Eleventh Annual Report
November 2012

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A PUSH FOR GROWTH

The time is now

Task Force on Competitiveness, Productivity and Economic Progress

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The Task Force on Competitiveness, Productivity and Economic Progress was announced in the April 2001 Speech from the Throne. Its mandate is to measure and monitor Ontario's competitiveness, productivity, and economic progress compared to other provinces and US states. In the 2004 Budget, the Government asked the Task Force to incorporate innovation and commercialization issues into its mandate. The Task Force reports directly to the public.

It is the aspiration of the Task Force to have a significant influence in increasing Ontario's competitiveness, productivity, and capacity for innovation. This, we believe, will help ensure continued success in the creation of good jobs, increased prosperity, and a high quality of life for all Ontarians.

The Institute for Competitiveness & Prosperity is an independent not-for-profit organization established in 2001 to serve as the research arm of the Task Force. The Working Papers published by the Institute are primarily intended to inform the work of the Task Force. In addition, they are designed to deepen public understanding of macro and microeconomic factors behind Ontario's economic progress and stimulate debate on a range of issues related to competitiveness and prosperity. Ideas are shifted from concept to action by using a method that demonstrates value along the way.

Comments on this Eleventh Annual Report are encouraged and should be directed to the Institute for Competitiveness & Prosperity. The Task Force and the Institute are funded by the Government of Ontario through the Ministry of Economic Development and Innovation.

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Foreword & Acknowledgements

On behalf of Ontario's Task Force on Competitiveness, Productivity and Economic Progress, I am pleased to present our Eleventh Annual Report to the Ontario public. The mandate for the Task Force, and this Report, is to provide government, firms, organizations, and individuals in Ontario with recommendations for increased competitiveness and prosperity.

As the recession recedes, Ontario is emerging in a position of relative strength. The province benefits from a sound banking system, a strong housing market, and a robust dollar. All of this can lead to a sense of satisfaction among our decision makers and the general public.

However, a new status quo is developing that should give all Ontarians cause for concern. The Task Force, and other economic experts, are projecting a prolonged period of slow or stagnant growth for Ontario's economy. If Ontario's leaders do not make the decisions and investments required, growth will languish for the next eight to ten years. Should this scenario materialize, it will affect everything from government funding and programs to private sector competitiveness and employment.

That is why the title of this year's Annual Report is *A push for growth: The time is now*. This is the time to take advantage of the relative gains made during the recession. The Task Force has been pleased to see radical changes to Ontario's tax structure that were not easy to achieve, but will make Ontario more competitive for years to come. Significant investments to post-secondary education have helped close some of the prosperity gap, as more Ontarians are achieving the higher levels of education that are necessary to compete in the modern world. And, as this Report lays out, the Ontario Child Benefit and other initiatives are lifting Ontarians out of poverty and helping them get back to work.

The federal and provincial governments weathered the recession relatively well, but they now face the daunting task of balancing their finances. The Task Force will encourage governments of all levels to learn from recent history and balance their budgets in a way that does not hurt long-term competitiveness and prosperity. How Ontario balances the budget is as important as when it is balanced.

More than ever, now is the time for Ontario's business leaders to step up and take the actions necessary to enhance long-term competiveness and prosperity. Some of the recommendations in this Report are not new – particularly the need to invest in productivity-enhancing capital and information and computer technology. What is new are the economic conditions that make those investments more necessary, and more realistic, than ever before. The Task Force lauds corporate leaders for the stability that they have provided. But those same leaders need to take advantage of the strong dollar, the cash on their balance sheets, and the relative strength of the Ontario economy to take the risks necessary to avoid the status quo scenario.

Now is the time for Ontario's business leaders to step up and take the actions necessary to enhance long-term competiveness and prosperity.

Finally, the Task Force realizes that it must push itself to achieve the mandate laid out some eleven years ago. In 2000, Ontario ranked fifteenth among North American peer jurisdictions in GDP per capita. In 2011, Ontario ranked fourteenth, and the gaps with the North American peer median and peer leaders have grown. This placing is not acceptable, when all the knowledge and tools are available to raise it. The Task Force will set out to find new ways to push the conversation along, both on its own and in conjunction with others interested in this crucial mission, so that all Ontarians may benefit from increased prosperity.

Ontario is not alone in this challenge. Jurisdictions around the world are facing the same issue of stagnant growth and looming questions. But where else would you rather face those challenges than in Ontario? The province has the ability, the talent, and the desire to be better tomorrow than yesterday. The aim of the Prosperity Agenda is for Ontario's economic performance to match the median of the North American peers by 2020.

The Task Force would like to add a special thanks to James Milway, who spent ten years working tirelessly as the Executive Director of the Institute for Competitiveness & Prosperity. His intellect, humanity, and leadership provided the foundation for much of our work. We wish him well in his future endeavours. We would also like to welcome Jamison Steeve to this role. We look forward to his contribution to our work.

We gratefully acknowledge the research support from the Institute for Competitiveness & Prosperity and the funding support from the Ministry of Economic Development and Innovation. We look forward to sharing and discussing our work and findings with all Ontarians. We welcome your comments and suggestions.

Roger L. Martin, Chairman
Task Force on Competitiveness, Productivity and Economic Progress
Dean, Joseph L. Rotman School of Management, University of Toronto

WHY SHOULD ONTARIO PUSH FOR GROWTH NOW?

In the Annual Report last year, the Task Force took the opportunity to look back and look ahead at the 2020 Prosperity Agenda. Over much of the decade, since the Task Force was established in 2001, Ontario experienced moderate growth in Gross Domestic Product (GDP). But it was too moderate for Ontario's economy to achieve its full economic potential. As a result, many of the North American peer jurisdictions stayed ahead of, or gained on, the province.

After ten years of moderate growth, the Ontario economy, like economies in the rest of the world, was affected by the most significant economic downturn in ninety years. Major economic players faced financial collapse. Governments struggled to deal with rising deficits. Comparatively, Ontario's economy weathered the storm relatively well. It is too soon to determine the full impact of the recession, but there is little doubt that the economy is undergoing a transformation, and long-term growth prospects have been reduced to 1.8 to 2.0 percent annually. Lagging innovation and low productivity remain critical factors in any progress toward prosperity.

That is why this year's Report is focused on pushing decision makers to take the necessary steps to become more productive and to improve GDP growth in the coming years. This Report will lay out some key recommendations for government and business leaders on how they can close the growing productivity gap in both the medium and long term. Furthermore, the Report will signal some areas of further study, like tax reform, that the Task Force will push in the new year.

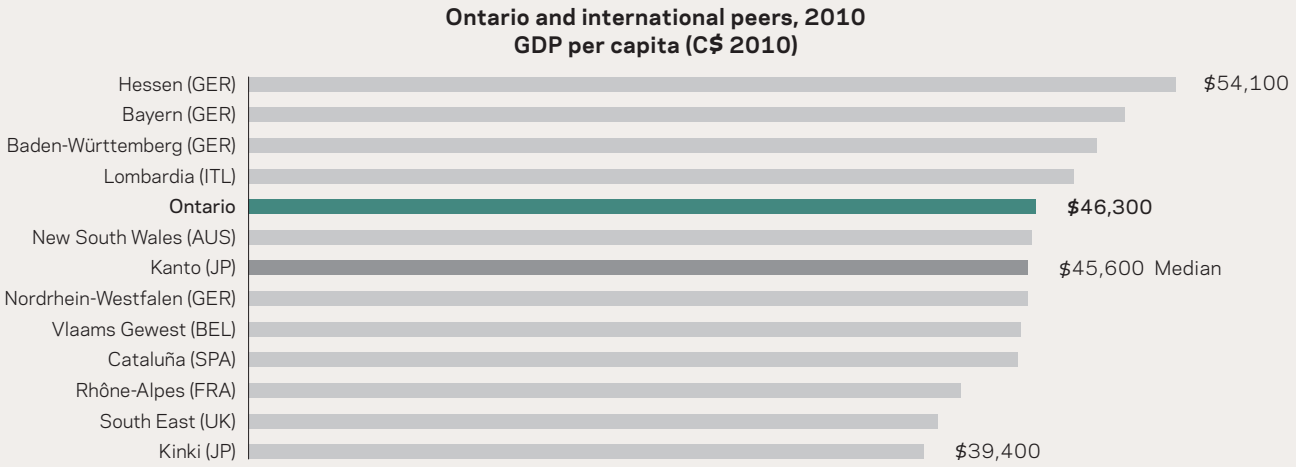
More so than in years past, the recommendations in this year's Report focus on the business sector. Many gains in the last decade have been the result of decisions made by government. Leaders of all political stripes at both the federal and provincial levels have taken up some of the recommendations of the Task Force and others.

The same simply cannot be said of the private sector. Interestingly, Ontario's business leaders seem to have a favourable disposition towards taking risks, investing in innovation, and thinking strategically about competing in a global market place. However, the gap between their attitudes and their behaviour is substantial, and the Ontario economy is paying the price. The Task Force will be exploring new ways to encourage Ontario's business leaders to consider the recommendations of this Report and implement them so that all Ontarians may benefit.

Ontario has made some good progress over the past decade. However, good is not good enough anymore.

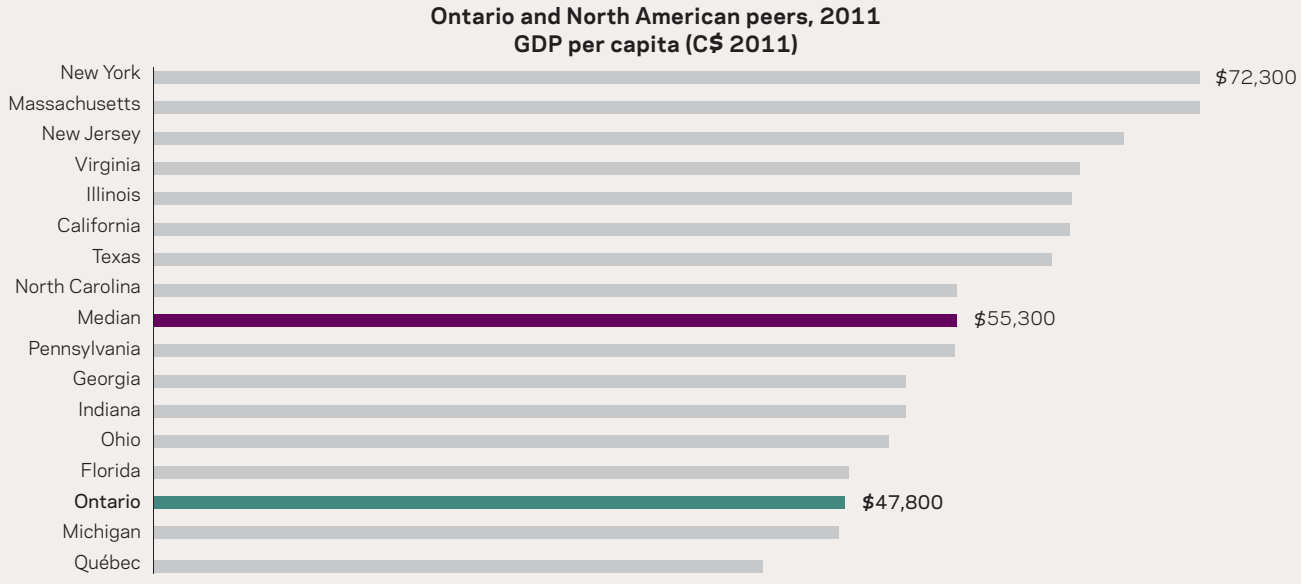
Ontario's economy ranks well internationally but lags in North America.

Exhibit 1 Ontario out performs most international peers



Note: Because of limited GDP data on Kanto & Kinki, Japan's national GDP growth rate from 2009 to 2010 is used to estimate Kanto & Kinki's GDP in 2010.
All currencies converted to Canadian dollars using PPP.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; Australian Bureau of Statistics; Statistische Ämter Des Bundes Und Der Länder; Annuario Statistico Regionale Lombardia; National Bank of Belgium; Institut national de la statistique et des études économiques; Economic and Social Research Institute, Cabinet Office, Government of Japan; Statistics Bureau of Japan; UK Office for National Statistics; Instituto Nacional de Estadística; Eurostat; OECD; and IMF.

Exhibit 2 Ontario continues to trail its North American peers



Note: US GDP numbers converted to Canadian dollars using 2011 PPP.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; Ontario Ministry of Finance; Banque de données des statistiques officielles sur le Québec; US Department of Commerce, Bureau of Economic Analysis; and US Census Bureau.

Ontario's recovery is sluggish

Ontario has built a strong and competitive economy. Outside North America, Ontario is one of the most prosperous jurisdictions in the world.

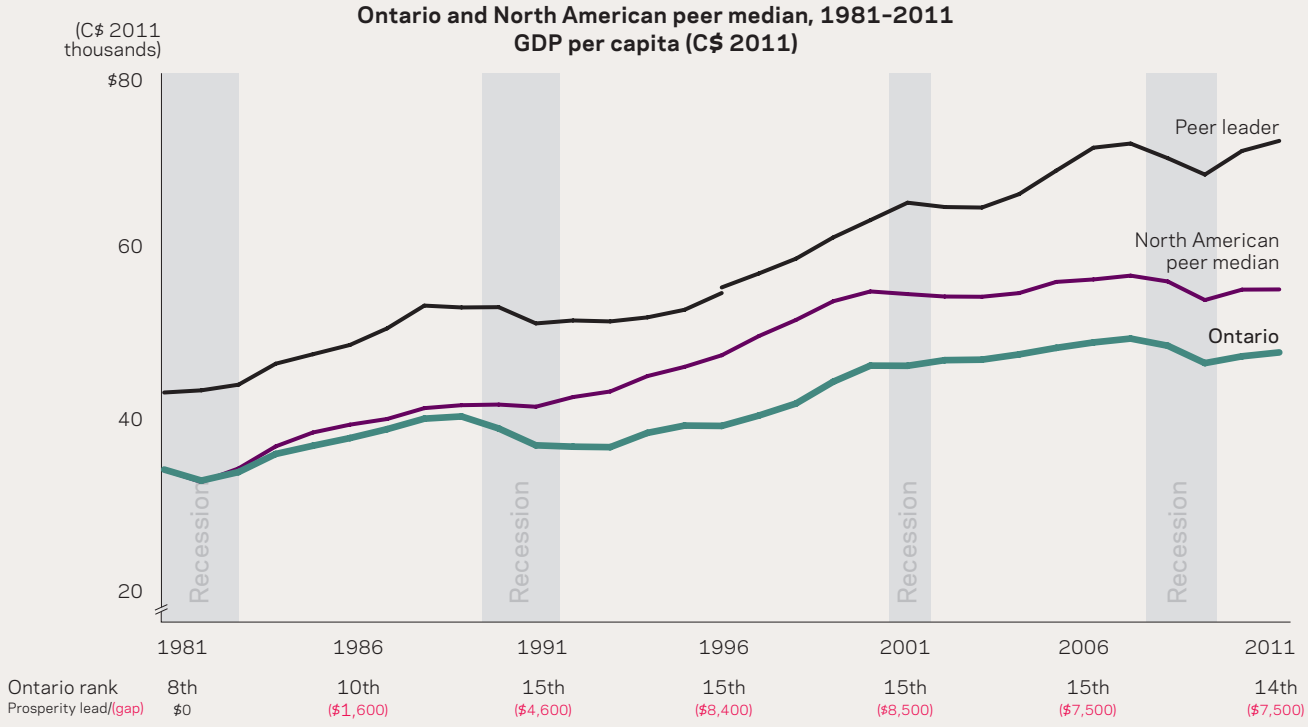
The Task Force compares Ontario's economic performance with that of twelve jurisdictions abroad with half its population or more and with a similar mix of metropolitan centres. Ontario's GDP per capita out performs that of most other regions outside North America, and the median of international peers. In 2010, Ontario ranked fifth among international peer regions (Exhibit 1), up from sixth in 2009. This ranking followed a steady upward trend among the international peers from 2008 when Ontario fell to seventh.

It is heartening to see that Ontario has rebounded since the 2009 recession. This success in a global setting is based on a highly skilled and culturally diverse work force, the mix of productive industries, and a superior work ethic. But the story is different within North America.

Closer to home, the Task Force compares Ontario's performance with that of sixteen peer North American jurisdictions – fourteen US states, plus Ontario and Québec. It has found a large and growing prosperity gap. In 2011, with a GDP per capita of $47,800, Ontario trailed the median of North American peers of $55,300 (Exhibit 2). (Unless otherwise stated, the Task Force uses constant 2011 dollars converted at the Canada/US purchasing power exchange rate of 1.215.)

Over the past thirty years, Ontario's prosperity gap with the North American peer median has been significant (Exhibit 3). Ontario was in the middle of this group of successful jurisdictions globally. However, GDP growth has failed to match the performance of most of the North American peers. The advantage

Exhibit 3 Ontario's prosperity gap narrowed slightly in 2011



Note: New York is peer leader. 1997 shows the break in the US method of calculating state-level GDP from SIC-based to NAICS-based. US state GDP numbers are converted to Canadian dollars using 2011 PPP. NBER US recession definition and dates.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; Ontario Ministry of Finance; US Department of Commerce, Bureau of Economics Analysis; and US Census Bureau.

over Québec continues. Ontario's rank has shifted between fourteenth and fifteenth place out of the sixteen North American peer jurisdictions since the early 1990s. In 2010, Ontario ranked fourteenth when GDP per capita was $7,900 below the North American peer median. In 2011, Ontario remained in fourteenth place, but the prosperity gap decreased to $7,500.

The consequences of not performing to Ontario's full potential are great. If Ontario were to close the prosperity gap with the North American peer median, the result would be a $12,900 rise in after-tax disposable income for the average Ontario household of 2.7 persons. In addition, this would lead to a rise of $32.4 billion in combined tax revenues for all three levels of government in Ontario.

Ontario's growth prospects substantially depend on the economic performance of the United States. With current indicators showing that the recovery there is progressing slowly, this does not bode well for Ontario's growth prospects. The good news is that Ontario labour markets have not suffered as extensively from the financial crisis as those in the North American peers. Still, Ontario's biggest problem is lagging productivity compared with the North American peers, and this remains a key barrier to realizing the province's prosperity potential.

The "new normal" is challenging

The most recent global recession produced structural changes to the economic environment of most regions in North America. In some cases, such as the housing and mortgage markets, the changes were explicit and direct. In others, such as monetary policy responses, the changes were not as clear. One effect of the recession that Ontario may need to address in the future is the new low level of its economic growth: the "new normal." In the past decade, the province experienced growth rates in the neighbourhood of 2.5 percent annually, and the Ontario Ministry of Finance in its Ontario Economic Outlook and Review projected that the province's economy will continue along this trend, reaching a growth rate of 2.4 percent by 2015. Nevertheless, the Task Force believes that there is cause to be less optimistic now. The analysis, coupled with projections by Statistics Canada, shows that growth rates around 1.8 to 2.0 percent annually would be expected if no significant measures are taken.

Despite this impending slowdown, Ontario is in a good position to reverse this scenario. A solid financial system, allied with higher cash balances accumulated by the private sector during the past ten years, represent a favourable environment for greater capital investment and productivity gains. In addition, interest rates at historic low values further enable the accumulation of capital, an imperative to boost economic growth. To challenge this new normal, Ontarians and their enterprises need to assess risk and uncertainty better, as well as to innovate to guarantee future productivity and prosperity. Ontario has to achieve higher productivity to reduce the prosperity gap, something that can be done by supporting Ontarians in their quest to work smarter instead of just harder.

