Assessing the drivers of the Canada-US prosperity gap

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Presented at the Canadian Economics Association
38th Annual Meetings
Friday, June 4 - Sunday, June 6, 2004
Ryerson University, Toronto

About the Institute for Competitiveness & Prosperity

The Institute for Competitiveness & Prosperity is an independent not-for-profit organization established in 2001 to serve as the research arm of Ontario's Task Force on Competitiveness, Productivity & Economic Progress.

Research published by the Institute is primarily intended to inform the work of the Task Force. In addition, it is to raise public awareness and stimulate debate on a range of issues related to competitiveness and prosperity.

The mandate of the Task Force, announced in the April 2001 Speech from the Throne, is to measure and monitor Ontario's competitiveness, productivity and economic progress compared to other provinces and US states and to report to the public on a regular basis.

The Task Force's First Annual Report to the people of Ontario, *Closing the prosperity gap*, was published in November of 2002. The Second Annual Report, *Investing for prosperity*, was published in the fall of 2003.

Comments on this paper are welcome and should be directed to the Institute for Competitiveness & Prosperity (see end of paper for contact information). The Institute for Competitiveness & Prosperity is funded by the Government of Ontario through the Ministry of Economic Development and Trade.

Executive Summary

The Institute for Competitiveness & Prosperity is pleased to present this paper, *Assessing the drivers of the Canada-US prosperity gap* at the 2004 Annual Meetings of the Canadian Economics Association. It is excerpted from our special report *Partnering for investment in Canada's prosperity*, published in January 2004 on the occasion of the 2004 Davos conference, "Partnering for Prosperity and Security." The Institute for Competitiveness & Prosperity has extended its analysis of productivity in Ontario and highlights the results of our research on understanding Canada's prosperity gap versus the United States.

Canadians take pride in our achievements in creating one of the world's most successful economies. In fact, other than the United States, no other country of comparable or greater size and population has achieved our level of prosperity. But the Institute continues to urge Canadians to aspire to close the prosperity gap.

The major conclusion of this report is that raising productivity – the ability of Canadian people, firms, and governments to create value from our labour, intellectual and physical capital, and natural resources – is the key to closing this prosperity gap. Our analytical approach is to assess each element within a framework that accounts for the difference in Gross Domestic Product per capita between Canada and the US. The framework, based on a decomposition of GDP per capita isolates three labour supply factors – demographic profile, labour force utilization, and work intensity – and labour productivity. We find that labour supply factors are not the keys to closing the prosperity gap; instead addressing our productivity under-performance is our key challenge. This productivity under-performance is the result of several factors – lower urbanization rates and lower investments in human and physical capital.

Assessing the drivers of the Canada-US prosperity gap

Canada's economy is strong, ranking among the most prosperous countries in the world. Canadians also enjoy a stable and secure environment, with a society that, while diverse, is socially cohesive, sharing fundamental values from coast to coast.

But we cannot stand still. In today's world, competitiveness is not an option. To ensure Canada's standard of living continues to rise, our economy must grow. To grow, our economy must be competitive with other jurisdictions, particularly our most significant trading partners.

Competitiveness depends on our capability to produce and sell superior products and services that customers in Canada and the rest of the world are eager to buy. Or it can come from selling our products and services at attractive prices because they are produced at lower costs with superior processes or technologies. Increased international trade and globalization have enabled firms and regions to expand their potential markets and to focus on specific products, services, and capabilities. But that means that they have to be internationally competitive in their specialization.

The Institute for Competitiveness & Prosperity has analyzed Canada's international competitiveness and identified a prosperity gap with the United States – our most significant trading partner and North American neighbour – that is widening and worrisome. To reverse this trend, Canadian individuals, businesses, and governments need to partner more effectively to generate higher prosperity from our capital, human, and natural resources. Our efforts today represent our investment for future generations.

Canada's economy is strong

In Canada, our economic strength encourages optimism about our future prospects. Our economy continues to grow and is one of the strongest in the world, leading any comparable region outside the United States *(Exhibit 1*). By most measures, Canada's economy is vibrant and robust. In absolute terms, Canada's economy has performed well, achieving above-average growth in economic output, eliminating government deficits, and purging the curse of inflation.

Canada continues to be one of the best places in the world to live, work, and invest. We have responded well to the challenges of globalization. Canada's exports in 2002 stood at an unprecedented level of $472 billion – more than 40 per cent of the Canada's output. Canada leads the world's top performing economies in exports as a share of the economy and on a per capita basis.

