.9
USA	1.3	2.7	1.4	1.5	-4.0	1.6
Real Personal Disposable Income Per Capita						
Canada	2.1	2.8	-1.0	2.5	1.2	1.4
USA	1.7	3.1	0.4	1.9	-0.8	0.4
Real Consumption Per Capita						
Canada	2.1	2.6	0.5	2.9	-0.8	1.9
USA	1.7	3.6	2.2	1.8	-3.1	1.5
Employment						
Canada	1.7	2.4	0.7	2.1	-0.6	1.5
USA	0.6	1.7	-1.4	1.2	-2.7	-0.3

Note: Table calculations are based on a compound annualized quarterly growth rate between start and end points. To match the growth rate for the entire 1997 Q1 to 2011 Q1 period the sub periods are reported using the same terminal and starting points. For example, If the period is split in half, then the same overall growth rate is achieved by compounding from 1997 Q1 to 2011 Q1 and by compounding from 1997 Q1 to 2004 Q2 and then compounding from 2004 Q2 to 2011 Q1. It is necessary to use 2004 Q2 as the terminal point of the first period and the beginning point of the second period. Failure to do so results in inconsistent results due to a gap in data employed as the growth from 2004 Q2 to 2004 Q3 would be omitted. This way of compounding across sub-periods will produce results that are different from quarterly annualized average rates.
Source: Statistics Canada; U.S. Bureau of Economic Analysis; and U.S. Bureau of Labour Statistics.

References

This *Economic Insight* is based on Economic Analysis Division research into economic growth. For more information, please see:

Baldwin, J.R. and W. Gu. 2007. *Long-term productivity growth in Canada and the United States*. Statistics Canada Catalogue no. 15-206-X. Ottawa, Ontario. The Canadian Productivity Review. No. 13.

Baldwin, J.R., W. Gu and B. Yan. 2008. *Relative multifactor productivity levels in Canada and the United States: A sectoral analysis*. Statistics Canada Catalogue no. 15-206-X. Ottawa, Ontario. The Canadian Productivity Review. No. 19.

Macdonald, R. 2007a. *Real GDP and the purchasing power of provincial income*. Statistics Canada Catalogue no. 11F0027M. Ottawa, Ontario. Economic Analysis Research Paper Series. No. 46

Macdonald, R. 2007b. *Canadian and U.S. real income growth pre and post 2000: A reversal of fortunes*. Statistics Canada Catalogue no. 11F0027M. Ottawa, Ontario. Economic Analysis Research Paper Series. No. 48.

Macdonald, R. 2010. "Real gross domestic income, relative prices and economic performance across the OECD." *Review of Income and Wealth*. Vol. 56. No. 3. p. 498-518.

Macdonald, R. 2011. *Measurement of real Income in the System of National Accounts: An application to North American economies*. Statistics Canada Catalogue no. 11F0027M. Ottawa, Ontario. Economic Analysis Research Paper Series. No. 68.

Roy, F. 2004. "Terms of trade, GDP and the exchange rate." *Canadian Economic Observer*. Vol. 17. No. 3. Statistics Canada Catalogue no. 11-010-X. p. 3.1-3.10.