Growth is the key to achieving Ontario's 2020 Prosperity Agenda

Out of the recovery come new opportunities to make Ontario a global leader of innovative policies and supportive business environments. The ability for Ontario to achieve the 2020 Prosperity Agenda will only be found in a consistent quest for growth and an aversion to the status quo (Exhibit 4).

With only seven years before 2020, there is a lot more work to be done in little time. But the Task Force provides its 2020 Prosperity Agenda as a roadmap toward building the future it sees for Ontario. Even if Ontario does not meet the targets put forward in time, adopting an attitude toward promoting growth will serve as a useful springboard for budding accomplishments.

Ontario has emerged from the recent recession with many reasons for optimism. But there remains much to be done to overcome high deficits, sluggish growth, and lagging productivity. That is why this is the time for all Ontarians to join in the push for growth to close the persistent prosperity gap.

Exhibit 4 The Task Force has set out a 2020 Prosperity Agenda to narrow Ontario's prosperity gap

Goal: Raise innovation, productivity, and prosperity	Current	Target 2020
Why should Ontario push for growth now?	14th in North American peer group in 2011	Rank 8th among North American peers by 2020 – the peer median
How can Ontario work smarter, not harder?	Ontario is a productivity laggard	Become a global leader in innovation and productivity
How does where Ontarians live and work matter?	Urbanization rate is lower than the North American peer median Ontario manufacturing employment is decreasing	Maximize the benefits of urban areas by increasing employment in clustered industries Continue shifting away from low value added manufacturing industries into skilled, high value added manufacturing and service industries
How does Ontario compete?	Ontario's business leaders are averse to risk and taking innovative products to market Government continues to promote small business as an engine for growth	Translate Ontario's favourable attitude toward investing and innovation into actions for growth Increase the size of Ontario's businesses
How does Ontario invest?	Balance shifted from education to health care	Balance deficit reduction initiatives Improve literacy rates and shift focus away from retraining programs
How can Ontario achieve its prosperity potential?	Tax policy supporting business investment improved Business investment in innovative technologies or R&D lags North American peer median	Introduce real innovations in tax policy at all government levels Rise to the challenge of globalization through business investment to raise capabilities

HOW CAN ONTARIO WORK SMARTER, NOT HARDER?

Since 2002, the Annual Reports of the Task Force on Competitiveness, Productivity and Economic Progress have examined the many factors that contribute to Ontario's economic growth and long-term prosperity. The objective has been to identify areas for improved competitiveness, inspire dialogue to make change happen, and celebrate the achievements of policy makers and business leaders.

Last year, the Task Force took a "look back" at the progress Ontario made over the previous ten years – and there was much to celebrate. The introduction of the Harmonized Sales Tax, reductions in corporate tax rates, and the elimination of the capital tax have made Ontario a more attractive location for business investment. The province continues to increase investment in post-secondary education, which will improve the skills and knowledge of the workforce.

But there is still much room for improvement. Businesses continue to fall behind in investments that add capacity for innovation, particularly in machinery, equipment, and software. The Task Force has asked the Institute for Competitiveness & Prosperity, its research arm, to look at new ways to encourage and inspire Ontario business leaders to invest. The recent inroads made in tax policy are merely an adoption of current practices among the world's most developed countries, and government is hesitant to pursue true breakthrough innovations in tax policy. The Institute will produce a white paper in 2013 that analyses further tax reforms.

In this Report, the Task Force looks toward the next decade with a renewed sense of purpose for Ontario's growth outlook. With an economic future characterized by increasing uncertainty, it is essential for Ontario to establish robust fundamentals now that reinforce economic growth and development to challenge bleak predictions. The imperative to raise the province's competitiveness and prosperity is greater than ever.

What are competitiveness and prosperity?

The objective of increasing a nation's competitiveness is to increase its citizens' well-being. That is, a nation's prosperity is a measurement of how well it is able to endow its resources to create value added. Companies with higher value added processes are likely to produce more innovative and more complex products – and hence have higher productivity. Their products and processes are then less vulnerable in the global market place, whether as a result of a lower price or a differentiable quality, making the home country more competitive. A more competitive nation is very likely to be a more prosperous one.

A country's *competitiveness* is "its ability to create economic value from natural, physical, and human resources in a way that is uniquely advantageous to the nation."[1] This requires a country's businesses to employ their resources effectively to generate added value, which is driven by their capacity and goals for innovation to develop the goods and services people want to buy.

Value added is the worth of a good or service minus the intermediate inputs used in the production process. It is the increase in the *value* (the worth the market assigns to a good or service or what somebody is willing to pay) to the good or service that is added as a result of a process or by a producer during development and before it is sold on the market.

Prosperity can be measured by "the income people are able to earn, and their access to the comforts of life, health care, and schooling, so that they can enjoy life today and invest in their future prosperity."[2] The most common measure of economic prosperity is the gross domestic product per capita. GDP is the sum of all the value added in the economy, and GDP per capita represents the summary measure of success.

The Institute acknowledges that GDP per capita is an imperfect measure of prosperity, since the prosperity of a region includes other measures than just wealth, such as its citizens' quality of life and personal happiness. GDP does not include any unpaid activity like leisure, homemaking, and volunteerism. However, GDP does include items that do not strictly enhance quality of life and personal happiness. The value to an economy of productive elements, such as food production, education expenditure, machinery and equipment investment and housing developments, differ considerably from spending on "regrettables," such as the outcomes of pollution, crime, natural disasters, and avoidable health problems. In addition, as an average, GDP per capita is largely influenced by outliers – significantly high or low values. In contrast to the median, which divides the population evenly in half to see how the middle person should be faring, the average can be misleading if there are significant highs or lows in the outlying values, particularly at the top end of the spectrum. This leads to problems comparing the distribution of wealth in a society and capturing the amount of income inequality.

1 Roger Martin and James Milway, *Canada: What It Is, What It Can Be*. Toronto: Rotman-UTP Publishing, University of Toronto Press, 2012, p. 15.

2 *Ibid.*, p. 24.

Nevertheless, GDP per capita is useful to the extent that a more prosperous economy creates the opportunity for a better quality of life through good health, increased life expectancy, and widespread literacy. Other measures of well-being – happiness, and life satisfaction – around the world correlate well with economic prosperity, as defined by GDP per capita.[3] These tight correlations provide confidence that GDP per capita is indeed a good standard measure of well-being. As a measure that summarizes the value of all goods in an economy, it provides an easy way to understand prosperity. As long as the focus is on competitiveness and prosperity – which are by nature economic concepts – GDP per capita is a sound measure of economic results. Institute research continues to include other indicators of societal well-being throughout this Annual Report and other Institute publications to provide a full context to describe Ontario's prosperity.

Ontario's prosperity gap persists

Ontario's prosperity gap, which the Task Force defines as the difference in GDP per capita between Ontario and the median of the North American peer jurisdictions, has been growing steadily since the 1980s. To understand the reasons for this prosperity gap, the same framework used in previous reports is applied to disaggregate GDP per capita into four measurable elements (Exhibit 5).

- **Profile.** Out of all the people in a jurisdiction, what percentage are of working age and therefore able to contribute to the creation of products and services that add economic value and prosperity?
- **Utilization.** For all those of working age, what percentage are actually working to add to economic value and prosperity?
- **Intensity.** For all those who are employed, how many hours do they spend on the job in a year?
- **Productivity.** For each hour worked in a jurisdiction, how much economic output is created by a jurisdiction's workers?

The first three factors – profile, utilization, and intensity – add up to work effort, or the hours worked per capita, and capture the human effort Ontarians are spending to create economic value. The fourth factor – productivity – measures how effectively work effort turns resources into economic value and prosperity.

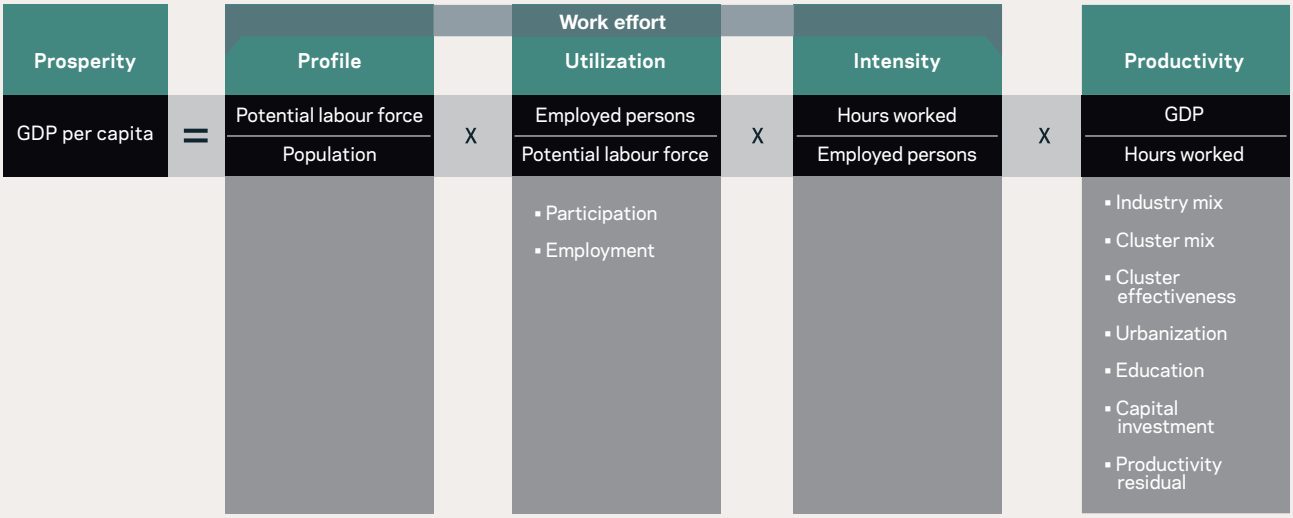
Ontario's divergence from the prosperity performance of the North American peer state median occurred during the recession of the early 1990s. During that time the key factor driving the economic weakness was lower work effort, especially utilization and its two sub-elements, participation and employment. Since 1995, Ontario has been recovering to 1990 performance levels. At the same time, a growing productivity gap has emerged with the North American peer states. If Ontario is to emerge from this period of recovery and slow the increasing prosperity gap – or eliminate it – efforts will be needed to focus on raising productivity and not repeating the mistakes made after the last recession.

How much are Ontarians working for prosperity?

Ontario continues to have an advantage over the North American peer state median in demographic profile and utilization, but has a significant intensity gap (Exhibit 6).

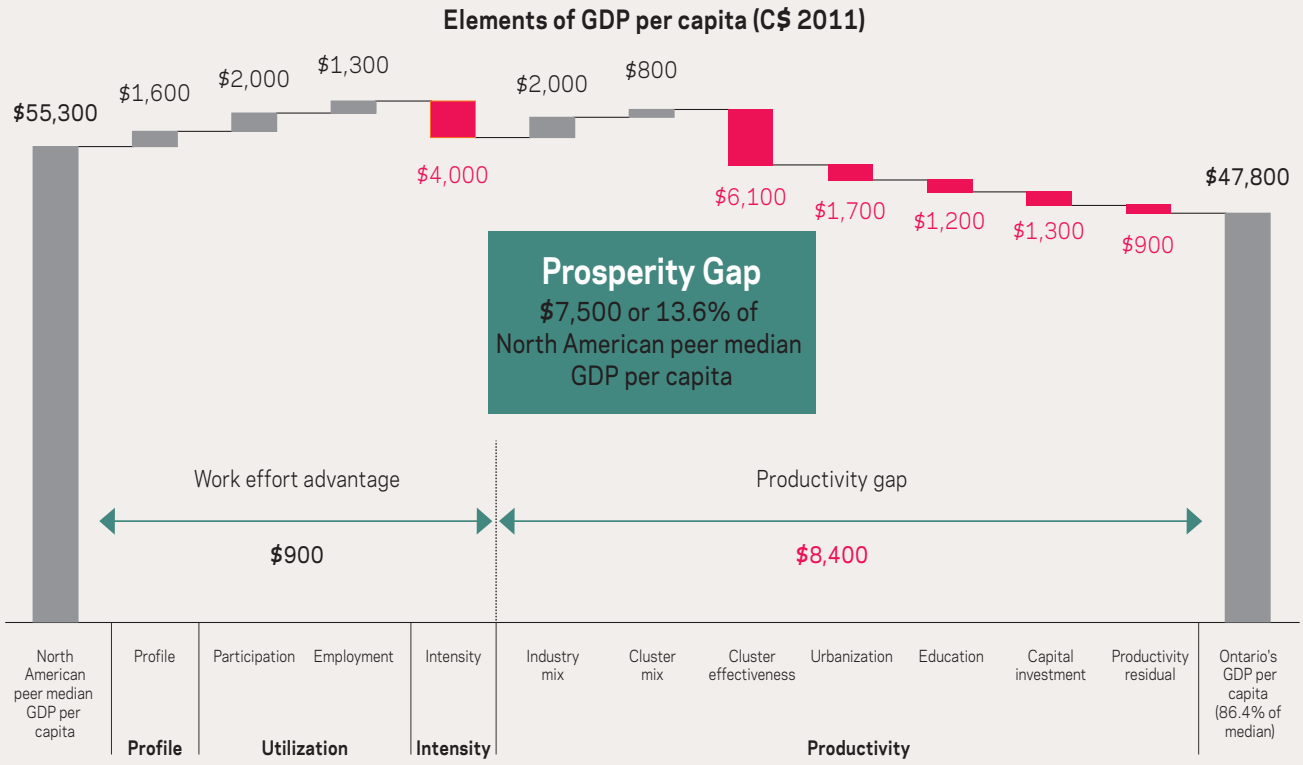
3 Task Force on Competitiveness, Productivity and Economic Progress, Eight Annual Report, *Navigating through the recovery*, November 2009, pp. 19-20.

Exhibit 5 The Task Force measures four components of prosperity



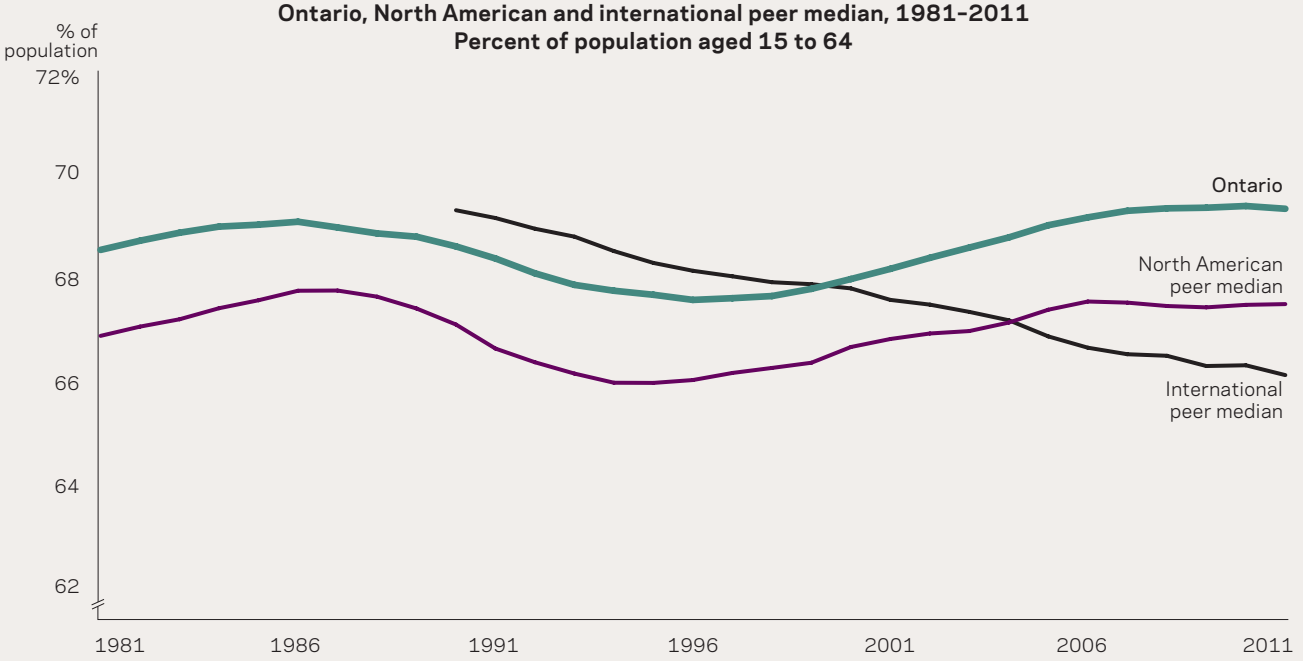
Source: Adapted from John Baldwin, Jean-Pierre Maynard and Stewart Wells, "Productivity Growth in Canada and the United States," *Isuma: Canadian Journal of Policy Research*, Vol. 1 No. 1, Spring 2000, Ottawa Policy Research Institute.

Exhibit 6 Lower productivity and intensity drive Ontario's prosperity gap with North American peers



Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; Ontario Ministry of Finance; Banque de données des statistiques officielles sur le Québec; US Department of Commerce, Bureau of Economic Analysis; US Bureau of Labor Statistics; and US Census Bureau.

Exhibit 7 Ontario continues to have a demographic profile advantage over North American peers



Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; US Bureau of Labor Statistics; US Census Bureau; Australian Bureau of Statistics; National Bank of Belgium; Statistics Belgium; Institut National de la Statistique et des études économiques; Statistische Ämter Des Bundes Und Der Länder; L'Istituto Nazionale di Statistica; Instituto Nacional de Estadística; UK Office for National Statistics; Statistics Bureau of Japan; Economic and Social Research Institute, Cabinet Office, Government of Japan; OECD; IMF; and Eurostat.

Demographic profile remains an advantage for Ontario. The first factor in a jurisdiction's potential for creating prosperity is its demographics. The percentage of the population that is of working age – 15 to 64 years old – is a basis for prosperity. Having a larger proportion of the working population in this age group offers more potential for economic value to be created. Ontario's demographic profile has been stable and has not had a significant impact on closing the prosperity gap compared with the North American peer median (Exhibit 7).

In 2011, 69.3 percent of Ontarians were aged 15 to 64, above the North American peer median demographic profile of 67.3 percent. Ontario's 2.9 percent advantage accounts for a benefit of $1,600 in per capita GDP.[4]

Ontario's international peers, comprising mostly European regions, have experienced a steady decline in their share of working age population. This is the result of low birth rates combined with longer life expectancy in the last quarter century in Europe. They have on the whole lost their profile advantage over Ontario and other North American peers coming into the new millennium. The international peer median experienced a twenty-year low of 65.9 percent.

Because of its ageing population, Ontario's demographic profile will continue to weaken.[5] While Ontario will retain its profile advantage over both its North American peers and international peers with a smaller working age population, the potential for prosperity creation will dwindle in the coming years. By 2020, Ontario's demographic profile will be 66.1 percent, a 4.8 percent drop from the current position.[6] As a result, Ontario needs to improve on other factors, such as intensity and productivity, to maintain its potential for growth.