Exhibit 1 Canada's economy outperforms most others

GDP per Capita at Purchasing Power Parity in C$ (2002)

RANK	COUNTRY	GDP per Capita at PPP
1	United States	$43,600
2	Canada	$36,800
3	Australia	$33,200
4	Netherlands	$32,600
5	Germany	$31,500
6	France	$31,300
7	United Kingdom	$30,700
8	Japan	$30,700
9	Italy	$30,600
10	Taiwan	$30,000

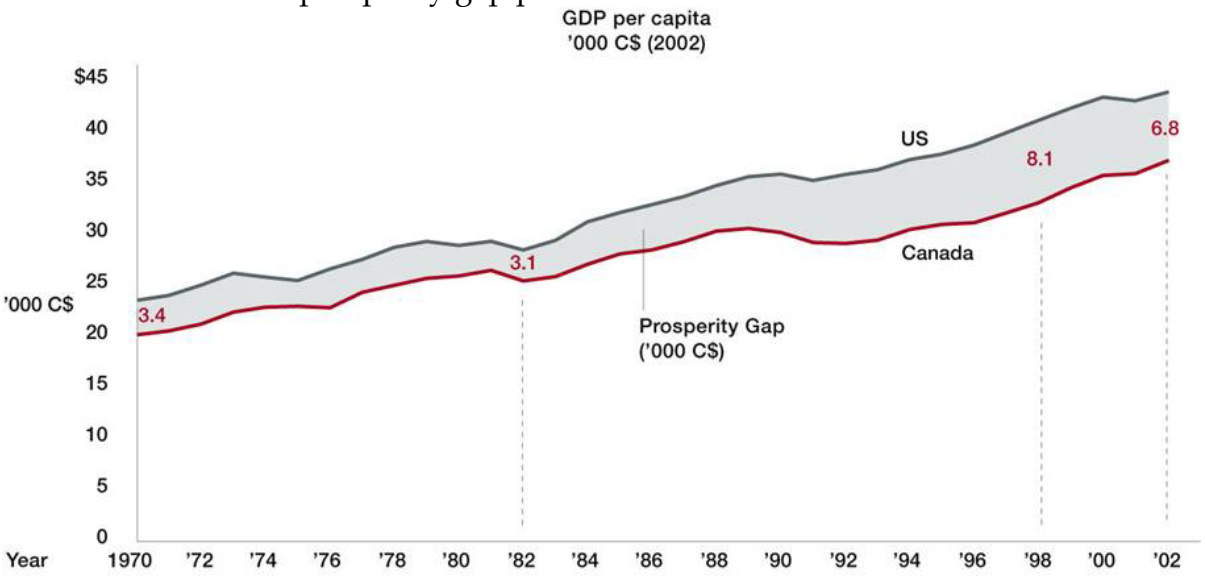
Source: Institute for Competitiveness & Prosperity, World Economic Forum
Note: Only countries with populations over 15 million (i.e., half of Canada's or greater)

Note that throughout this report we use constant 2002 Canadian dollars using purchasing power parity conversion unless otherwise noted.

The prosperity gap hinders increases in living standards

As comforting as Canada's position may look globally, the Institute has concluded that a more relevant comparison is with the United States. We believe it provides the most appropriate benchmark for our own economic progress. Against the United States, we have a significant prosperity gap *(Exhibit 2)*.

Exhibit 2 Canada's prosperity gap persists



Source: Statistics Canada, Cansim II, Table No. 380-0002, 510-001, 380-0017; US Bureau of Economic Analysis, Available online at: http://www.bea.gov

Our relatively poor prosperity ranking is worrisome not only because the gap is large, but also because it has slowly and steadily widened over the past two decades. In 1982, for example, Canada was only 10.9 percent or $3,100 behind the United States. Between 1982 and 1998 the prosperity gap between Canada and the United States widened considerably – more than doubling in real dollars per capita. Since 1998 the gap has moderated somewhat to just under $6,800 in 2002.

This prosperity gap does not derive from a fundamental weakness in our economy, such as demographics, industry mix, or work force characteristics. The gap does indicate that Canadians are not deriving as much strength from our available resources as we could. We have found no reason why we should accept being a distant second to the United States.

By not realizing our full economic potential we are less able to increase our economy's capacity for future upgrades and innovations and to support higher spending in areas such as health care and education. And, without action, we will witness growing disparities in economic well-being with our neighbours to the south.

The prosperity gap matters: $6,800 in GDP per capita translates into a yearly difference in after-tax disposable income of just over $10,000 per family. If the gap were eliminated, the economic well-being of Canadians would be enhanced. Families could enjoy the additional income in many different ways, based upon 2000 Statistics Canada data on household expenditure.[1] For example, among mortgage holders the average annual mortgage payment ($9,700) could be covered entirely. Among tenants, average rent payments of $6,400 could be offset, or renters could choose to own. In addition, purchasing a car ($12,200) would be easier, many more could make significant increases to RRSP contributions, or people could significantly increase their annual charitable donations from the current level of $1,800. Further, provincial and federal governments would also benefit, collecting approximately $75 billion annually, from Canadian taxpayers without increasing rates. This additional tax revenue would enable Canada's government to address funding issues in health care, education, and social services.

In summary, Canada's economic performance has been very positive. But we can do better.

Canada's prosperity requires closing the productivity gap

Our economic progress is inextricably tied to the United States. To maintain our strong position, we have no choice but to strive to perform as well or better economically than the United States.

[1] Statistics Canada, "Spending Patterns in Canada 2000," Catalogue no. 62-202-XIE

We think Canadians ought to aspire to narrow the prosperity gap over the next decade. This will require bold initiatives both in public policy and in private strategies.

The Institute has conducted intensive analyses to develop new insights into the explanations of the differences in performance between Canada and the US. We argue that Gross Domestic Product (GDP) per capita is the key measure of economic progress, review the elements that drive its growth, and show that strengthening productivity has the most potential for improving our standard of living.

GDP per capita is the best measure of economic progress and prosperity

We concur with most economic observers that GDP per capita is the best measure of how an economy is performing over time and against its peers. GDP per capita measures the output of an economy, or the "value added." We can think of this as the value created in the conversion of the country's natural, labour, and capital resources into products and services that consumers buy here and around the world. GDP captures costs of inputs and value of outputs. To the extent that we offer better or more innovative products and services that command higher prices, our GDP increases. Similarly, to the extent that we generate increasing demand for attractively priced products by using our inputs more productively, our GDP increases.

Another important reason for choosing GDP per capita as our measure of prosperity is that it allows us to benchmark our progress against most other countries around the world. It is the most commonly reported statistic at national and regional levels. Some observers prefer other measures of prosperity such as National Income, Personal Income, or Personal Disposable Income. Given that GDP correlates very closely with these measures and is generally accepted around the world, we chose GDP per capita as our measure of economic prosperity.

Four elements drive GDP per capita

We have shown that Canada lags the US and that our prosperity gap has grown over the last two decades. To understand the reasons for this performance trend, we have built on the framework developed by John Baldwin and others at Statistics Canada to disaggregate GDP per capita into measurable elements *(Exhibit 3):*

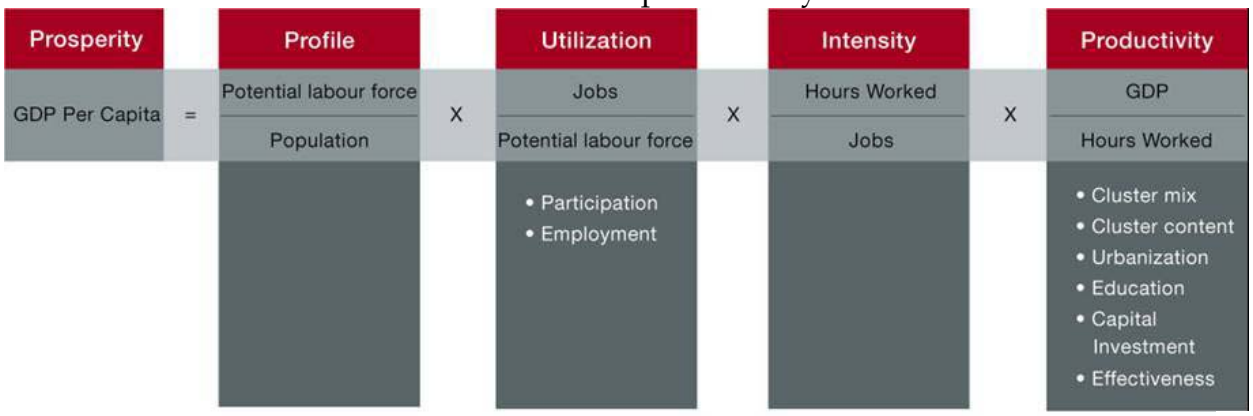
- Profile – the proportion of Canada's total population who are of working age to contribute to our economic performance

- Utilization – the proportion of the working-aged population who actually look for and find employment

- Intensity – the amount of time those who do work are actually working

- Productivity – the success in translating working hours into products and services of value to customers in Canada and around the world.

Exhibit 3 Institute assesses four elements of productivity



Source: Adapted from Baldwin, J., Maynard, J.P., Wells, S. (2000). "Productivity Growth in Canada and the United States." ISUMA. Vol. No. 1 (Spring 2000), Ottawa Policy Research Institute

To gain further insight into these elements, we sub-divide two of them further.

We examine two sub-elements of utilization – the rate at which working-age Canadians participate in the labour force by being employed or seeking employment, and the proportion of labour force participants who are successful in finding employment.

We examine six sub-elements of productivity:

- the mix of our industries into traded clusters, local industries, and natural resources;

- the sub-industries that make up our clusters of traded industries;

- the degree to which our population lives in urban centres;

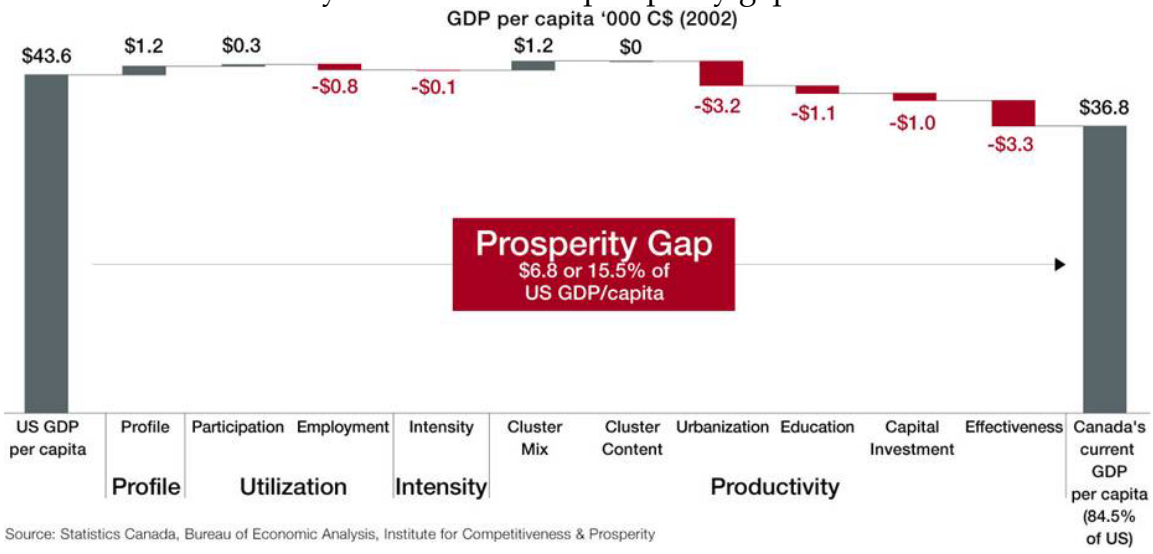
- the educational attainment of our population and its impact on productivity