Ontario has higher utilization than peer states. In 2011, Ontario's utilization rate of 60 percent was higher than the median of the North American peers at 55 percent, a trend that has continued over the last decade. Utilization consists of two components: *participation* and *employment*.

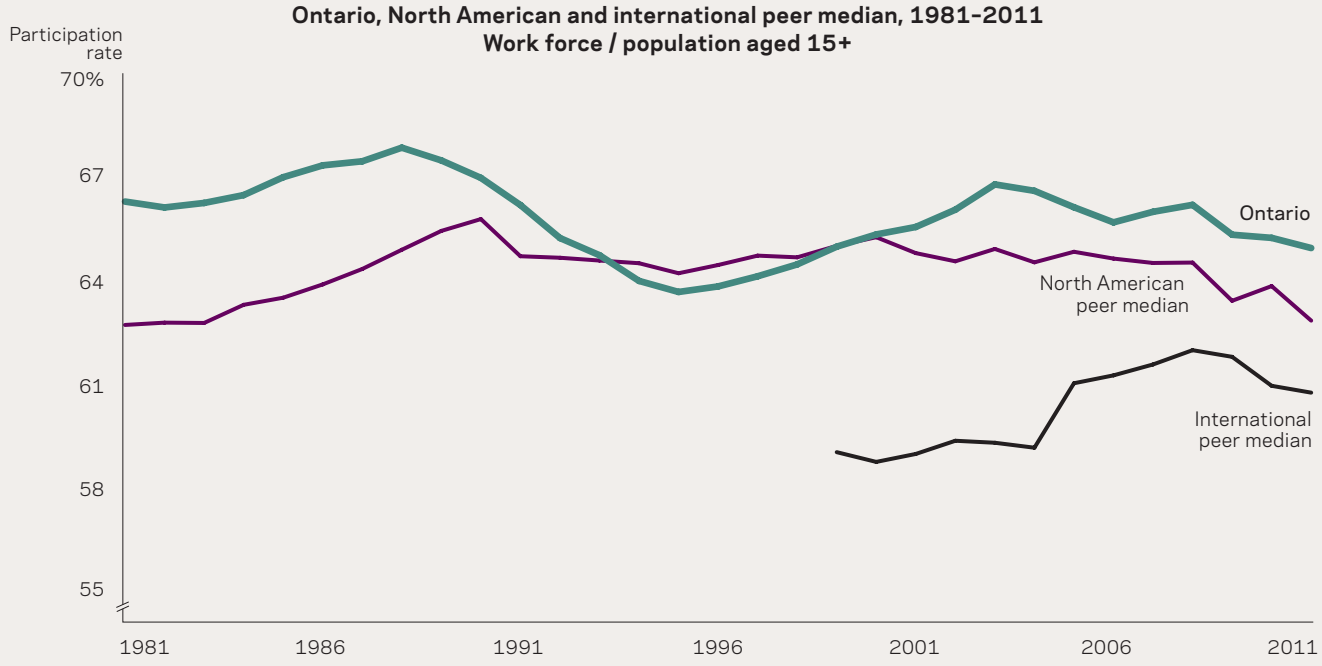
The *participation* rate refers to the percentage of the population who are fifteen and older who are searching for work, irrespective of whether they are successful or not. Ontario has led most of its North American peers in participation, especially with the improved economic conditions following the recession of the 1990s (Exhibit 8). During a recession, the participation rate normally falls because fewer jobs are available and

4 Calculated as 1 minus [67.3 (Peers)/69.3 (Ontario)] = 2.9 percent.

5 Task Force on Competitiveness, Productivity and Economic Progress, Tenth Annual Report, *Prospects for Ontario's prosperity*, November 2011, p. 29.

6 This comparison is between Ontario's demographic profile in 2011 and its potential in 2020; not the difference between Ontario and the North American peer group.

Exhibit 8 Ontario's participation rate still exceeds North American peers' performance



Note: Using data calculated to be comparable with US methodology.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; US Bureau of Labor Statistics; US Census Bureau; Australian Bureau of Statistics; National Bank of Belgium; Statistics Belgium; Institut National de la Statistique et des études économiques; Statistische Ämter Des Bundes Und Der Länder; L'Istituto Nazionale di Statistica; Instituto Nacional de Estadística; UK Office for National Statistics; Statistics Bureau of Japan; Economic and Social Research Institute, Cabinet Office, Government of Japan; OECD; IMF; and Eurostat.

people become discouraged when unable to locate work. Eventually these people quit looking out of frustration. Ontario experienced this in previous recessions, most notably during the 1990s. Since then, Ontario's participation rate has risen and remained relatively stable, having weathered the dot.com bubble burst and the 2009 recession quite well. Then, many Ontarians rejoined the labour force, increasing the capacity for higher economic performance in Ontario.

In 2011, 64.8 percent of Ontarians fifteen years of age and older worked or sought work.[7] Past recoveries indicate that it takes a few years for an economy to return to its pre-recession level. The same pattern is evident today, as Ontario's participation rate has not yet returned to its 2008 level of 66.1 percent.

Ontario has an advantage over the North American peer median, which dropped from 64.4 percent in 2008 to 62.6 percent in 2011, when many people stopped looking for work. In 2011, Ontario's higher participation rate translated into a $2,000 advantage in GDP per capita against the North American peers.

The other component of utilization, the *employment* rate, is the percentage of those who are participating in the work force and successfully finding work. What is more commonly commented on by economists and news outlets is the unemployment rate, equal to one minus the employment rate. Contrary to the direction of other measures of work effort, such as profile and participation, a lower unemployment rate is advantageous to an economy.

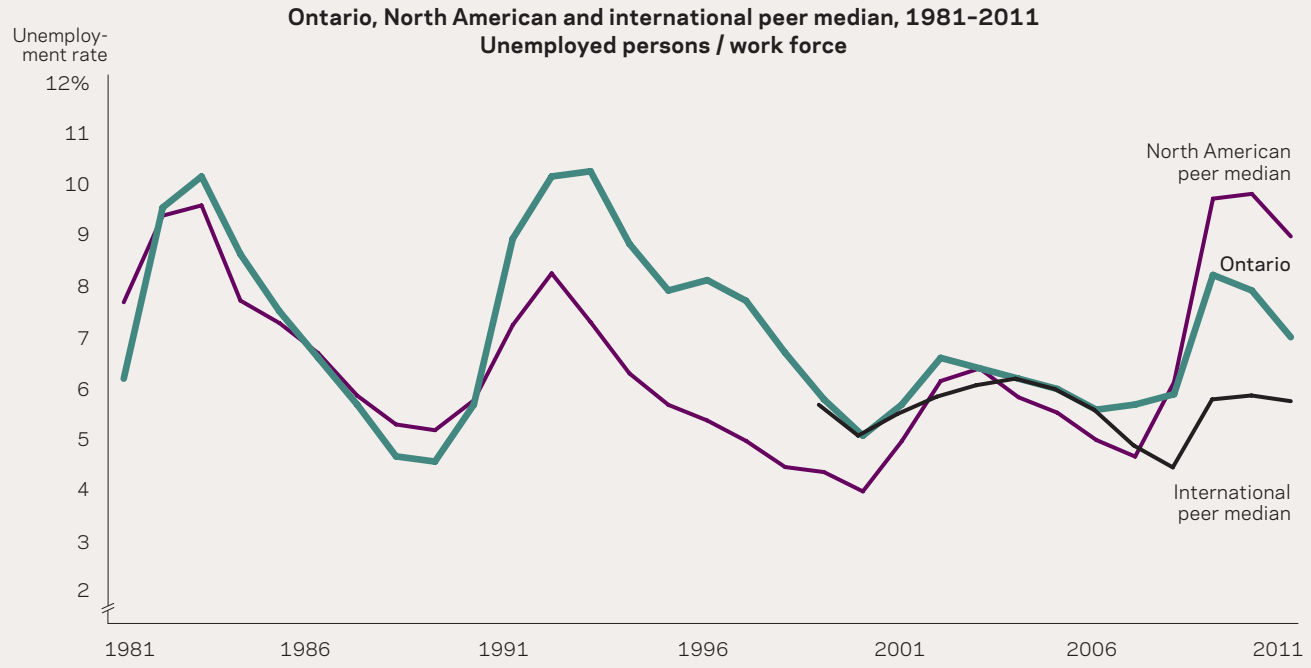
Ontario has traditionally trailed its North American peer median in unemployment performance (Exhibit 9). Since the 2009 recession, the situation has reversed, and Ontario is now ahead. This is mostly because the North American peers experienced a much sharper decline in unemployment than that experienced in Ontario. In 2011, Ontario's annual unemployment rate increased to 7.0 percent, up from 5.9 percent in 2008.[8] This rate is lower than the 8.9 percent of the North American peer median. The $2,000 advantage in participation combined with the $1,300 advantage in employment leads to a total advantage of $3,300 in utilization. (See *Ontario's high youth unemployment rates need to be addressed*.)

Since 2000, Ontario has led the US peer median in percent of working population. In the recession of the 1990s, each of the US peers, Canada, and Ontario experienced a sharp drop in their monthly utilization

7 Using data comparable to US methods of calculation.

8 These unemployment rates are based on US definitions; official Ontario unemployment rates were 7.0 percent in 2011, down from 7.9 percent in 2010.

Exhibit 9 The unemployment rate has fallen faster in Ontario than in North American peers



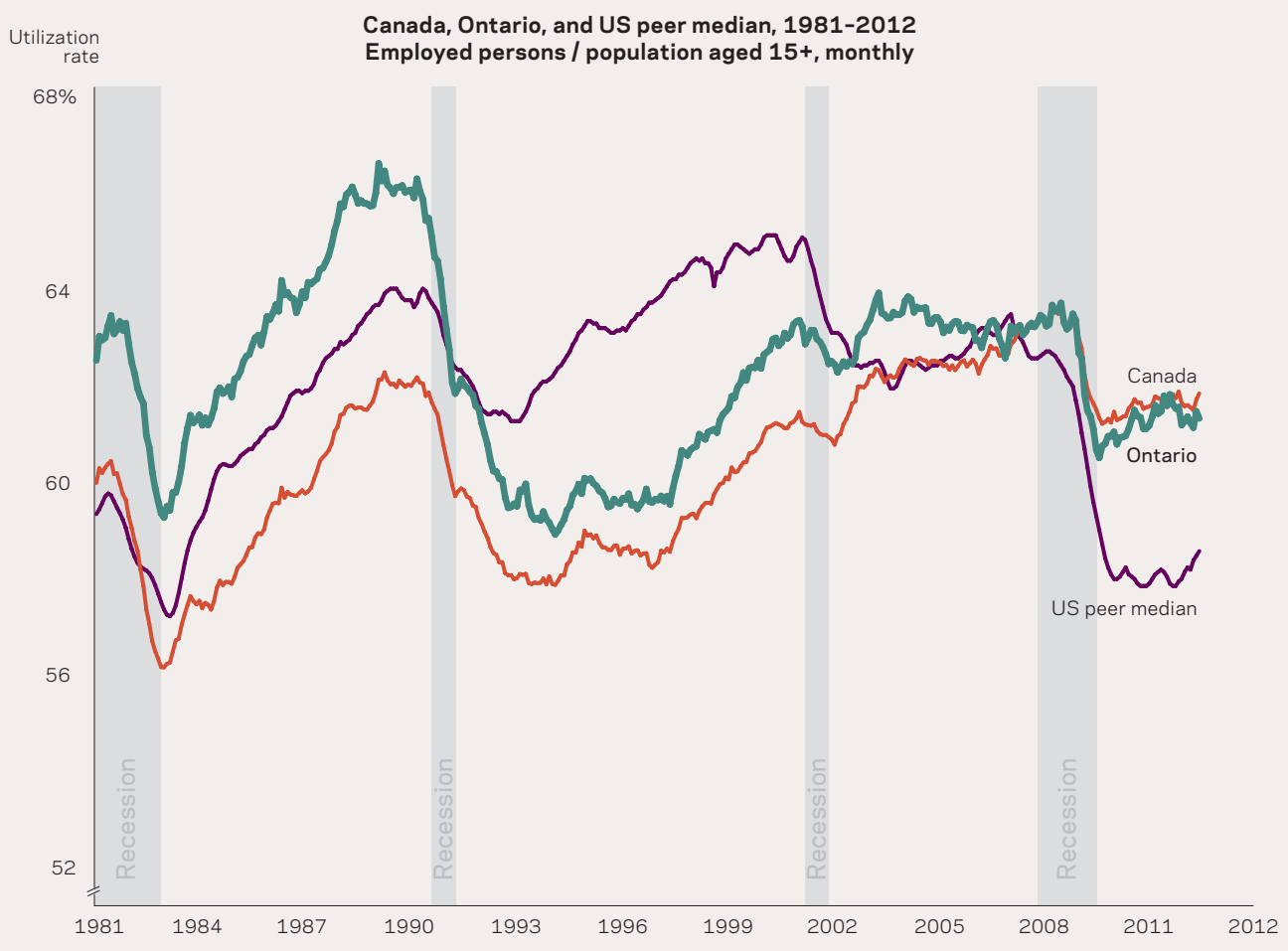
Note: Using data calculated to be comparable with US methodology.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; US Bureau of Labor Statistics; US Census Bureau; Australian Bureau of Statistics; National Bank of Belgium; Statistics Belgium; Institut National de la Statistique et des études économiques; Statistische Ämter Des Bundes Und Der Länder; L'Istituto Nazionale di Statistica; Instituto Nacional de Estadística; UK Office for National Statistics; Statistics Bureau of Japan; Economic and Social Research Institute,

rates, with Ontario's decline being the steepest of all (Exhibit 10). This slowed Canada's recovery. While the US peer median began recovering in 1993, Ontario's and Canada's utilization rate only started rising in 1997. (By comparison, the dot.com bubble burst in 2000, adversely affecting the US peers the most, and their monthly utilization rates have never recovered to the same levels.)

During the 2009 recession, while both Ontario and Canada experienced decreases in their monthly utilization rates, the US peers suffered dramatically. While all jurisdictions are slowly showing signs of recovery, the decline was so severe in the United States that the US peer median is similar to the low utilization rate Canada experienced in the aftermath of the 1990s recession.

This is significant, because over the past thirty years, the US peer median has never experienced such a low rate, and the consequences are large if it does not improve. Ontario's economic situation depends heavily on the economic performance of its US peers. Fewer employed US workers will lead to lower prosperity, lower income, and lower tax revenues, as well as a significant dent in the long-term prosperity potential of the US peers that, in turn, will have a negative effect on the economic performance of Ontario.

Exhibit 10 Lagging US peer utilization rate affects Ontario's recovery



Note: NBER US recession definition and dates. Using data calculated to be comparable with US methodology.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada and US Bureau of Labor Statistics.

Ontario's high youth unemployment rates need to be addressed

In the recent recession, as job markets have tumbled, soaring youth employment has become a critical problem that requires the special attention of policy makers.

FOR YOUNG PEOPLE AGED 15-24, finding a job has traditionally been much harder than it is for the overall population. During recessions, prospects become particularly bleak, as there are fewer jobs. Youth who are neither employed nor enrolled in education or training (NEET) are especially susceptible not only to high rates of unemployment but also becoming discouraged and disengaged.[a]

Rising youth unemployment could have serious consequences for future prosperity, as the current population of young workers forms the backbone of the labour force for years to come. But unemployed youths graduating into the recession are more likely to be discouraged than other young people and have a lower chance of finding high-paying jobs, even when the recession is over.

According to a recent study by Yale University, during recessions, even youth graduating from universities are likely to accrue lower lifetime earnings than those graduating in boom times.[b] The result is lost income, lower productivity and tax revenues, and wasted capacity. All of these potential losses are bound to place more strains on retirement and welfare systems – which may need to be reformed.

Currently, youths aged 15-24 are experiencing high levels of unemployment in some developed economies **(Exhibit A)**. Spain had a staggering 46.4 percent youth unemployment rate in 2011, with no signs of recovery. Italy followed at 29.1 percent and France at 22.1 percent. Germany and the Netherlands, by contrast, came out of the recession, with youth unemployment rates of 9 percent and 8 percent, respectively.

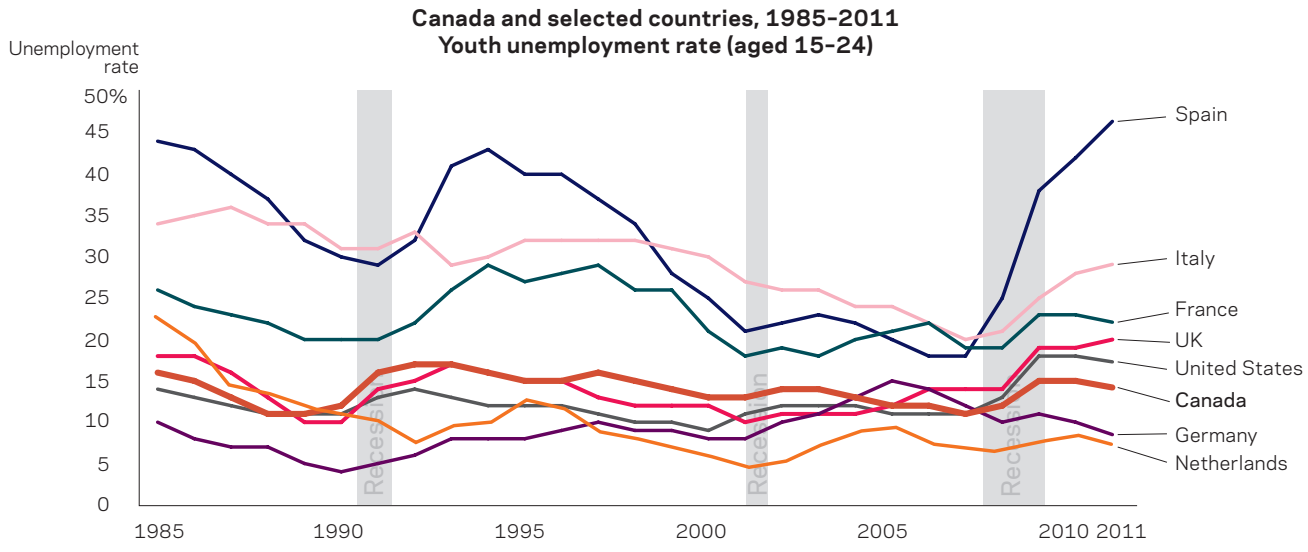
Ontario's youth unemployment rate in 2011 was 15.8 percent, which was more than double the provinces' overall unemployment rate of 7.0 percent **(Exhibit B)**. Although the youth unemployment began to decline in 2011, it is still well above its pre-recession level and the overall unemployment rate. Thus, it is much harder to find work for youths than for the average Ontario worker, and key challenges remain for policy makers.

Comparing the current economic recovery to past recessions, Ontario's youth unemployment rate can be divided into two periods. Following the recession in the early

a Statistics Canada, "Study: Youth neither enrolled in school nor employed, 2011," *The Daily*, May 23, 2012, **http://www.statcan.gc.ca/daily-quotidien/120523/dq120523b-eng.htm** (accessed June 30, 2012).

b Lisa B. Khan, "The Long Term Labour Market Consequences of Graduating from College in a Bad Economy," *Labour Economics*, 2010, Vol. 17, No. 2, pp. 303–316.

Exhibit A **Youth in Germany and the Netherlands are more successful at finding a job compared to other peer countries**



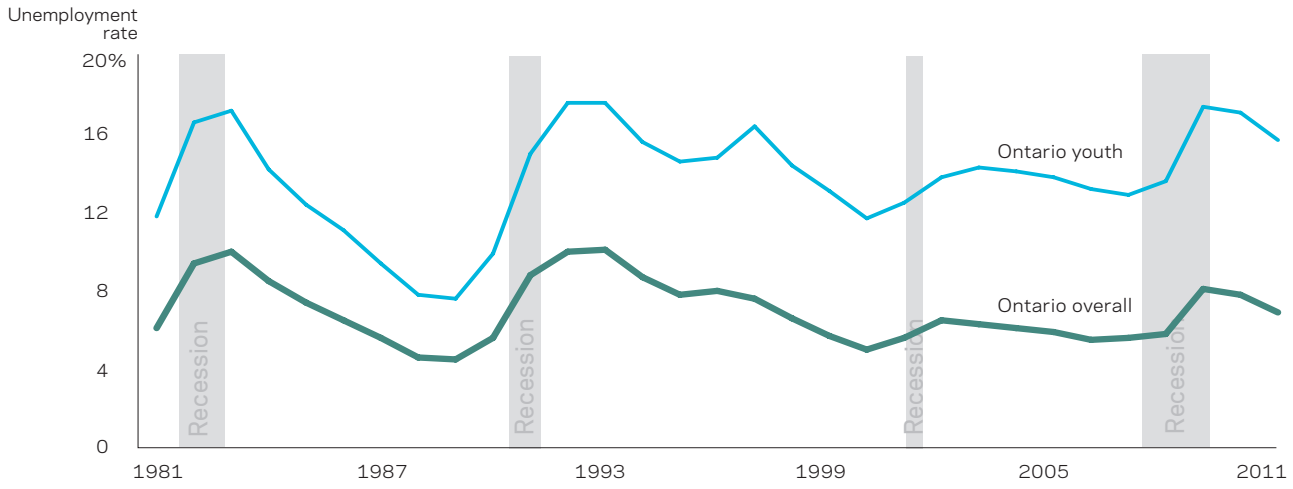
Note: Germany data earlier than 1990 refers to West Germany. NBER US recession definition and dates. Using data calculated to be comparable with US methodology.
Source: Institute for Competitiveness & Prosperity analysis based on data from OECD.

1980s, Ontario's youth unemployment rate shot up to 17.3 percent in 1983 before the recovery phase set in, and it fell to an all time low of 7.7 percent in 1989. Ontario's unemployment rate followed the same pattern over this period. In 1989, the gap between the youth unemployment rate and the provincial unemployment rate was 3.1 percentage points, but at no other time was the gap this low. In the second period, in the aftermath of the recession in the early 1990s, Ontario's youth unemployment rate rose again to a high of 17.7 percent in 1993 before falling to 11.8 percent in 2000 and then steadily rising again. Meanwhile, the provincial unemployment rate was 10.2 percent during the recession of the early 1990s and fell to an all time low of 5.1 percent in 1999. This disparity between the overall unemployment rate and the youth unemployment rate is not new, but it remains a serious problem to be resolved.

On a positive note, while the youth unemployment rate in Ontario is high today, the rate for youth with a bachelor's degree or higher is similar to the overall provincial unemployment rate **(Exhibit C)**. Youth who attain only some post-secondary education or less experience a much higher unemployment rate. Therefore, policy makers should place an emphasis on the importance of higher education to keep Ontario's youth employed.

Exhibit B The unemployment rate is higher for youth than other Ontarians

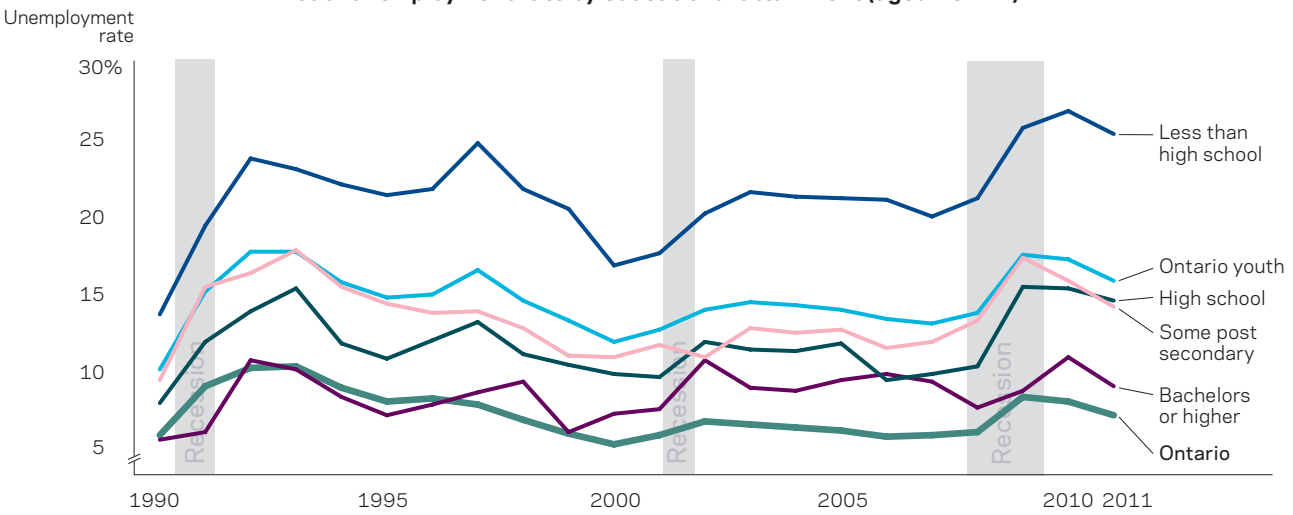
Ontario, 1981–2011
Overall and youth (aged 15–24) annual unemployment rates



Note: NBER US recession definitions and dates. Using data calculated to be comparable with US methodology.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada.

Exhibit C Ontario youth with a university degree have an easier time getting a job than those who have less education

Ontario, 1990–2011
Youth unemployment rate by educational attainment (aged 15–24)



Note: NBER US recession definitions and dates. Using data calculated to be comparable with US methodology.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada.

Ontarians work fewer hours than North American peers.

Ontario continues to have an intensity gap with North American peers. Intensity is defined as the number of hours worked per employed person. Ontario has a much lower level of intensity than the North American peers (Exhibit 11). Ontario's level of intensity experienced a sharp drop from its peak in 1989 to 1992, and the intensity gap with the North American peer median has persisted.

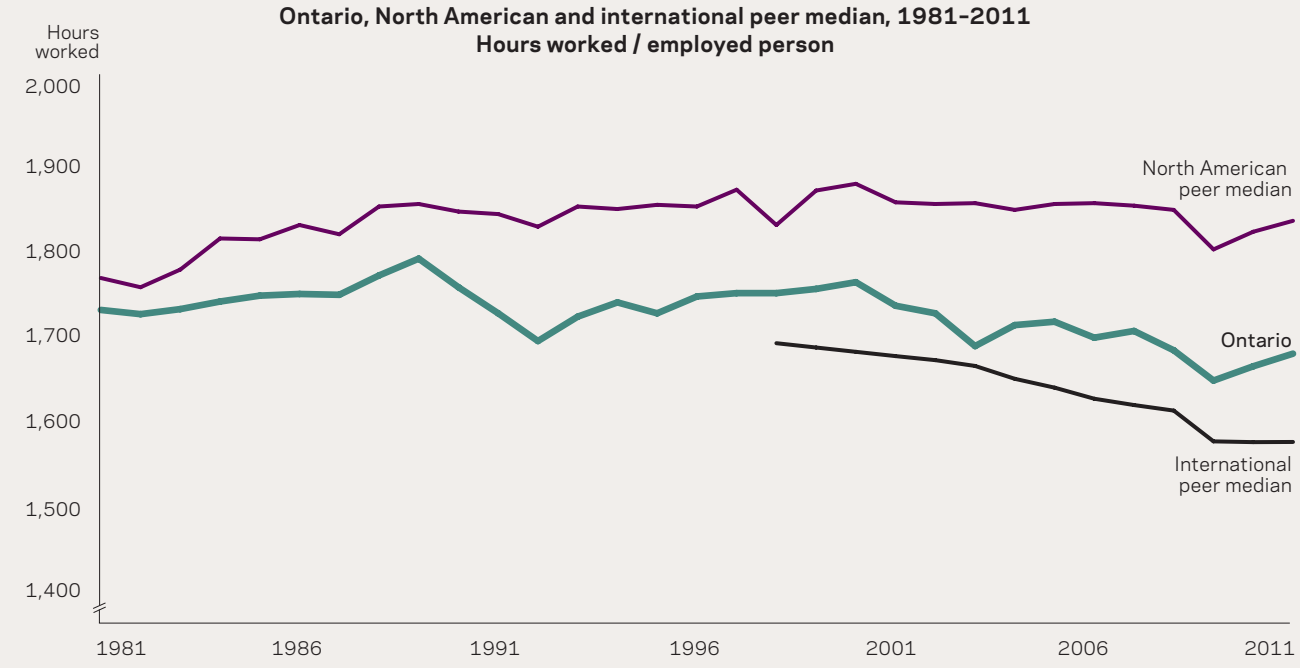
In 2011, the average Ontarian was on the job for 1,682 hours, while at the North American peer median, the average employee registered 1,840 hours at work. This difference amounts to 158 hours, or 4.5 work weeks annually. This contributed $4,000 to Ontario's prosperity gap, down slightly from 2010. Most of the intensity gap occurred because Ontarians take more vacation time than their North American peers. In addition, the economy's inability to create full-time jobs accounted for nearly a quarter of the intensity gap.[9]

Looking at Ontario over time, the highest intensity level occurred in 1989, when the average Ontarian was on the job 1,795 hours. Fast forward to 2011, the level fell by 113 hours. This drop is a major factor in the growing intensity gap, since the North American peer median of hours worked remained fairly stable during that time. Most of the decline in Ontarian hours worked – 90 percent – can be explained by fewer hours worked per week: more Ontarians are working part-time, and those working a normal and long work week are working shorter hours; 10 percent of the drop is explained by more weeks away from work (Exhibit 12).[10]

9 Institute for Competitiveness & Prosperity, Working Paper 9, *Time on the job: Intensity and Ontario's prosperity gap*, September 2006.

10 Part-time workers are defined as those working fewer than 35 hours per week; a normal work week is defined as working more than 35 hours to less than 50 hours; and a long work week is defined as more than 50 hours.

Exhibit 11 Workers in Ontario spend less time on the job than workers in North American peer regions



Note: Because of limited data on hours worked for Lombardia, New South Wales, Vlaams Gewest, South East, and Rhône-Alpes, national level data are used.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; US Bureau of Labor Statistics; US Census Bureau; Australian Bureau of Statistics; National Bank of Belgium; Statistics Belgium; Institut National de la Statistique et des études économiques; Statistische Ämter Des Bundes Und Der Länder; L'Istituto Nazionale di Statistica; Instituto Nacional de Estadística; UK Office for National Statistics; Statistics Bureau of Japan; Economic and Social Research Institute, Cabinet Office, Government of Japan; OECD; IMF; and Eurostat.

The growing trend of Ontarians working less is concerning, since it is a major factor in determining GDP growth for the economy.

By itself, the higher incidence of part-time work is not an issue. But there is evidence that more people are working part time because they could not find full-time work. Involuntary part-time employment is more prevalent among less-educated workers, and the incidence of part-time jobs tends to decline as educational attainment increases.[11] This points to opportunities for both public and private employers to strengthen Ontario workers' skills and educational attainment to help them find more hours of work and to help close the prosperity gap.

Overall, within the factors related to the supply of labour, Ontario's advantage in percentage of the population of working age has strengthened, and remarkable progress has been made in raising the percentage of Ontarians who are working. Still, differences in the number of hours worked continues to be a disadvantage for Ontario. Even with the overall gains in work effort, lagging productivity accounts for the greatest share of the prosperity gap with the North American peer median.

How much value are working Ontarians creating?

Productivity measures the amount of economic output created per unit of inputs used. The economic output is measured by subtracting the price of the inputs used from the final price paid by a consumer for that good or service. These inputs could be evaluated using labour, capital (including machinery and equipment), or natural resources. In economics, these are called factors of production, because they are used to produce the goods and services people desire.

Productivity can grow by two methods – increasing the efficiency of the factors of production, or generating higher value added per unit of input (Exhibit 13). Many believe that increasing efficiency is the only way to boost productivity, which unfortunately may come in the form of layoffs and outsourcing. But, though both these approaches will lead to higher productivity, the equally, if not more, important source for productivity growth comes from creating new value in goods and services.

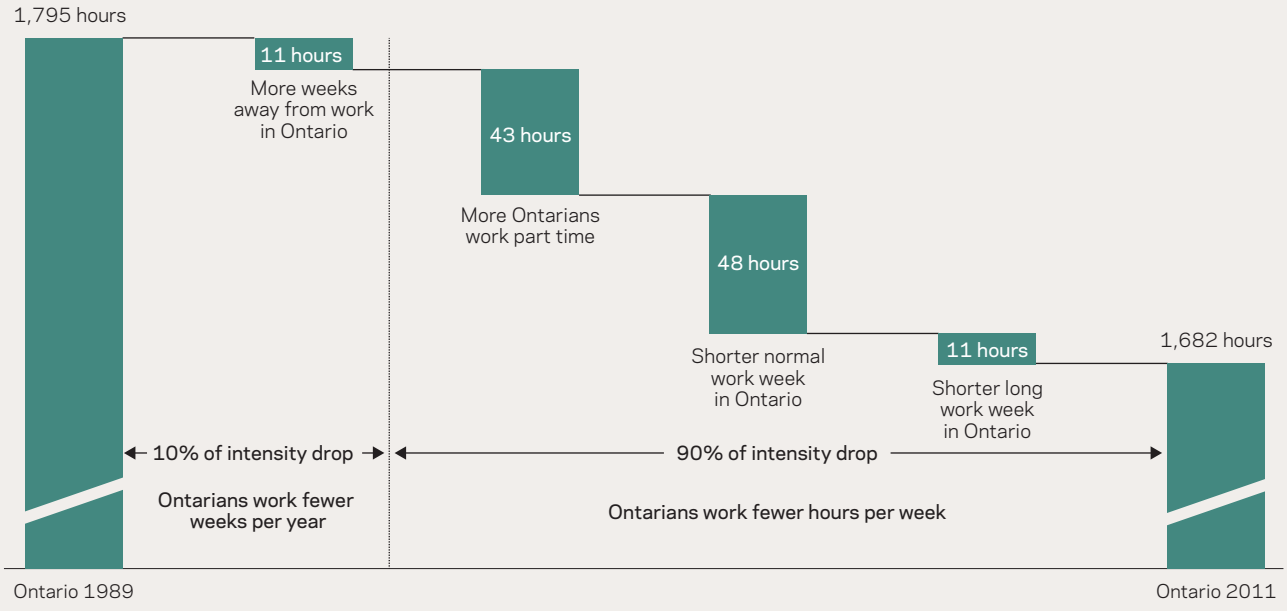
While economists may differ on the relative importance of various contributors to productivity growth, most agree on the factors that drive it, such as skilled workers, capable managers, scientific and engineering talent, and competitive pressure. These factors are the same ones that drive innovation. It is not a stretch to conclude that innovation and productivity growth are inexorably linked.

In 2011, Ontario's productivity gap with the North American peer median widened further. The Institute further

11 Institute for Competitiveness & Prosperity, Working Paper 9, *Time on the job: Intensity and Ontario's prosperity gap*, September 2006, pp. 25-26.

Exhibit 12 Ontarians work fewer hours today than in 1989

Ontario, 1989 and 2011
Source of drop in annual hours worked



Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, *Labour Force Survey*.

separates productivity into six sub-elements to determine the impact of this key driver of the prosperity gap:

- *Industry mix* - how the mix of industries in clustered industries, dispersed industries, and natural resources affects productivity potential
- *Cluster mix* - the productivity potential of the clustered industries that drive national productivity and innovation
- *Cluster effectiveness* – how well clustered industries compete
- *Urbanization* – the proportion of the population that lives in urban areas, which typically increases a jurisdiction's productivity
- *Education* – the educational attainment of the population and its impact on productivity
- *Capital investment* – the degree to which physical capital supports workers' productivity.

There remains a residual that cannot be explained.

Industry mix contributes positively to Ontario's productivity. The geographic clustering of firms in the same and related industries increases productivity and innovation. There are three types of industries: clustered, dispersed, and natural endowment.[12] The first type – clustered industries – typically sell to markets beyond their local region. In addition, the presence of clustered industries in a region has a positive spillover effect, in that they typically generate opportunities for increased success of the local economy. Ontario benefits from a mix of industries that is more heavily weighted toward clustered industries, and within these clustered industries, Ontario has a mix that is more favourable for productivity and prosperity than those measures in the North American peer states.[13]

A second major industry type is dispersed industries. These industries, such as retailers and restaurants, tend to serve only their local markets, do not realize economies of scale, and are less challenged to be innovative. As a consequence, they have lower rates of innovation, productivity, and wages.

A third industry type, natural endowment industries, is located where natural resources are found, and include forestry, mining, and agriculture. These are very small industries for both peers and Ontario – accounting for less than 1 percent of employment in Ontario in 2011.

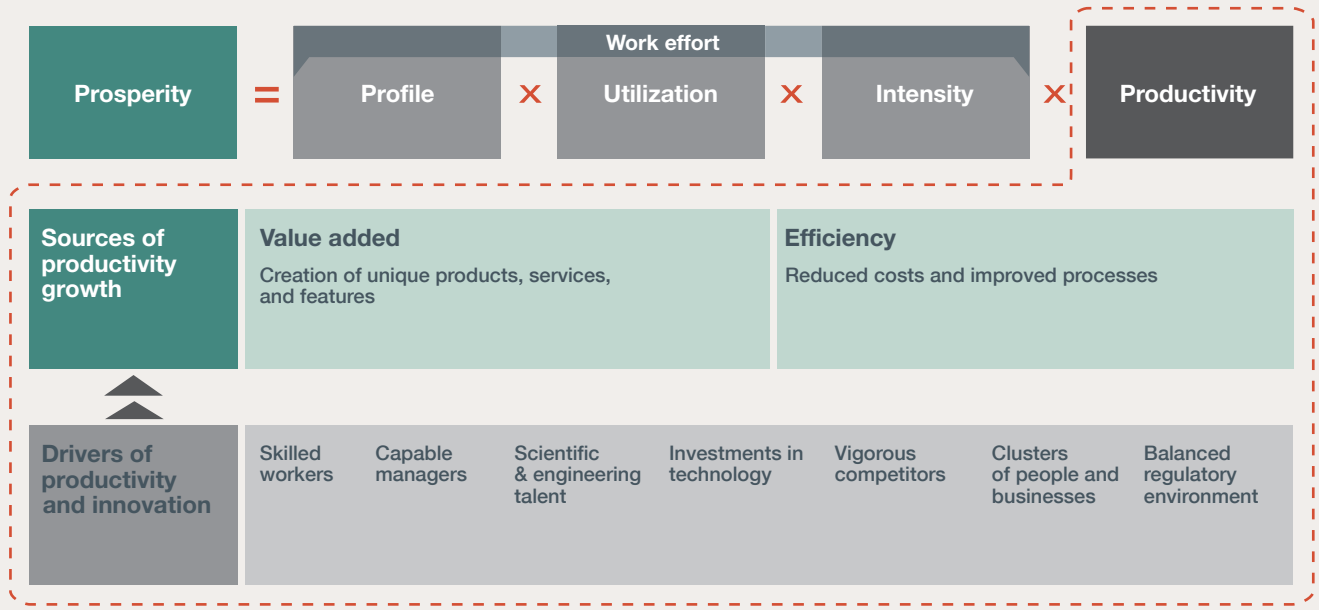
Fully 34.1 percent of employment in Ontario is in the forty-one clustered industries compared with the median of 27.7 percent in the North American peer jurisdictions. The potential productivity benefit from this higher percentage of clustered industries contributes $2,000 per capita. This benefit derives from higher output than would otherwise be achieved from a better industry mix.[14]

12 See http://data.isc.hbs.edu/isc/cmp_overview.jsp for a description of the three types of industries. The Institute refers to Michael E. Porter's "traded industries" as "clustered industries" and his "local industries" as "dispersed industries."