- the degree to which physical capital supports the productivity of workers

- the effectiveness with which we generate value based on the platform created by all of the other sub-elements – that is, the residual difference.

Productivity has the largest impact on prosperity gap
The most significant contributor to the prosperity gap is productivity *(Exhibit 4)*.

Exhibit 4 Productivity drives Canada's prosperity gap with the US



Source: Statistics Canada, Bureau of Economic Analysis, Institute for Competitiveness & Prosperity

Profile, Utilization, and Intensity have a limited impact on the prosperity gap
Canada's economy is strengthened relative to that of the US by a slightly higher proportion of our population who are of working age (67.4 percent of Canada's population is between ages 16 and 64 compared to 65.2 percent in the US). Canada's demographic **profile** represents an advantage relative to the US; if demographic profile were the only factor in economic performance Canada's GDP per capita would be about $1,200 higher than that in the US.

Utilization of the working age population is a slight disadvantage for Canada. Canada has nearly the same percentage of its working-aged population seeking work (67.1 percent) compared to the US (66.6 percent). This equates to a $300 per capita prosperity advantage for Canada. However, Canada's economy continues to be slightly less capable of creating jobs for its residents seeking work (a 92.3 percent employment rate versus 94.2 percent in the US in 2002). This under performance in employment accounts for $800 of the prosperity gap. The net effect of these two results is under performance of about $500 in GDP per capita.

For most of the last twenty years, official statistics report that Canadians have worked fewer hours than Americans. Based on 2002 results of Canada-US **intensity** difference (34.1 hours worked per week in Canada versus 34.2 hours in the US)[2], we can attribute $100 per capita of the prosperity gap to this factor.

[2] Canadian hours worked based on Labour Force Survey; US hours worked based on Current Employment Statistics. While the Canadian data are based on household surveys and the US are based on establishment surveys, we agree with many observers that the US household survey is not comparable to Canada's. We continue to monitor the work of others in evaluating the comparability of US and Canadian hours worked data.

Taken together, profile, utilization, and intensity actually enhance our GDP per capita comparison with the US. They continue to represent limited potential for closing the prosperity gap.

Productivity is the key driver of the prosperity gap
Productivity accounts for the largest share of our prosperity gap with the US. In analyzing productivity we have assessed six sub-elements.

Cluster mix and cluster content in Canada contribute positively to our productivity. In previous work, we identified the importance of clusters of traded industries to an economy's productivity, innovation, and standard of living.[3] Professor Michael Porter of the Institute for Strategy and Competitiveness, Harvard Business School has identified the contribution of clusters of traded industries to regional and national economies. Traded industries are those that are concentrated in specific geographic areas and sell to markets beyond their local region. Porter identifies two other types of industries: local industries, which are present in most geographic areas and primarily serve their local markets; and natural resource industries, which are located primarily on the basis of resource endowments.

Porter also identifies clustering patterns among traded industries using the correlation of industry employment across geographic areas (Exhibit 5).

Exhibit 5 Traded industries are grouped into 41 clusters

Upstream Materials and Products	Industrial and Supporting Functions	Final Consumption Goods and Services
Metals and Materials	**Multiple Business**	**Food/Beverages**
Construction Materials	Education and Knowledge Creation	Agricultural Products
Metal Manufacturing	Business Services	Processed Food
Forest Products	Heavy Machinery	Fishing and Fishing Products
Forest Products	Financial Services	**Housing/Household**
Petroleum/Chemicals	Motor Driven Products	Building Fixtures, Equipment & Services
Oil and Gas Products and Services	Prefabricated Enclosures	Lighting and Electrical Equipment
Chemical Products	Production Technology	Furniture
Plastics	Analytical Instruments	**Textiles/Apparel**
Semiconductors/Computer	Heavy Construction Services	Textiles
Information Technology	**Transportation and Logistics**	Apparel
	Automotive	Leather and Related Products
	Distribution Services	Footwear
	Transportation and Logistics	Sporting, Recreational and Children's Goods
	Power	**Health Care**
	Power Generation and Transmission	Medical devices
	Office	Biopharmaceuticals
	Publishing and Printing	**Personal**
	Telecommunications	Jewelry and Precious Metals
	Communications Equipment	Tobacco
	Defense	**Entertainment**
	Aerospace Engines	Entertainment
	Aerospace Vehicle and Defense	Hospitality and Tourism

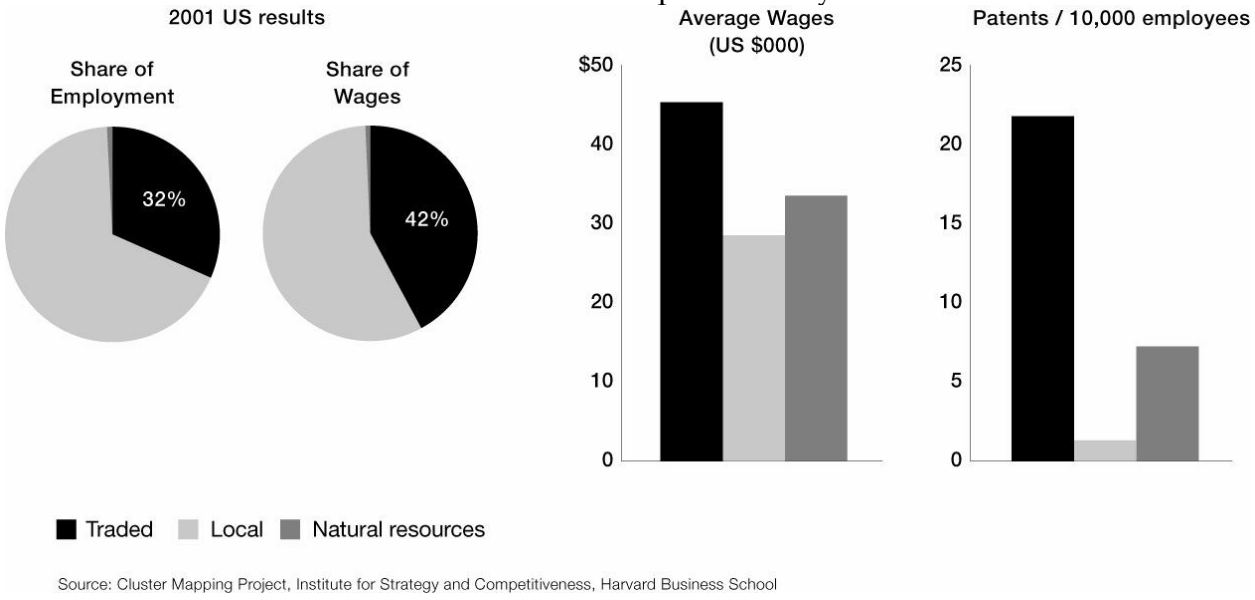
Source: Porter, Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

[3] Institute for Competitiveness & Prosperity, *A View of Ontario: Ontario's Clusters of Innovation, April 2002, pp. 18-20, 26-27*

Industries that are highly correlated constitute clusters.[4] Within clusters, groups of industries with a particularly strong correlation are identified as sub-clusters. For example, the Information Technology cluster comprises five sub-clusters: computers, peripherals, electronic components and assemblies, communications services, and software.

Traded clusters provide opportunities for growth and utilization that surpass those in the local economy. Further research by Porter has shown that clusters of traded industries increase productivity (as represented by wages) and innovation (Exhibit 6).

Exhibit 6 Clusters of traded industries drive productivity and innovation



Source: Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

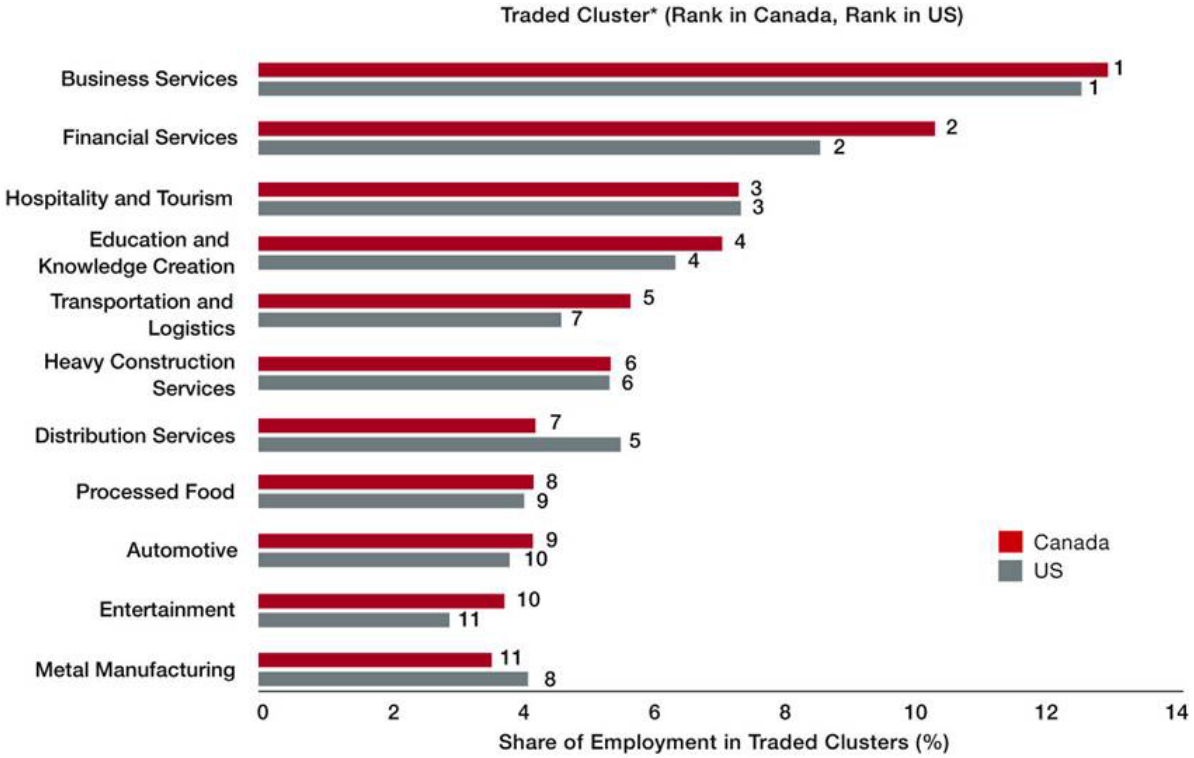
In addition, the presence of traded clusters in a region has a spillover effect in that they typically generate opportunities for increased success of the local economy. The "tide" of traded clusters raises the prosperity level for both local and traded industries, and the economy as a whole benefits.