13 Institute for Competitiveness & Prosperity, Working Paper 1, *A view of Ontario: Ontario's clusters of innovation*, April 2002; and *Idem.* Working Paper 5, *Strengthening structures: Upgrading specialized support and competitive pressure*, July 2004.

14 It is important to note that the measure focuses on the mix of industries only. It calculates the productivity performance that could be expected in Canada if each cluster were as productive as its US counterpart. It does not measure the effectiveness of industries in Canada.

Exhibit 13 Innovation and productivity are closely linked



Source: Institute for Competitiveness & Prosperity.

Within clustered industries, Ontario has a beneficial mix. Some of the forty-one clustered industries contribute more to productivity and innovation than others – so the mix of clustered industries matters. Ontario's relative employment strength in industries, such as financial services, automotive, metal manufacturing, and publishing and printing, has created an attractive mix of clustered industries. Ontario's cluster mix yields an $800 per capita advantage over North American peer median.

Cluster under performance is a significant part of Ontario's productivity gap. While Ontario has an excellent industry and cluster mix, cluster effectiveness, as measured by wages, is much lower than in the North American peer states. Across all clustered industries, the average wage in Ontario is 17.4 percent lower than the North American peer median. This lower wage reflects lower productivity and innovation in Ontario's clustered industries, which in turn reduces economic performance across all industries.

Clusters are an important factor in raising innovation. Michael Porter has observed that specialized support from excellent factor conditions, capable suppliers, and related industries pushes innovation higher in clustered industries. At the same time, more competitive pressure from sophisticated customers and vigorous rivals drives innovation. Ontario has solid general support structures – physical infrastructure and a quality education system – that strengthen cluster performance. But Ontario's structures of specialized support and competitive pressure are inadequate compared with those in clustered industries in the North American peer states. Specialized and sophisticated support conditions include university/industry research collaborations, quality of management schools, quality of scientific research institutions, and the local availability of specialized research and training services. Competitive pressure conditions include intensity of local competition, intellectual property protection, and prevalence of mergers and acquisitions. Without these upgraded supports and pressures, too few of Ontario's firms and industries have developed world-class strategies and operations that drive productivity and wages to match North American peer performance.[15]

The Institute has found that Ontario's clustered industries draw less on workers in creativity-oriented occupations than their counterparts in the US peer states.[16] Another source of clustered industries' under performance is the smaller scale of operations in their manufacturing facilities.

If Ontario clusters were as effective as US clusters, wages would be $15,400 higher per worker. As clustered industries account for 34.1 percent of Ontario employment and given the relationship between wages and productivity, overall productivity would rise by 14.7 percent.[17] Consequently, the productivity loss from the lower effectiveness of Ontario's clusters is $6,100 per capita.

Adding together the effects of industry mix (+$2,000), cluster mix (+$800), and effectiveness (-$6,100), Ontario's clustered industries provide a net loss of $3,300 in GDP per capita versus the peer states.

Lower urbanization is a significant contributor to the productivity gap. Ontario's urbanization gap contributes roughly $1,700 per capita to the prosperity gap.[18] If Ontario's urbanization level were as high as the North American peer median, there would be a substantial increase in Ontario's GDP per capita.

Lower educational attainment inhibits productivity growth. Economists agree that a better educated work force raises productivity. Education develops workers' base level of knowledge and provides the flexibility necessary for performance growth and ongoing skill gains. Also, higher wages go together with higher productivity, and increased wages tend to accrue to individuals with higher educational attainments. Ontario workers have been, on average, less educated compared to their counterparts in the United States. Holding wages constant at current levels, when the mix of

15 For more information on specialized support and pressure, see Institute for Competitiveness & Prosperity, Working Paper 5, *Strengthening structures: Upgrading specialized support and competitive pressure*, July 2004.

16 *Idem*. Eighth Annual Report, *Navigating through the recovery*, November 2009, pp. 27-29.

17 The calculation excludes the effects of Ontario's lower urbanization, underinvestment in capital, and lower educational attainment.

18 To increase the number of observations and the robustness of the results, the impact of urbanization on labour productivity was calculated using all the Canadian provinces and US states.

Ontario's structures of specialized support and competitive pressure are inadequate compared with those in clustered industries in the North American peer states.

educational attainment is adjusted to match the US mix, Ontario's per capita productivity would increase by $1,000. Ontario has bridged the educational attainment gap over the past decade as a result of significant government investment, particularly in post-secondary education. As updated wage and education information becomes available from the latest census, the gap is expected to be even smaller.

Lower capital investment limits productivity growth. Relative to workers in the United States, machinery, equipment, and software used by Ontario workers are less up-to-date, since private sector investments are lower. As a consequence, Ontario workers are less productive. This shortage of investment reduces Ontario's productivity by $1,300 per capita, based on the simulation of Ontario's GDP if the economy had matched the US level of private sector investment in machinery, equipment, and software. A large portion of this capital investment gap is the result of lower purchases of information and communications technology (ICT).

Ontario's growth prospects are clouded

Ontario's prosperity gap with its North American peer median is primarily a productivity gap. Ontarians are unable to produce the same amount of wealth, as measured by GDP per capita, as their North American peers. To assess the potential of Ontario's economy, it is vital to understand how challenging the future will be.

To do this, the Institute analysed Ontario's prosperity for the next ten years, based on critical variables: total population, potential labour force (working population ages 15-64), employed persons, hours worked, and GDP. To project these variables up to the year 2020, the assumed rate of growth of each variable for the next ten years would be the same as the average rate of growth for the past ten years, excluding outlying years.

Using this method, the growth rate of GDP per capita for Ontario would be about 0.76 percent annually, and the GDP growth would be around 2 percent, which implies a population growth rate of about 1.03 percent annually for the next eight to ten years.

Ontario's starting point is unfavourable

While the Institute's analysis shows a potential GDP growth rate of 2.0 percent, that rate over the next ten years could be lower. Statistics Canada projects that Ontario's demographic profile – the potential labour force as a percentage of the total population – which is currently higher than the North American peer median, will deteriorate in the next decade. More precisely, demographic profile will decrease from 69.3 percent in 2010 to 66.1 percent by 2020 in Ontario, and from 67.3 percent to 64.4 percent for the North American peer median.

To construct a base case for Ontario's economy, the Institute added Statistics Canada's profile data to its analysis, keeping the other

Exhibit 14 Ontario's economic prospects are clouded

Ontario, 2013-2020
Prosperity - GDP per capita (C$ 2011)

Scenario	2013	2016	2020
Base case: includes Statistics Canada's projections for profile	$48,280	$49,400	$51,060
Status-quo scenario: past decade's growth rate	$48,510	$49,640	$51,180
1990s growth: assumes an annual growth rate of 3 percent	$49,220	$52,430	$56,690
North American peer median (using Base case numbers)	$57,210	$59,010	$61,600

	1990-2000	2001-2011	2012-2020
Average growth rate of GDP per capita	1.78%	0.77%	0.76%
Average growth rate of GDP	3.0%	2.0%	1.8-2.0%

Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; Ontario Ministry of Finance; Banque de données des statistiques officielles sur le Québec; US Department of Commerce, Bureau of Economic Analysis; US Bureau of Labor Statistics; and US Census Bureau.

variables constant. The new expected growth rate for Ontario's GDP decreased to about 1.8 percent annually. Ontario's GDP per capita would then increase to $51,055 over the next eight to ten years. The prosperity gap, however, would increase to roughly $10,540 by 2020.

To determine the necessary measures to boost growth and close the gap in the next ten years, the Institute calculated the extra work hours, extra employment, and utilization rates that would be needed. In other words, how many more hours would the average Ontario worker have to work to avoid the unfavourable scenario? After arriving at the number of extra hours needed, employment and utilization rates were determined.

The Institute estimated that every 1 percent increase in the number of hours worked in Ontario leads to an increase of 0.4 percent in GDP per capita. For example, if the average work week increased from 36 to 36.4 hours, the total number of hours worked in the province would rise by about 1 percent, and this would lead to an increase in GDP per capita from $47,800 to about $48,000 (an approximately 0.4 percent increase).

The Institute developed two scenarios for Ontario's economy (Exhibit 14). First, the *status quo scenario*, assumes the past decade's growth rate of GDP per capita (which is equivalent to GDP growth of approximately 2.0 percent annually). Then, by 2020, roughly 0.3 hours would need to be added to the work week. That is, the average work week would have to increase from 36 hours today to about 36.3 hours by 2020. Alternatively, the number of employed persons would need to increase on average 5,470 people per year. This is equivalent to increasing the utilization rate 0.6 percentage points – an increase from 60 to about 60.6 percent.

Second, the *1990s growth scenario*, estimates the necessary increases in hours worked that would result in a GDP growth of 3 percent annually. In this case, the average Ontarian would have to work roughly 10 more hours by 2020, translating to a 46-hour average work week. Or the number of employed persons would have to increase by 246,300 annually – a rise in Ontario's utilization rate of about 5 percentage points.

To close the prosperity gap with the North American peer median by the year 2020, Ontario's GDP would have to grow around 4 percent annually. It is clear that both bridging the prosperity gap by 2020 and achieving the two proposed scenarios are daunting challenges, if not unfeasible. Ontario must find alternatives to raise future growth prospects.

Higher productivity will generate growth

One way to boost economic growth is to raise productivity. While a 1 percent increase in the number of hours worked results in an increase of 0.4 percent in GDP per capita in Ontario, in the US peer states, the same increase in hours worked leads to an increase of 0.6 percent in GDP per capita. If Ontarians were able to increase their productivity by 50 percent to be as productive as their US peers, the scenarios would become

more plausible. For example, to achieve the status quo scenario (GDP growth of 2 percent annually), the work week would have to increase from 36 hours to an average of 36.2. Similarly, the number of employed persons would have to grow by an average of 3,800 people per year, which means the utilization rate would have to rise by 0.4 percentage points. In the case of the 1990s growth scenario, the work week would have to increase by 7 hours, taking the average work week to approximately 43 hours. It is clear that to achieve more ambitious goals for the economy, Ontario would have to implement a combination of increases in hours worked and utilization rates, and improvements to productivity.

This analysis offers a window into the future for Ontario's economy. The outlook for growth over the next eight to ten years seems bleak. Yet there are solutions available to reduce the negative effects of the decrease in the demographic profile. To make the solutions more plausible from a public policy standpoint, however, will require improvements in productivity. Policies should offer incentives for businesses to innovate and invest to boost productivity and to improve labour market dynamics.

Ontario needs to become more competitive. But the province continues to lag North American peers in economic performance, mainly because of lower productivity. Economic growth is the new imperative that will lead to competitiveness and prosperity. Yet the outlook for growth over the next eight to ten years is bleak. There are available solutions. Public policies should offer incentives for businesses to innovate and invest to boost productivity and to improve labour market dynamics.

HOW DOES WHERE ONTARIANS LIVE AND WORK MATTER?

Where Ontarians choose to live and work has far reaching implications for their careers, productivity levels, and, ultimately, their prosperity. A smaller proportion of Ontarians live in urban centres than their US peer state counterparts. This puts a substantial drag on innovation levels and productivity.

The urbanization level and the industrial makeup of Ontario and Canada are difficult for governments to change. In many respects, they are predetermined and cannot be addressed by public policy. So it is necessary for Ontario businesses to be at the forefront of innovation and productivity to lead the province to prosperity.

By contrast, a greater share of Ontarians is working in clustered industries than of workers in the North American peer states. But they are not as effective at deriving the same economic benefit from those clusters.

Within Canada, Ontario manufacturing is shifting away from low value added industries and into higher, more sophisticated ones. Ontarians need to step up their efforts to pursue opportunities in the growing service industries.

More densely populated metropolitan areas lead to higher labour productivity

The relationship between urbanization, measured as the percentage of the population living in metropolitan areas, and labour productivity is a strong one.[19] Higher levels of urbanization lead to higher productivity. On average, a 10 percent increase in urbanization leads to a 5.4 percent increase in labour productivity. Both Ontario's urbanization and labour productivity are below the North American peer median (Exhibit 15).

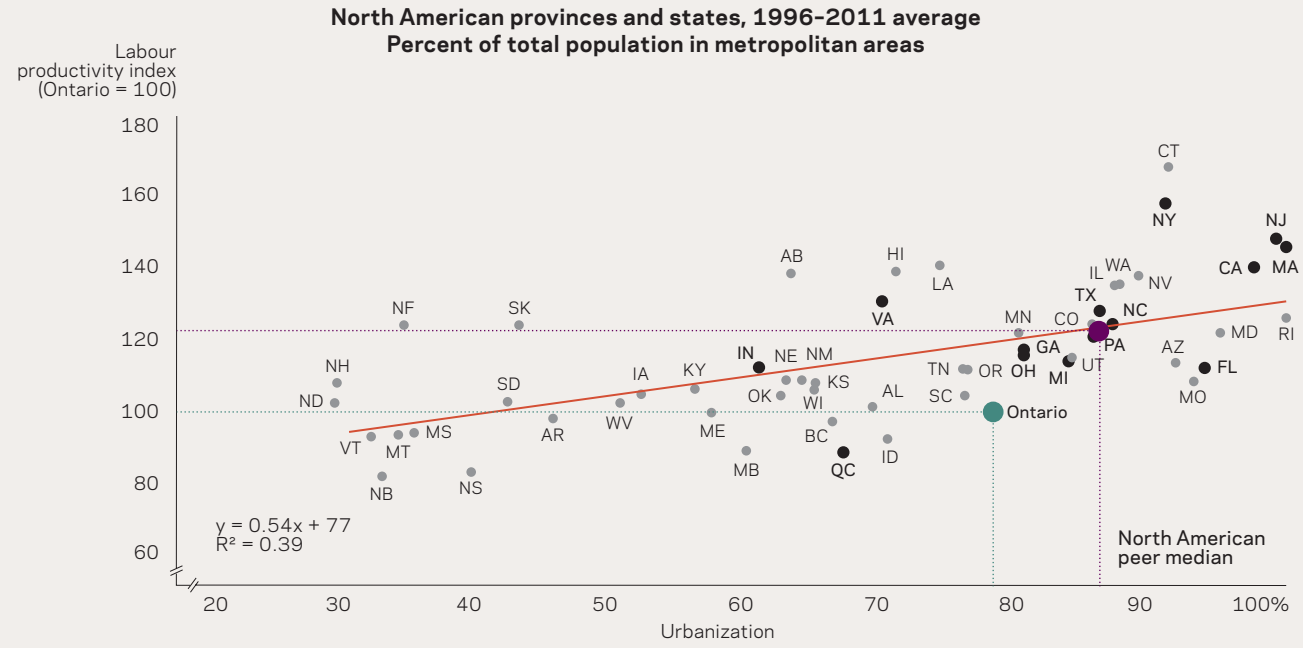
Several factors explain this relationship:

- At the city-industry level, competition fosters higher productivity, and city diversity increases employment growth.[20]
- By pooling skilled workers and enhancing the matching mechanism in the labour market, cities accumulate more skills, all of which lead

19 Labour productivity is measured as GDP divided by the total hours worked in the province or state. The Institute transformed that measurement into an index by making Ontario's productivity equal to 100.

20 Edward L. Glaeser, Hedi D. Kallal, Jose A. Scheinkman, and Andrei Shleifer, *Growth in cities*, National Bureau of Economic Reasearch Working Paper Series, Working Paper No. 3787, July 1991

Exhibit 15 More urbanization is linked with higher labour productivity



Note: Alaska, Delaware and Wyoming were excluded from this analysis. North American peer states are in black.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, 2006 Census; *Labour Force Survey*; US Census Bureau; US Department of Commerce, Bureau of Economic Analysis, Regional Economic Accounts; and US Bureau of Labor Statistics.

to higher wage growth and higher returns to experience.[21]

- Given the fact that cities tend to be centres of knowledge and creativity, urban density is critical for knowledge spillovers and innovation. These spillovers, particularly across industries, help economic growth. This effect is stronger for more mature cities.[22]
- The world's 681 metropolitan areas with more than 500,000 people, which house 24 percent of the world's population, accounting for 58.5 percent of total worldwide economic activity. Such metropolitan areas account for roughly 60 percent of economic activity in North America.[23]

Since the trend of increasingly more urban populations is inevitable, provincial and municipal governments need to ensure that they are investing adequately in infrastructure to facilitate this move, supporting growing urban populations, and taking full advantage of urbanization effects.

Growth in clustered industries drives the economy

Clustered industries tend to co-locate in specific regions and cities and have the ability to drive productivity through high-paying, high-skill jobs. Clustered industries thrive on serving consumers outside their region. In contrast, dispersed industries are found throughout the local economy, producing goods and services that do not cross borders. Natural endowment industries are located only near areas close to natural resources.