Drawing on Porter's methodology, the Institute has determined that fully 37.6 percent of employment in Canada is in clusters of traded industries versus 31.6 percent in the US. It turns out that, within the traded clusters, our mix is remarkably similar to that in the US (Exhibit 7). That is to say, our mix of traded versus local clusters and weighting across traded clusters would be expected to produce a $1,200 higher GDP per capita, other things being equal.[5]

[4] For more information on the Cluster Mapping Project, see the Institute for Strategy and Competitiveness website: http://www.isc.hbs.edu

[5] It is important to note that our measure focuses on the mix of clusters only. It estimates the productivity performance we could expect in Canada if each cluster were as productive as its US counterpart.

Exhibit 7 Canada has a similar mix of clusters to the United States



* US Statistics – 1999, Canadian Statistics – 2000

Source: Canadian Business Patterns; Cluster Mapping Project, Institute for Strategy and Competitiveness, Harvard Business School

Sub-clusters make up each cluster of traded industries. As with clusters, there are wage and productivity differences across sub-clusters.[6] One of the issues being discussed by business analysts and economists is "hollowing out." Some observers believe that Canada is losing the high value-added component of its industries, as head offices and decision-makers relocate outside the country. As we analyze the sub-clusters that make up our clusters of traded industries and compare these with the mix in the US, we conclude that the impact of cluster content on GDP per capita is essentially the same in the US and Canada.

Relatively low urbanization is a significant contributor to the prosperity gap. The Institute has synthesized current research by Canadian and other urban geographers and economists[7] that linked urbanization, innovation, learning, and urban policy.

We found that the increased social and economic interaction of people and firms, the cost advantages of larger-scale markets, and a diversified pool of skilled labour all improve productivity in urban areas.[8]

[6] *A View of Ontario's Clusters of Innovation*, April 2002, pp. 18-20

[7] Ibid. and Institute for Competitiveness & Prosperity, *Missing Opportunities: Ontario's urban prosperity gap*, June 2003

[8] *Missing Opportunities: Ontario's urban prosperity gap,* p.11

The interplay of these factors promotes innovation and growth in an economy.

City regions of reasonable size are increasingly important drivers of economic activity. Three factors interact to improve productivity in urban areas:

- Network effects drive innovation. Close proximity of people and firms increases the frequency and quality of social and economic interactions, which spur innovation. This innovation strengthens and promotes the growth of the cluster, which draws more firms and people, which produces greater interaction, and so on.

- Scale reduces unit costs. Unit costs fall as the local markets grow in size. With a strong cost position from a larger local base, firms can supply other cities and regions.