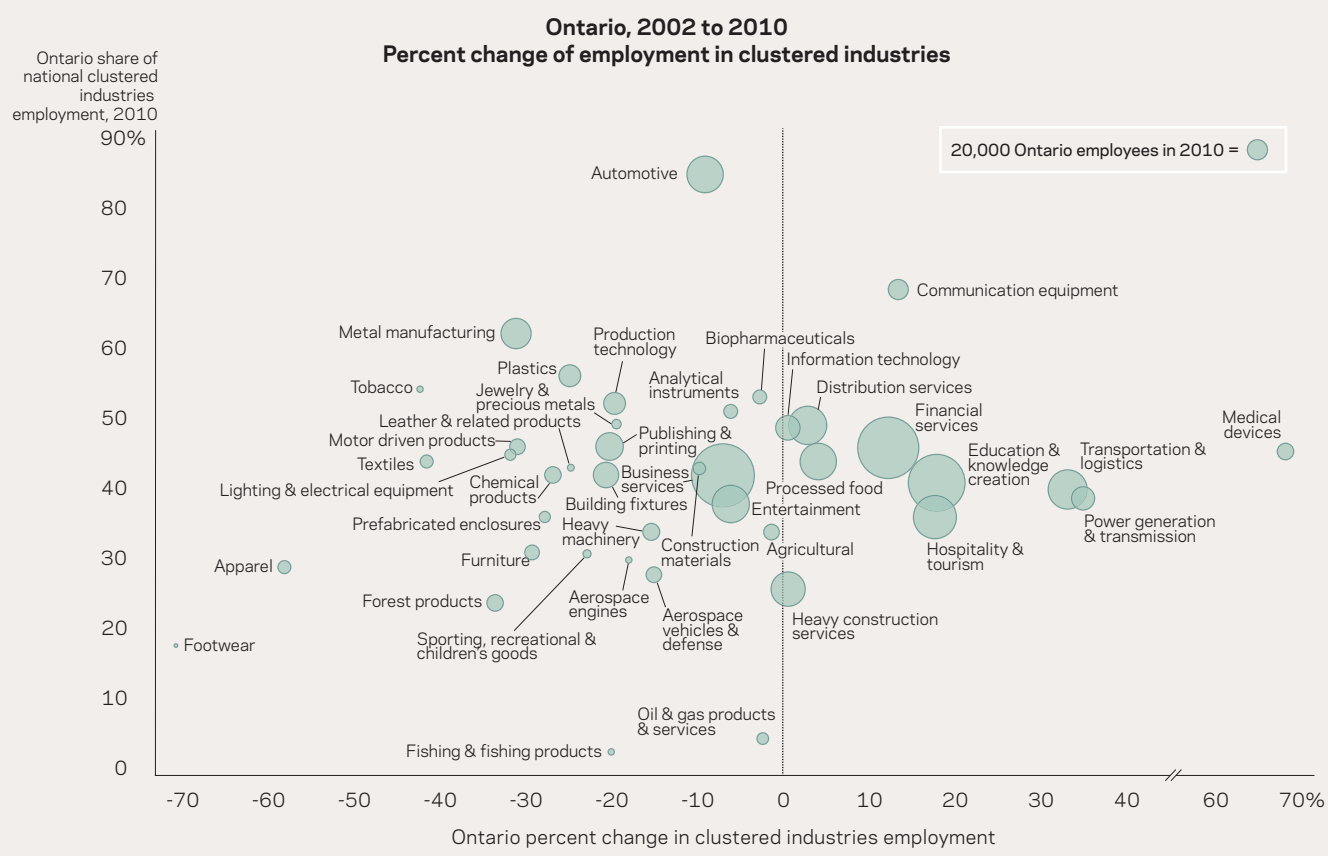
Clustered industries have a positive impact on an economy. To describe the evolution of clusters' role in Ontario, it is instructive to look at clustered industries in both Ontario's share of national employment – the contribution of an Ontario clustered industry with Canada's clustered industry employment as a base – and the Ontarian clustered industry employment share within Ontario – the contribution of a clustered industry with Ontario's clustered industry employment as a base (Exhibit 16). Ontario's share of Canada's clustered industry employment has decreased over time. In

21 Edward L. Glaeser and David C. Mare, *Cities and skills*, National Bureau of Economic Research Working Paper Series, Working Paper No. 4728, May 1994.

22 Adam B. Jaffe, Manuel Trajtenberg, and Rebecca Henderson, "Geographic Localization of Knowledge Spillovers as Evidenced by Patent Citations," *Quarterly Journal of Economics*, 1993, Vol. 108, No. 3, pp. 577-98.

23 Richard Florida, Charlotta Mellander, and Tim Gulden, *Global metropolis: The role of cities and metropolitan areas in the global economy*, Martin Prosperity Institute Working Paper, March 2009, p. 10

Exhibit 16 Employment has grown in some Ontario clustered industries



Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada and the research of Professor Michael E. Porter and the Cluster Mapping Project.

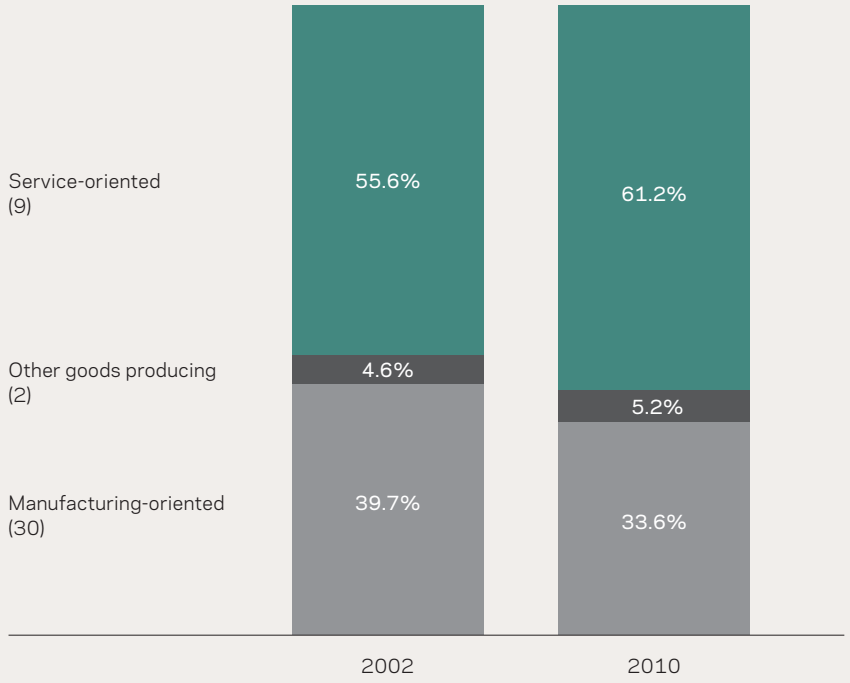
2002, the province represented 43.4 percent of the national clustered industry employment. In 2010, this share decreased to 41.2 percent. Mainly this was the result of the burgeoning economies of the Western provinces. In Alberta, for example, the share of national clustered industry employment increased from 10.7 percent in 2002 to 12.5 percent in 2010. In fact, all Western provinces have increased their share of national clustered industry employment over this time.

While each clustered industry has experienced its own evolution, a few in depth pictures are instructive:

- Ontario's *financial services* cluster added jobs from 2002-2010, but it has not kept up with the overall increase of jobs nationally, causing its share of national employment in this sector to decrease. Specifically, Ontario added 13 percent more jobs in the financial services clustered industry, while the rest of Canada (excluding Ontario) added 25 percent more jobs. Toronto, the financial hub of Ontario accounting for 69 percent of the share of Ontario's financial services cluster, added 23 percent more jobs in financial services. The rest of Ontario (excluding Toronto) lost 6 percent of financial services jobs.
- Similar to financial services, Ontario lost national share of employment within the *education and knowledge creation* clustered industry because it failed to keep up with the national growth of jobs. Ontario gained 18 percent of employment over the 2002-2010 period compared to 28 percent in the rest of Canada. But Toronto gained 44 percent more jobs in this sector over that time. While Toronto only makes up 38 percent of provincial education and knowledge creation employment, the positive investments the provincial government is making in education are most evident in this city.
- This employment attraction can also be observed in two other clusters: *automotive* and *communications equipment*. Nationally, employment in both of these clustered industries predominates in Ontario, and both have been increasing their share of national employment. The Ontario automotive cluster lost 9 percent of its jobs, but gained in national share because other parts of the country lost 21 percent of jobs. Conversely, the communications equipment cluster increased its employment by 14 percent, whereas the rest of Canada (excluding Ontario) lost 35 percent of its jobs in that cluster.

Exhibit 17 Employment in Ontario's service-oriented clustered industries increased

Ontario clustered industries, 2002 and 2010
Percent of employment by type in 41 clustered industries



Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada and the research of Professor Michael E. Porter and the Cluster Mapping Project.

Combining the clustered industries by type provides insight into Ontario's flow of employment over time. Of the forty-one clustered industries, nine are service-oriented, thirty are manufacturing-oriented, and the remaining two are in other goods-producing industries.[24] As expected, Ontario's manufacturing-oriented clustered industries saw a loss of 3.2 percent of their national employment share and shed an average of 18 percent of their jobs. Service-oriented clustered industries in Ontario saw a loss of only 1.6 percent of their national employment share and gained 7 percent in employment share. Other goods-producing industries lost only

24 Service-oriented clusters are those with more than 50 percent of employment in service-producing industries (NAICS 41-91), manufacturing-oriented are those with more than 50 percent of employment in goods-producing manufacturing industries (NAICS 31-33), and other goods-producing are those with more than 50 percent of employment in goods-producing industries other than manufacturing (NAICS 11-23). The clustered industries identified as service-oriented are: business services, distribution services, education and knowledge creation, entertainment, financial services, hospitality and tourism, information technology, jewelry and precious metals, and transportation and logistics. The clustered industries identified as other goods-producing are: heavy construction services and power generation and transmission.

0.5 percent of their share of national employment, while gaining 8 percent of their employment.

Within clustered industry employment, the mix of service-oriented, manufacturing-oriented, and other goods-producing sectors has also fluctuated. The share of service clustered employment swelled to 61.2 percent of total clustered industry employment in 2010, while manufacturing clustered employment dwindled to only 33.6 percent (Exhibit 17). Many might believe that manufacturing constitutes the majority of employment in Ontario, but clearly this is not the case. It is true that manufacturing is an important part of the economy, but the majority of the clustered industry employment is in service-oriented industries.

Clearly, much of the loss of national employment share in clustered industries can be blamed on layoffs in manufacturing industries. Clustered industries drive the Canadian economy. The forty-one key industries identified by Porter give rise to much of the country's overall productivity and innovation, as measured by wages and patent output. Ontario needs to be sure it is not losing out on the benefits of this type of employment.

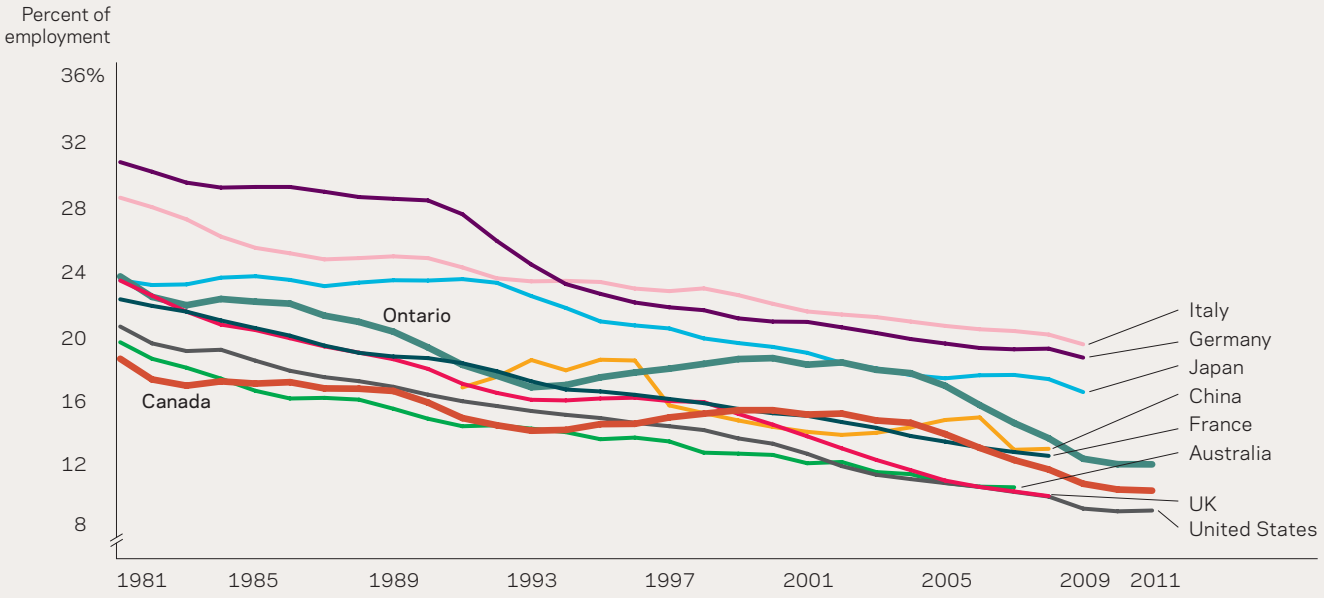
High value added manufacturing and service industries are key to growth

The future of manufacturing in Ontario has gained considerable media coverage. This is not surprising, since the manufacturing sector – overall, rather than in clustered industries – contributes more than 15 percent of the provinces' total GDP.[25] Manufacturing historically provided employment in relatively

25 Using 2011 figures. Statistics Canada, *Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS) and province*, CANSIM Table 379-0025.

Exhibit 18 Manufacturing employment share has declined globally

Ontario, Canada and international peer countries, 1981–2011
Manufacturing share of total employment



Note: The trendline for the US represents the share of manufacturing employment out of total non-farm employees.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; US Bureau of Labor Statistics; OECD STAN Indicators database; National Bureau of Statistics of China, National Annual Statistical Bulletin; Judith Banister and George Cook, "China's employment and compensation costs in manufacturing through 2008," *Monthly Labor Review*, Vol. 134, No. 3, March 2011, pp. 39-52.

The major source of Ontario's prosperity will increasingly be found in innovations within a service-oriented economy.

well-paying jobs for blue-collar workers. It became a bridge to the middle class for many who found it difficult to earn the same wages as highly educated workers.

Manufacturing employment changed dramatically over the years. Ontario lost 27.4 percent of manufacturing jobs between 2002 and 2011. Nationally, Canada lost 23.1 percent of manufacturing jobs during that time. Most of the manufacturing industries that lost jobs between 2002 and 2008 were in low value added industries, such as textiles.[26] In fact, manufacturing employment has shifted away from less productive firms to higher value and more sophisticated Canadian manufacturing industries, such as production machinery and medical devices, which are growing in employment and productivity. This phenomenon is not due to the growth of the Chinese manufacturing sector. Although imports from China are increasing in Canada, this trend began well before China's entrance into the World Trade Organization in 2001.

In the rest of the world, the shrinking manufacturing sector is part of a long-run trend experienced by almost every advanced economy (Exhibit 18). Even manufacturing employment decreased in China in the same way as that in other countries. This was a consequence of the privatization of state-owned enterprises and private companies implementing the same productivity increasing and labour-saving technologies as their global competitors, hence contributing to the worldwide trend.

Technological progress explains most of the long-term trend of manufacturing employment loss. Much like the decline of agriculture as a share of both employment and GDP in Canada during the nineteenth century and continuing into the twentieth century, an economy going through rapid technological progress experiences a rise and fall of many sectors. The advent of the combined threshing and reaping machines that operated with a fraction of the labour previously required permitted a far fewer number of people to be employed in agriculture. While this may have signaled a dramatic change in the livelihoods of many farmers, technological changes led to enormous economic growth for Canada during that time.

The Federal Reserve Bank of Cleveland found that technological improvements and productivity changes brought about by increasing skills and capital intensity were major determinants of the decline in manufacturing employment in the United States.[27] Considering the close trade and business relationships between the United States and Canada, it is not a stretch to draw the same conclusion for Canada. Computers have allowed manufacturers to achieve higher efficiency and production levels by automating many routine-oriented tasks, thereby employing fewer workers while producing more goods.

Technological improvements explain the behaviour of producers. However, the Dallas Federal Reserve concluded that the relative shrinking of the manufacturing sector, compared to the expansion of the services sector, can also be explained by consumers' behaviour.[28] For individual households in Ontario, real personal disposable income rose 99 percent from 1981 to 2010.[29] In a modern economy, an increase in household income leads to higher demand for services and leisure activities, such as education and tourism. As an economy grows richer, the demand for food, clothing, and other goods will increase, but over time the global demand increase will naturally skew toward entertainers, doctors, financial advisers, and domestic workers.[30]

Given the shrinking size of the manufacturing sector and the increasing demand for services, manufacturing is now less important to Ontario's economy than in the past. The major source of Ontario's prosperity will increasingly be found in innovations within a service economy, in which the share of the goods production has risen 8 percent since 1992. In the future, public policy

26 Institute for Competitiveness & Prosperity, Working Paper 14, *Trade, innovation, and prosperity*, September 2010, p. 40.

27 Eric O'N. Fisher and Peter C. Rupert, "The decline of manufacturing employment in the United States," Federal Reserve of Cleveland, 2005.

28 Federal Reserve Bank of Dallas, "Opportunity knocks: Selling our services to the world," 2007 Annual Report, 2008.

29 Personal disposable income is calculated as personal income less direct taxes, contributions to social insurance plans, and other current transfers to government. Statistics Canada, *Sources and disposition of personal income, provincial economic accounts, annual (dollars)*, CANSIM Table 384-0012.

30 Eric O'N. Fisher, "Why are we losing manufacturing jobs?" Federal Reserve Bank of Cleveland, Economic Commentary, 2004. Federal Reserve Bank of Dallas, "Opporunity Knocks: Selling our services to the world," 2007 Annual Report, 2008.

should be geared toward promoting the progressively more important service industries as much as manufacturing has been promoted in the past.

Ontario needs to concentrate these efforts on the routine-oriented service occupations, which employ the largest number of its workers. Improving the service economy would increase the wages and working conditions for employees and dramatically boost productivity and prosperity in the province. Preparing these workers to thrive with the growing creativity content of these jobs is one way to combat this. Two core skills are required for success in the creative age – analytical and social intelligence skills, such as problem-solving and communication skills. Ontario has worked hard to provide a solid education system that provides workers with the necessary background to teach analytical skills. In future, Ontario needs to widen efforts to include cultivating the critical social intelligence skills in higher education system that will be necessary to compete in the creative age.[31]

Ontario should invest in high value added manufacturing industries

Ontario must ensure the province can remain competitive and find opportunities for growth in the current economic environment. Ontario businesses need to invest in conditions that will play to their strengths: the growing, high-skilled manufacturing industries. Specializing in skills-intensive products that cannot be produced in low-income countries will keep Ontario at a competitive advantage. Thus, Ontario should:

- *Improve management capability* – an important element in expanding innovation and productivity performance. Strong management is important for sizing up competitive challenges and threats, assessing consumer behaviour for business opportunities, putting in place the necessary resources and capabilities, and building skills and talents in the organization. The Institute measured the quality of Canadian management in manufacturing compared to that of their counterparts in other countries. While Canada's performance was solid, the research showed how the quality of management improved as the percentage of an organization's management team had university degrees.[32] A lower percentage of managers has a university education in Ontario than in the United States, and a higher percentage only has a high school diploma.[33] Ontario businesses need to look critically at their human resources strategies for their management positions. They cannot expect to realize their full innovation potential without a highly capable management cadre.
- *Invest in skilled workers* – to enhance the productive capacity of these sectors and make them more competitive. Companies must realize that investing in the skills of their employees is to their economic advantage.
- *Boost investment in machinery and equipment* – when the Canadian dollar is high to capitalize on the benefit of stronger purchasing power. Closing the investment gap offers the potential for closing the prosperity gap, since higher machinery, equipment, and software investment will make the work force more productive.
- *Invest in infrastructure* – to facilitate the export of manufactured goods. Border crossing infrastructure, especially in southern Ontario, risks becoming a critical choke point for trade with the United States.[34] The health of the manufacturing sector depends on investment outside Ontario. Advocating investment needs to the federal government on behalf of west coast seaports and airports across the country will help realize the full potential from expanded trade with the Asia-Pacific countries. The Institute commends the federal government on its commitment to building a new Detroit-Windsor bridge. Ontario needs more of such initiatives to address inadequate infrastructure, which inhibits trade growth.

31 For more information please see Martin Prosperity Institute, *Ontario in the Creative Age*, February 2009.

32 Institute for Competitiveness & Prosperity, Working Paper 12, *Management matters*, March 2009.

33 *Idem., Canada's Systematic Under Investment in the Education of Managers*, January 2011, slide 6, available at **http://www.competeprosper.ca/images/uploads/Manager_Education_RLM_240111.pdf**.

34 *Idem*. Working Paper 14, *Trade, innovation, and prosperity*, September 2010, pp. 16-17.

- *Remove trade barriers* – that prevent exports to the global economy. Increased pressure to innovate, which comes from opening borders, is beneficial, and sophisticated consumers and competitors will help Ontario's manufacturing firms improve their innovation capabilities and enhance consumers' welfare. Currently, Ontario's exports are primarily directed at slow-growing advanced economies, principally the United States, in place of fast-growing emerging markets, which represent an estimated 85 per cent of the resource opportunities in the world.[35] Ontario businesses need to look abroad, and not just south of the border, for the real opportunities awaiting us.

Ontario faces the challenges of low urbanization and under performance in key industries. Ensuring the long-term prosperity of Ontario will depend on all industries throughout the province becoming more innovative and productive. The goal is to raise the skills of Ontario's workers in both high value added manufacturing and service industries to compete on the world stage.

35 Richard Dobbs, Jeremy Oppenheim, Fraser Thompson, Marcel Brinkman, *et al.*, "Resource revolution: Meeting the world's energy, materials, food, and water needs," McKinsey Global Institute, McKinsey Sustainability & Resource Productivity Practice, 2011.

HOW DOES ONTARIO COMPETE?

Ontario has a strong base from which to foster the necessary growth for recovery from the 2009 recession. Canada as a whole is faring better than the United States in overcoming the economic downturn, and this has clearly positive implications for the country's competitiveness. However, there are still many areas in which Ontario businesses must continue to improve to achieve this growth, and public policy can assist by creating a stable and sustainable economic and political environment.

Governments have taken major steps to raise productivity with beneficial tax changes and investment in post-secondary education. But the debate on productivity, and the work of this Task Force, have not been able to capture the minds or imaginations of business leaders. While Canadian business owners acknowledge the importance of innovation and investment, the obstacles to innovation such as risk and uncertainty, the lack of skilled employees, and the lack of internal financing are significantly hampering their ability to follow through on their investment decisions. This hesitation to invest is not only reflected in what business owners say, but also how businesses are operating. They seem to be responding to the uncertainty of economic performance around the world. But, in Canada, there is less uncertainty than elsewhere to hold them back. Still, businesses have built up large cash reserves. The problem of "dead money" is generating considerable debate, and the Institute believes that managers should take advantage of their high cash reserves and invest in areas that will help their companies grow.

The size of a business can also be an advantage. Large companies have more resources to invest in R&D, hire more skilled employees, handle intense global competition, and overcome the barriers to innovation. More large Ontario companies would make business owners less tentative about making investments to increase their companies' innovation capabilities and competitiveness. Firms and governments need to work together to build upon Ontario's existing foundation to create an economic environment that is conducive to sustained competitiveness and growth.

Ontario business leaders' attitudes and behaviours are mismatched

Business owners' and entrepreneurs' attitudes toward innovation and investment represent an important foundation for a region's development. In Canada, there appears to be a dichotomy between behaviours and attitudes. Canadian business owners and entrepreneurs understand the importance of investment and innovation; however, they also seem reluctant to take risks and to invest in innovative projects.

A study conducted by Deloitte reveals that Canadian and US business leaders present "similar levels of risk tolerance." However, these results are based on self-assessment tests. The same study shows that there are differences between American and Canadian business leaders' willingness to invest, given uncertainty of returns.[36] Another study, The Survey on Innovation and Business Strategy (SIBS), shows that Canadian business leaders identify risk and uncertainty as one of the three main obstacles to innovation, with the other two being lack of skills within the enterprise and lack of internal financing. Even though SIBS also points out that "the percentage of enterprises taking measures to mitigate obstacles to innovation is high" (roughly 90 percent in the manufacturing sector), which shows an active attitude toward innovation by Canadian businesses, the fact that they still lag their international peers in innovation and investment seems to prove that businesses do not follow through with efforts to innovate and invest.[37]

A third survey also points to conflicts between attitudes and behaviours toward investment and innovation by business owners and entrepreneurs. Aiming at constructing a clear picture of the Canadian small and medium size enterprises (SME) population, the Business Development Bank of Canada (BDC) conducted an online survey with business owners of companies with fewer than 500 employees about their attitudes toward investment, innovation, and growth prospects for their businesses.[38] The survey confirmed that business owners understand the importance of investment and innovation, but do not fully grasp the process of innovation, or do not plan appropriately for future innovative efforts. For example, even though roughly half of the Ontario respondents indicated product/service development as one of their future investments, only 21 percent said R&D was another possibility for

36 Bill Currie, Larry Scott, and Alan Côté, "The future of productivity: An eight-step game plan for Canada," Deloitte & Touche LLP Canada, Future of Canada Series, 2011.

37 Industry Canada, "Business innovation and strategy: A Canadian perspective," Report Based on the Results of the *Survey of Innovation and Business Strategy* (SIBS), 2011.

38 Business Development Bank of Canada, *Survey conducted among Angus Reid's Forum Panel for the October 2010 Small Business Week*, Montreal, June 2011, available online: **http://www.bdc.ca/Resources%20Manager/misc/Report_survey_SBW_ENG_FINALX.pdf**.

future investment. That shows a failure to relate the two activities. Instead, Canadian SME business owners seem to be relying on casual development of new products or processes rather than on a rigorous process of innovation through research and development.

Another striking feature of the BDC survey is that only 9 percent of SME business owners affirmed they had a strategy for innovation in place, whereas 72 percent of the respondents admitted that they follow an "ears-to-the-ground" approach – they funnel ideas generated by people around them and other elements in their business environment. Business owners also pointed out that the main obstacles to innovation and growth are lack of funds, lack of time, and lack of skilled workers. Another mismatch arises here over the last obstacle, since only 5 percent of Ontario SME business owners (4 percent overall in Canada) indicated that investing in employee training is a way to improve growth prospects, whereas roughly 20 percent answered that improving overall productivity is a reasonable venue for increasing growth.

Canadian business owners and entrepreneurs seem inclined to invest and innovate. However, they do not translate this attitude into actual investment and innovative behaviour. Whether this is due to lack of funding or planning, it is evident that businesses do not prepare properly for the process of investment and innovating. The result is that Ontario industries lag their international peers.

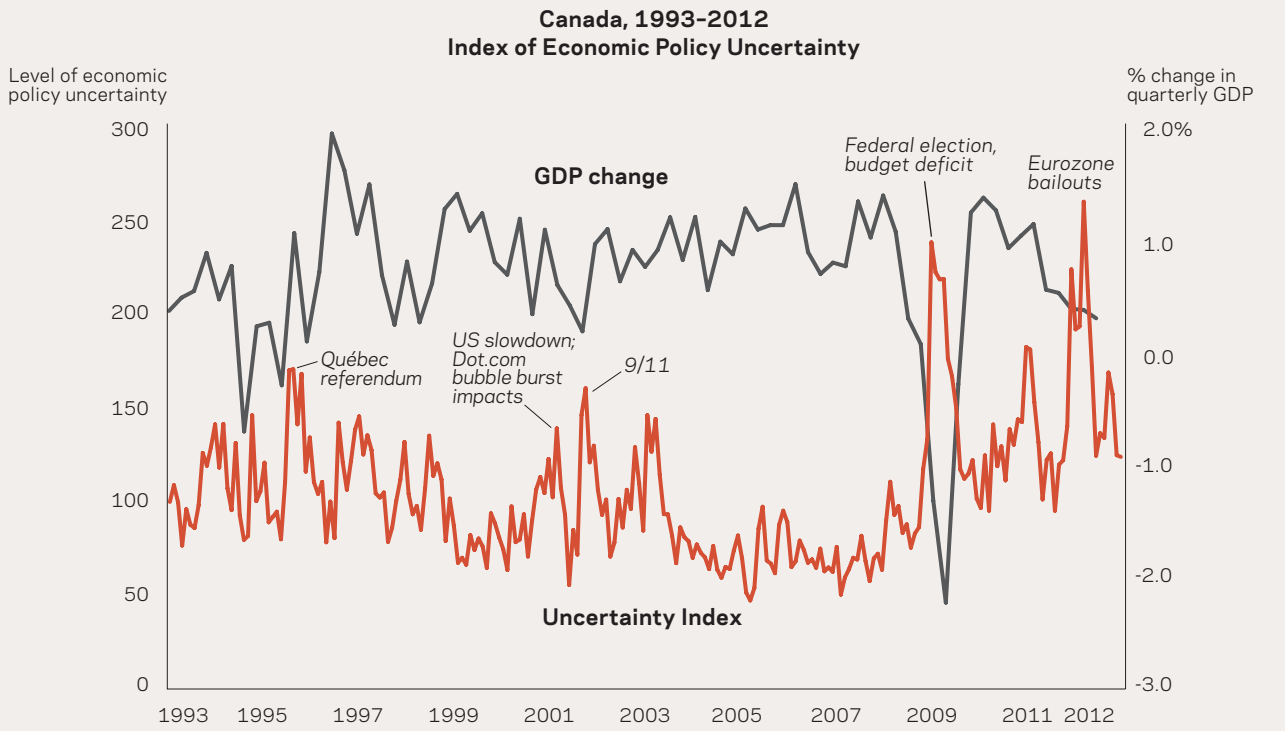
Less economic uncertainty in Canada aids business decision-making

Closing Ontario – and Canada's – prosperity gap requires the cooperation of governments, businesses, and citizens. Many of the factors that contribute to the prosperity gap, such as the lack of investment in software or capital by businesses, are due to the uncertainty that prevails in current economic conditions. By extension, the productivity and innovation gaps are also affected.

The impact of uncertainty on economic activity and business cycles is now a burgeoning area of academic study by economists and policy makers alike.[39] The common belief is

39 For a literature review of recent works on uncertainty, see Scott R. Baker, Nicholas Bloom, and Steven J. Davis, "Measuring economic policy uncertainty," June 2012, pp.1-3, available online: http://policyuncertainty.com/media/BakerBloomDavis.pdf.

Exhibit 19 Economic policy uncertainty affects GDP



Note: Index of Policy-Related Economic Uncertainty is composed of 3 series: (1) News-Based Policy Index; (2) Inflation Index; (3) Budget Balance Index. Weights: 50% news-based policy index, 25% inflation index, 25% budget balance index.
Source: Scott R. Baker, Nicholas Bloom and Steven J. Davis and the Institute for Competitiveness & Prosperity for the Index of Economic Policy Uncertainty. Statistics Canada for GDP growth.

that major economic and political events generate uncertainties, which in turn can create "short sharp recessions and recoveries."[40]

Researchers have analysed whether economic uncertainty can prompt businesses and households to delay spending on capital and consumer goods, which tends to lower GDP. They developed a US Economic Policy Uncertainty Index and recently expanded this analysis to Europe following the debt crisis in the region.[41] The same methodology was applied to examine the Canadian situation (Exhibit 19). Three indices were used to calculate an overall Index of Economic Policy Uncertainty for Canada:

- The News-Based Policy Index is weighted heaviest (50 percent) in the calculation of the Economic Policy Uncertainty Index.
- The Inflation Index captures one year forecasts of the consumer price index and has a 25 percent weight in the calculation of the overall index.
- The Budget Balance Index also has a 25 percent weighting and is made up of the goods and services spending by the federal government one year into the future.

Since the Economic Policy Uncertainty Index combines both current and predictive measures, with each making up half of the equation, the Index is a useful tool for gauging historical and future economic uncertainties. Economic uncertainty caused by the budget deficit and looming federal election in October 2008 drove economic uncertainty to the highest point since 1993. This period was marked by discussions of bailouts for companies in the United States and Canada and the greatest decrease in quarterly GDP since 1993.

The Economic Policy Uncertainty Index affirms that some significant US events, such as 9/11, budget deficits, and the Obama stimulus package, increased uncertainty in Canada. The regular influx of US events and news into the Canadian media is a normal practice, and many of the changes in economic policy uncertainty are due to the situation south of the border.

However, not all of the major spikes in uncertainty are the result of US events. Instead, many periods of great economic uncertainty are due to distinctly Canadian happenings. For example, the Québec referendum and the threat of Québec secession caused even more economic uncertainty in Canada than 9/11, even though the terrorist attacks generated monumental international political and economic repercussions. Furthermore, the 2008 federal election and budget deficit in light of the US economic downturn caused the highest level of economic policy uncertainty, second only to the Eurozone bailouts.

No matter the impact of international events on Canadian economic forecasts or news, the peaks and valleys in the Index of Economic Policy Uncertainty are far less wide-ranging than those in the US equivalent. Although no one can accurately predict how significant the peaks and valleys will be in the future, especially given the growth of the media, the Index nonetheless shows that Canada's economic uncertainty is lower than that of the United States.

Accordingly, the smaller range in Canada's economic policy uncertainty helps Canada in its economic recovery and subsequent growth. This is further evidence that businesses should push for growth, as the lower level of economic policy uncertainty in Canada is an excellent reason to increase investment. Governments, businesses, and citizens alike should therefore take advantage of this fact and move forward with their investment decisions.

Canadian firms hold unproductive cash balances

Recently the Governor of the Bank of Canada, Mark Carney, stated that companies in Canada have accumulated large cash reserves and have been afraid of investing. The Governor referred to these accumulated reserves as "dead money," and followed by proposing that companies that are not going to invest should distribute the extra cash in the form of dividends to shareholders. After these remarks, an intense debate ignited in the media. Most economists and analysts criticized Governor Carney's point of view, but the so called "dead money" issue remains.

To address this issue, the Institute analysed companies' cash and cash equivalent balances and net fixed assets in three different industries: retail and wholesale trade, manufacturing, and construction.[42] Both cash balances and net fixed assets have consistently increased since 1988. But cash and deposits increased at a faster pace than investment, especially after 2001. Between 1988 and 2011 cash and equivalents grew as a percentage of total assets, while net fixed assets on average shrank. In these industries, the cash balances as a percentage of total assets increased at a faster pace after 2001 (Exhibit 20).

Both the Governor and the private sector firms have valid arguments. On the one hand, cash and equivalents have grown over the years and more

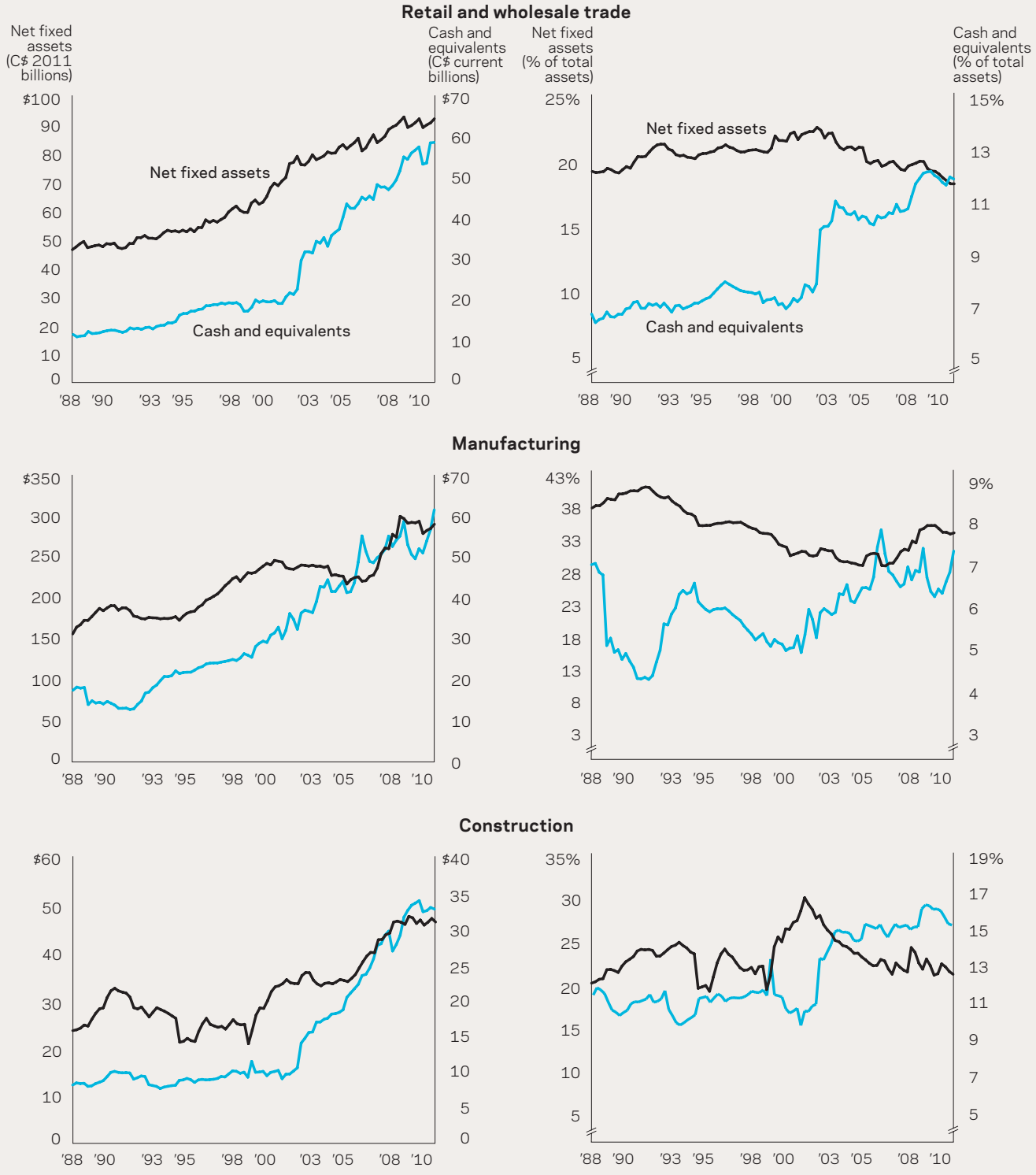
40 Nicholas Bloom, Max Floetotto, Nir Jaimovich, *et al.*, *Really uncertain business cycles*, National Bureau of Economic Research Working Paper Series, Working Paper No. 18245, July 2012, as cited in Scott R. Baker, Nicholas Bloom, and Steven J. Davis, "Measuring economic policy uncertainty," 2012, p. 1.

41 Scott R. Baker, Nicholas Bloom, and Steven J. Davis, "Measuring Economic Policy Uncertainty," June 2012, pp. 1-3, available online: **http://policyuncertainty.com/media/BakerBloomDavis.pdf**. For the full US analysis by Baker *et al.*, please visit **www.policyuncertainty.com**.

42 Cash and cash equivalents refer to currency, deposits, and liquid, short-term investments. Throughout the text, cash and cash equivalents are referred to as cash and equivalents, cash balances, or simply cash.