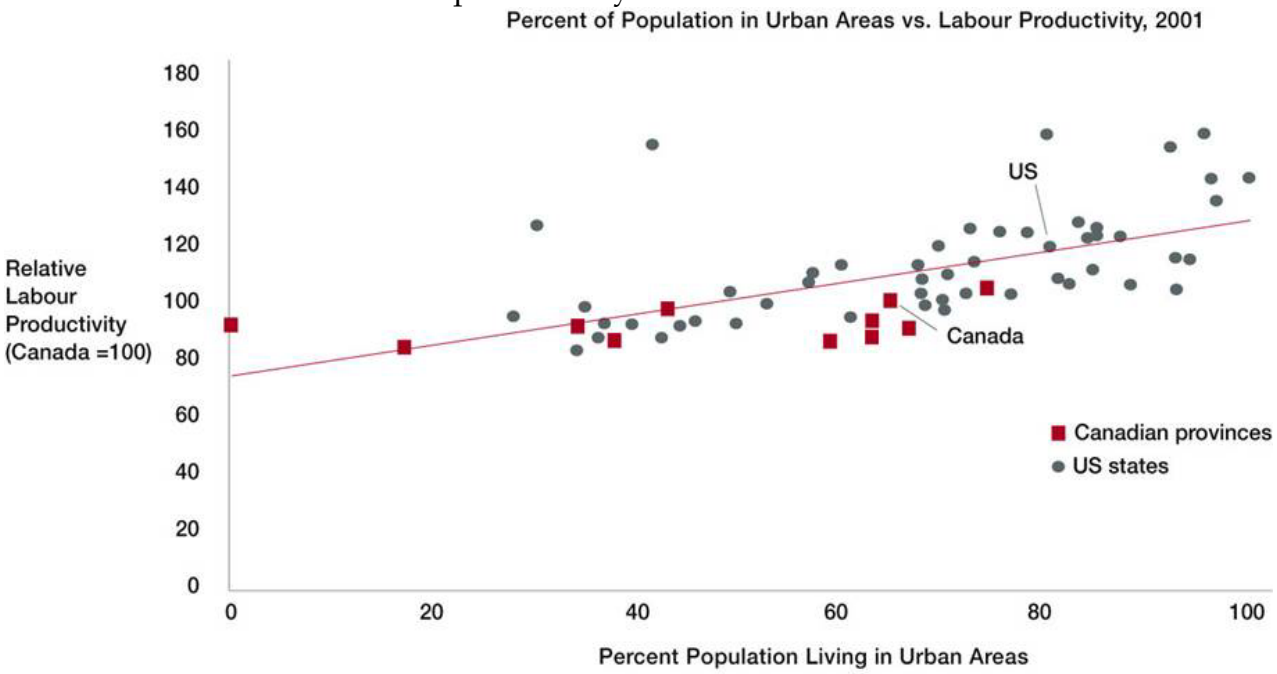
- "Thick" labour markets benefit workers and firms. Cities have a greater concentration and variety of skilled personnel. Firms locate in urban areas to draw on diversified pools of skilled labour. Likewise, individuals have a form of "labour market insurance" when they live in a city where there is more than a single employer.[9]

Canada's lower degree of urbanization hurts our productivity compared to the US. There is a positive relationship between degree of urbanization and the labour productivity of 60 jurisdictions in North America (Exhibit 8). Urbanization is defined as the percentage of their population living in city areas of greater than 50,000 people. For Canada it includes our 43 largest cities ranging in size from Toronto to Lethbridge.

Our analysis indicates that we have a $3,200 per capita disadvantage against the US. In other words, if the rate of Canadian urbanization matched that of the US and our productivity grew in relation to current North American patterns our GDP per capita would increase by $3,200. This makes low urbanization the largest negative contributor to Canada's productivity gap.

[9] E. Glaeser, "Demand for Density? The Functions of the City in the 21st Century," *The Brookings Review*, Summer 2000, Vol. 18, No. 3

Exhibit 8 Urbanization drives productivity



Source: Statistics Canada, CANSIM, table 051-0014, 051-0001, 384-0002, 282-0002
Statistical Abstract of the United States: 2000. Available online at: http://www.census.gov/prod/www/statistical-abstract-us.html
US Bureau of Labour Statistics, State Employment. Available online at: http://data.bls.gov/labjava/outside.jsp?survey=la
US Bureau of Economic Analysis, Gross State Product. Available online at: http://www.bea.gov/bea/newsrel/gsp0503.xls
US - MSAs; Canada - CMA (adjusted to equate to US MSA definition)

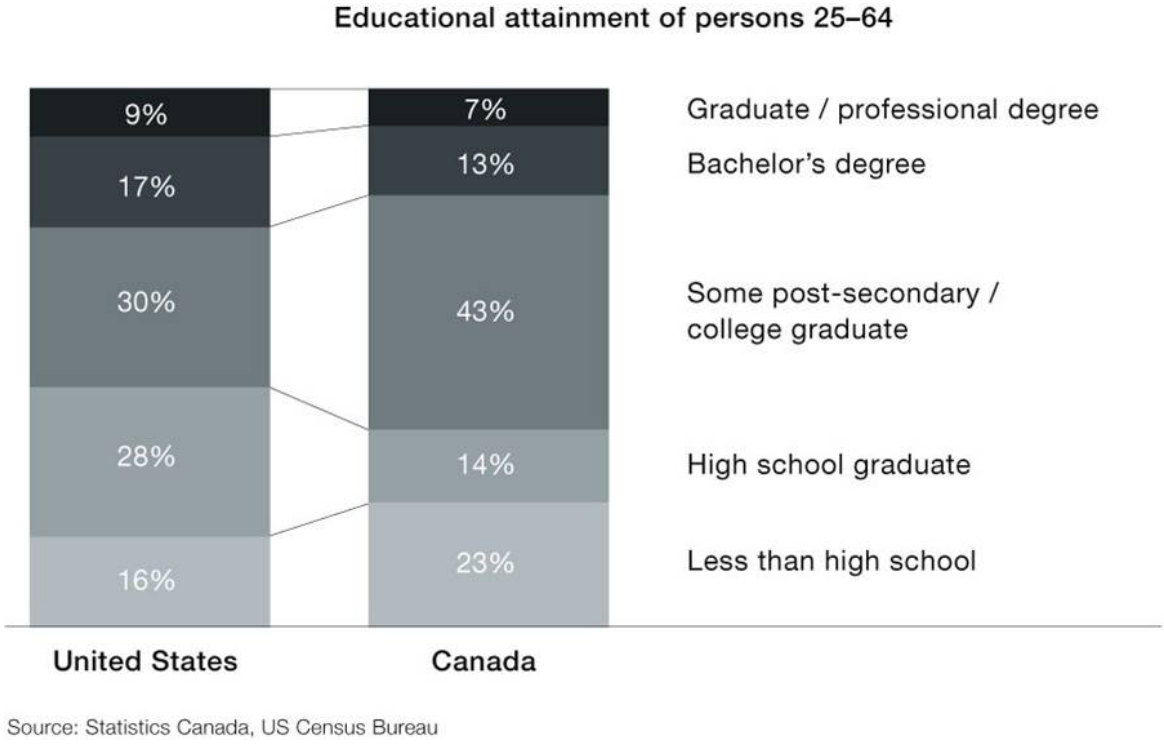
Lower educational achievement weakens our productivity. Most economists agree that the level of education attained across the workforce is an important determinant of the "quality" of an economy's human capital. Our analyses reinforce the positive correlation between productivity and wages.[10] Economic studies also show repeatedly that individuals' earnings increase with their level of education.[11] In fact, the best single predictor of personal income is level of educational attainment.

Canada's under performance in educational attainment, mainly at university levels (Exhibit 9) translates into a negative impact on GDP per capita of $1,100 per capita. Analytically this is the result of adjusting our earnings based on an educational attainment mix equal to that of the US.

[10] Task Force on Competitiveness, Productivity and Economic Progress, *Closing the prosperity gap,* November 2002, p.27

[11] For a literature review of the rates of returns to education and results of their recent calculations, see Laidler, D. (2002). "Renovating the Ivory Tower: An Introductory Essay", in Laidler, D. (ed.) *Renovating the Ivory Tower: Canadian Universities and the Knowledge Economy.* C.D. Howe Institute Policy Study No.27

Exhibit 9 Canada trails the US in educational attainment



Source: Statistics Canada, US Census Bureau

Capital under investment is a drag on productivity growth. In our work in Ontario, we have identified under investment in machinery and equipment in Ontario compared to levels in US peer states as an issue.[12] This under investment slowly erodes the relative strength – levels and renewals – of our capital stock compared to that in the US. This erosion in turn reduces the productivity of our labour and hence our prosperity. For Canada, we estimate this under investment to be worth about $1,000 per capita in lost productivity and prosperity. This is based on the estimated impact on productivity if Canada's investment in private sector machinery and equipment had matched the US experience since 1981. The Institute has analyzed the causes of this under-investment including Canada's higher tax burden on capital.[13]

The remaining gap of $3,300 relates to lower effectiveness. We have been able to account for the impact of profile, utilization, and intensity on prosperity. We have also accounted for the effects of several elements of productivity. The gap that remains is related to productivity on the basis of like-to-like cluster mix, urbanization, education and capital intensity. In sum, Canada is less effective than the US in converting our natural, physical and human resources into goods and services.

[12] Task Force on Competitiveness, Productivity and Economic Progress, *Investing for prosperity*, November 2003, pp. 24-26

[13] Institute for Competitiveness & Prosperity, *Partnering for investment in Canada's prosperity*, January 2004, pp. 27-28, and Task Force on Competitiveness, Productivity and Economic Progress, *Investing for prosperity,* November 2003, pp. 36- 38

Productivity gains count

Productivity gains count not only because they would reduce the dominant portion of the prosperity gap; looking at the road ahead, productivity increases would also provide the greatest leverage for a higher, sustainable GDP per capita. Productivity is the only element that can improve in the short-run and grow indefinitely. This can be achieved if our attitudes towards competitiveness, our investments, our motivations to work and hire, and our market and institutional structures combine to lead to the innovation and upgrading that will raise our productivity to US levels and eliminate the prosperity gap.

* * * * *

In our ongoing work the Institute has sought explanations for the prosperity gap and for ways to close it. We have looked at differences in attitudes to competitiveness and entrepreneurship. We have deepened our understanding of consumption-investment tradeoffs being made by Canadians, examined the impact of tax policies on motivations, and considered how market and governance structures affect our productivity.

Our main conclusion is that Canadian individuals, businesses, and governments are not investing enough of today's wealth for tomorrow's prosperity.
To close the prosperity gap with the US, we need to partner to reverse the widening pattern of under investment that limits our potential for productivity gains.

About the Institute for Competitiveness & Prosperity

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Previous Publications

Institute for Competitiveness & Prosperity:

Working Paper No. 1 – *A View of Ontario: Ontario's Clusters of Innovation* – April 2002

Working Paper No. 2 - *Measuring Ontario's Prosperity: Developing an Economic Indicator System* – August 2002

Working Paper No. 3 – *Missing opportunities: Ontario's urban prosperity gap* – June 2003

Working Paper No. 4 – *Striking similarities: Attitudes and Ontario's prosperity gap* – September 2003

Canadian Report - *Partnering for investment in Canada's prosperity* – January 2004

Task Force on Competitiveness, Productivity and Economic Progress:

First Annual Report – *Closing the prosperity gap* – November 2002

Second Annual Report – *Investing for prosperity* – November 2003