Exhibit 20 Canadian businesses have accumulated cash reserves

Canada, 1988–2011
Cash balances and net fixed assets in selected industries (C$ billions and percent of total assets)



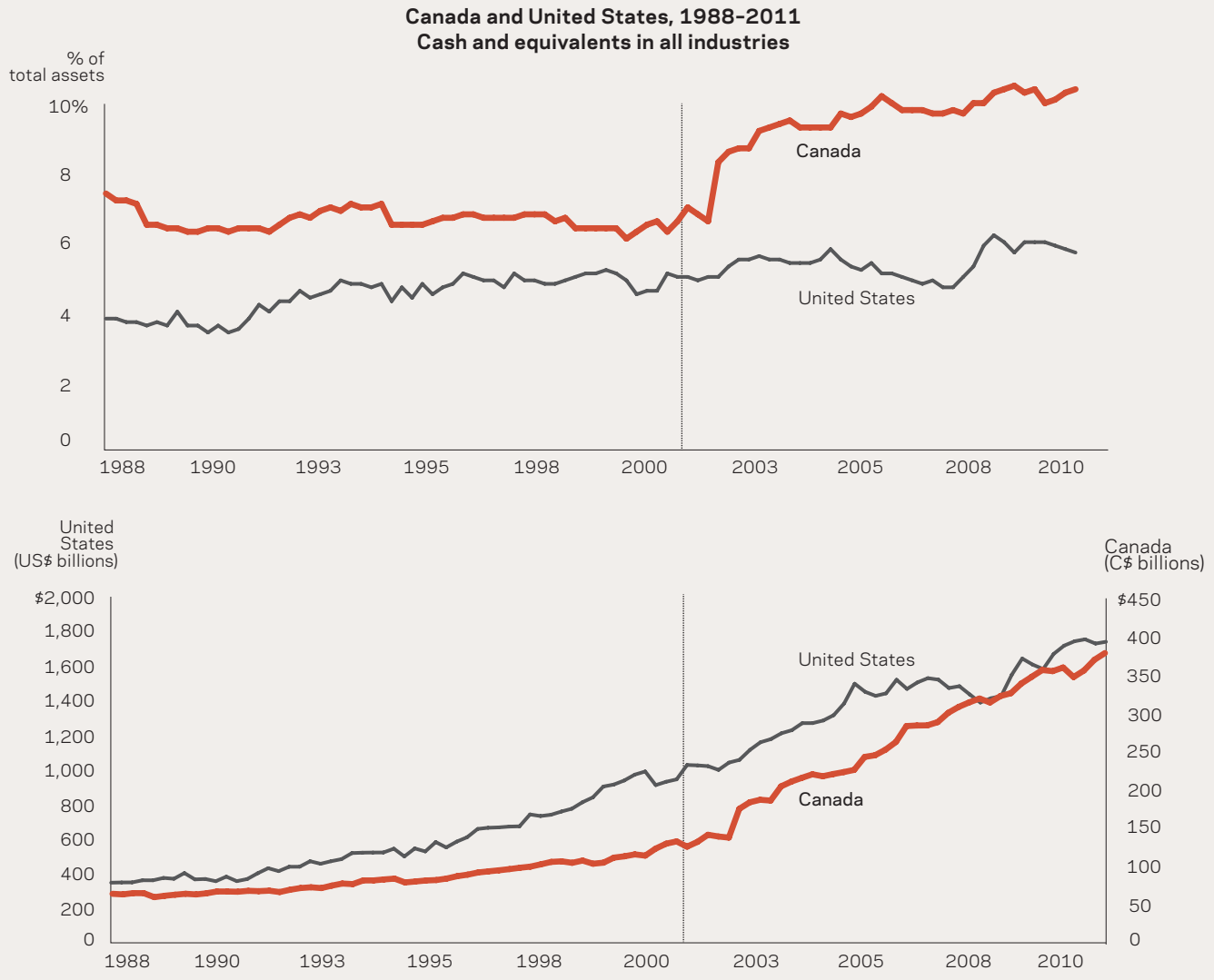
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada.

prominently in the last ten years in the industries considered, as observed by the Governor. On the other hand, investments have also increased over time, though at a slower pace, as private sector representatives note.

The discussion, therefore, should focus on understanding why companies are keeping increasingly higher levels of cash balances and what they should do with that cash. One possible reason relates to risk buffering. To avoid economic uncertainty and remain solvent during an economic recovery stage, companies are relying on larger cash cushions. Given that the first decade of the twenty-first century was marked with events that greatly increased economic instability, companies turned to cash accumulation as a solution for dealing with perceived uncertainty. If that was the case, behaviour would be similar in companies in different countries.

But a comparison between Canada and the United States reveals important trends (Exhibit 21). In both countries, the overall levels of cash and equivalents have increased over time. The amount of cash accumulated by nonfinancial corporations is at its all-time high, around $400 billion and $1.7 trillion dollars in Canada and the United States, respectively. More important, however, is the path taken by the cash accumulation in both countries. In the United States, the total level of cash and equivalents has constantly increased over the period. But, in Canada, there was an increase in the rate of cash accumulation after 2001. While in the United States, cash balances as a percentage of total assets increased slightly between 1988 and 2011, the numbers in Canada showed a significant increase. Strikingly, most of the increase in the proportional cash accumulation

Exhibit 21 Canadian and American companies behave differently



Note: US dollar cash and equivalents are not converted to Canadian dollars to avoid distortion from exchange rate volatility.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada and the Board of Governors of the Federal Reserve System.

happened after 2001. Specifically, there was a significant change in the pattern of cash accumulation after 2001 in Canada, which was not present in the United States.

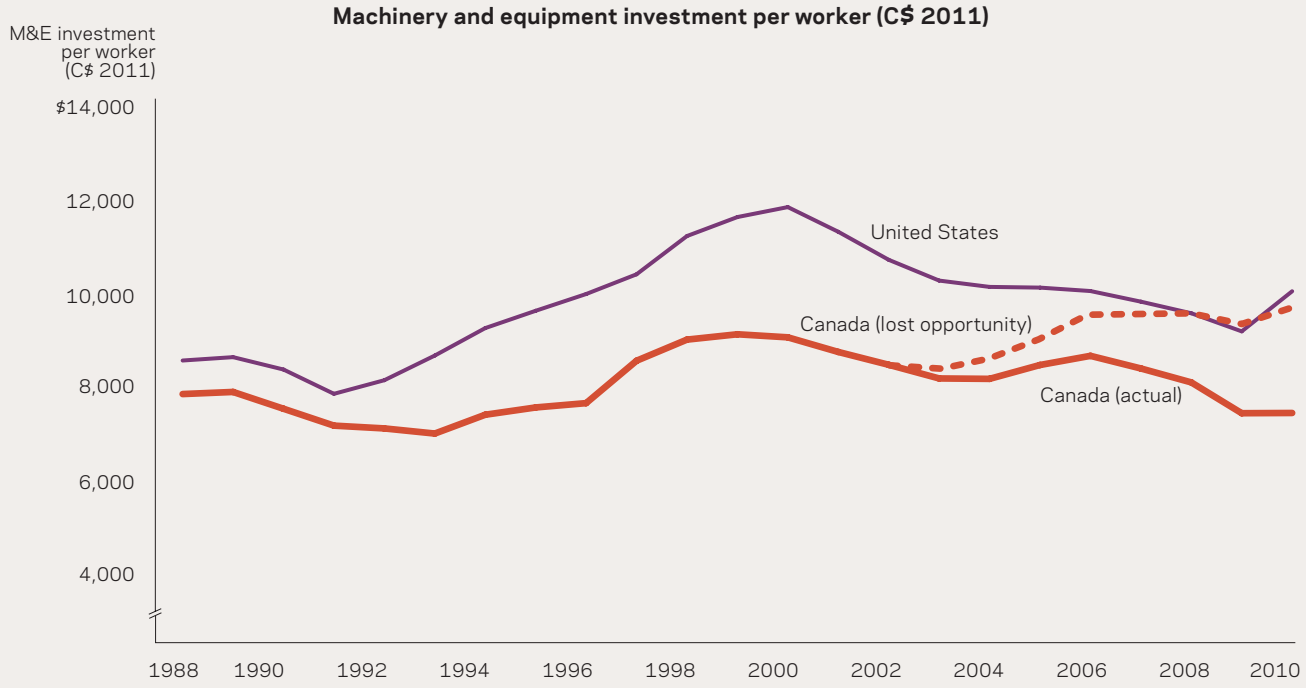
These cross-country comparisons raise questions about the risk buffering hypothesis in Canada. One possibility is that Canadian business owners are more risk averse than US business owners. Despite the fact that Canada experienced lower economic uncertainty than the United States during the 2000s, Canadian corporations chose to hold a larger proportion of their assets as cash and equivalents to remain more solvent during possible downturns. By 2011, the cash balances as a percentage of total assets were 10.5 and 5.8 percent, for Canada and the United States, respectively. Another possibility is that Canadian businesses were simply more efficient at predicting economic uncertainty and started to accumulate proportionately more cash earlier to avoid any turmoil. In some sense, that would mean Canadian business owners are more forward looking than US business leaders.

The most likely explanation for the findings is a combination of both concepts. The fact that Canadian companies increased their cash holdings faster than their US counterparts after 2001 shows that they expected more uncertainty. But the fact that on average Canadian companies hold more cash as a percentage of total assets supports the idea of more risk aversion.

To get an idea of the investment potential behind the faster pace of cash accumulation of the past ten years, the Institute calculated what would have happened to Canada's machinery and equipment (M&E) gap with the United States if Canadian firms had invested at least part of their total cash accumulation. It turns out that if they had increased

Exhibit 22 Canadian businesses could have bridged the M&E investment gap

Canada and the United States, 1988-2010
Machinery and equipment investment per worker (C$ 2011)



Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; *Labour Force Survey* (special tabulations); US Department of Commerce, Bureau of Economic Analysis; US Bureau of Labor Statistics; US Census Bureau, *Current Population Survey*; and Centre for the Study of Living Standards, Database of Information & Communication Technology (ICT) Investment and Capital Stock Trends: Canada vs United States.

Businesses should consider alternatives to address the dead cash conundrum.

investment by roughly 2 percent annually, equivalent to an average of 11 percent of the extra cash balance accumulated from 2001 to 2010, Canada would have closed the M&E gap with the United States by 2008 (Exhibit 22). In other words, by 2010, companies would have been investing roughly 20 percent of the extra cash accumulated and that amount would have been enough to close the M&E gap. In addition, if Canada had maintained the pace of cash accumulation seen during the 1980s and 1990s throughout the first decade of the twenty-first century, the M&E investment level per worker would be considerably higher in Canada than in the United States. In this case, by 2010, Canada would not only have been investing in capital at a faster pace than the United States, but also would have accumulated more productive capital than the United States on a per worker basis.

Businesses should consider the alternatives to holding larger cash balances to address the dead cash conundrum. Taking into account the potential for Ontario's economic future, the solution is for companies to invest more to raise productivity. That is, companies need to step up their efforts to grow the economy, and counterbalance risk by producing higher returns. Given the higher level of cash balances, this is the time to turn this situation around and for companies to innovate and invest in productivity-enhancing projects.

These conditions combine to create a compelling case to address the long-standing need for Ontario businesses to invest in productivity-enhancing human resource development and ICT. The time to push forward on this agenda has never been better. Ontario businesses have benefitted greatly from recent cuts to the corporate income tax rate and the marginal effective tax rate on capital investment. The policy thrust behind those tax reductions was to provide business with the liquidity to invest in long-term competitiveness. While the Task Force would prefer a market-based decision, government decision makers may be forced to step in and provide an incentive to stimulate appropriate investment. If this is required, government should consider tax credits or accounting treatments that would lead to targeted and specific investments in ICT. This recommendation is made knowing that such tax credits are difficult to craft and hard to remove.

Small scale of businesses contributes to the prosperity gap

One factor affecting an economy's well-being is the scale or the size of firms. Larger firms have many competitive advantages, including economies of scale (lower average cost for a single product) and economies of scope (lower average cost for two or more products). Large firms also create more jobs and have more resources for innovation. This ultimately leads to the creation of economic wealth.

Ontario is a recognized leader in the production of minerals, such as nickel, automotive vehicles, and information technology solutions, because it is home to large corporations that specialize in these industries. As these companies grow, they can hire more skilled workers and afford to pay higher wages. Most of these corporations are headquartered in clustered industries, where many similar companies also operate. This creates healthy competitive pressure and improves access to shared expertise and resources. All of these factors increase productivity and innovation, helping to close the prosperity gap from all sides.

Large firms contribute most to the growth of Ontario's employment

In Working Paper 15, *Small Business, Entrepreneurship, and Innovation*, the Institute compared small and large businesses and found that, while small firms provide a critical foundation for an economy, larger businesses drive growth, productivity, and prosperity.

One element of the importance of large firms is their job creation record. On the whole, large firms contribute more employment to Ontario's private sector growth than medium or small businesses.[43] Private sector employment in Ontario changed from year-to-year, using a three-month rolling average (Exhibit 23). Firms

43 The use of private sector employment data is a better litmus test of employment changes across business cycles than including both private and public sectors, because governments can increase employment regardless of economic downturns.

that hire more employees in one quarter compared to the same quarter the year before experience a net positive difference. When companies increase the number of positions available in their firms, they are contributing positively to Ontario's GDP.

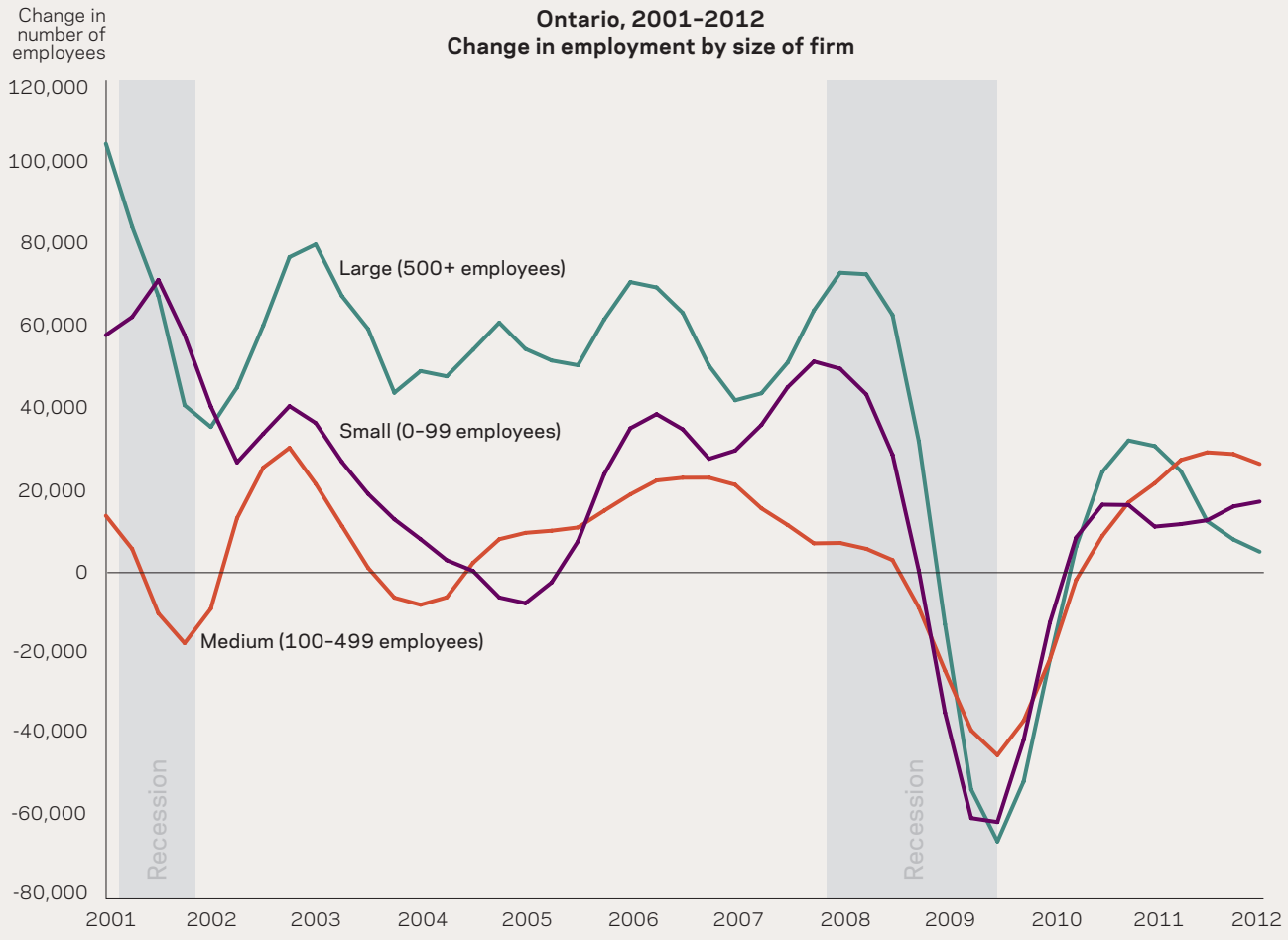
The 2009 recession placed a greater strain on employment in large firms than on smaller businesses, and the drop at the end of 2009 to 2010 was indicative of this fact. Yet large companies also have better capabilities to "bounce back" or hire more than small or medium businesses during economic recoveries.

Medium-sized businesses, employing between 100 and 500 workers per firm, represent a small sliver of economic contribution, in part because they have a narrow range of total employment (100 to 499 workers), compared with large firms with an uncapped range above 500. However, more medium companies have growth intentions than small firms. In fact, 64 percent of medium businesses surveyed are planning to expand in the next two years.[44] This, compared to small business growth intentions (at a maximum of 52 percent for businesses with 20-99 employees), is evidence that those medium businesses that have the capacity to grow should scale up their operations and increase investment in capital and R&D. They should also focus on innovation to bring about the efficiencies that these firms need for growth.

Examining the net change in employment between 2001 and 2012, small firms accounted for 28.4 percent, medium-sized businesses 8.6 percent, and large firms 63.0 percent, disproving the notion that small firms account for a disproportionate share of employment growth. This is further corroborated by Industry Canada research examining hyper (at least 150 percent growth in employment) and strong (between 50 to 150 percent growth in employment) growth firms. Between 1993 and 2003, there were nearly

44 Institute for Competitiveness & Prosperity, Working Paper 15, *Small business, entrepreneurship and innovation*, February 2012, p. 27.

Exhibit 23 Large firms contribute most to Ontario's employment growth



Note: Reflects quarterly year over year net change; three quarters moving average. NBER US recession definition and dates.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, *Survey of Employment, Payrolls and Hours*.

53,000 hyper and strong growth companies in operation, creating a total of almost 1 million jobs. Of these new positions, large firms contributed nearly a quarter of the jobs, although only 9 percent of large firms exhibit hyper or strong growth. Therefore, large companies contribute significantly more employment per firm than other sized businesses.[45]

This shows that it is a myth that small businesses are the engines of economic growth. Small companies are not as productive and are less inclined to grow than larger businesses. Nonetheless, small businesses are often over emphasized in public policy, and resources are transferred through provincial taxation and public spending from larger to smaller firms. Instead of providing small businesses with disincentives for growth, public policy must encourage firms to progress toward becoming large businesses. (See *Is special public policy required to support smaller and entrepreneurial firms?*)

The Institute recognizes that large firms are often a rarity and the result of a multitude of factors. Nonetheless, businesses must work toward creating more efficiencies and productivity through innovation, and governments can foster this growth by establishing a business environment that is supportive of corporate efforts. A smart tax system that encourages growth is one way that public policy can support businesses in their efforts and in turn help close Ontario's prosperity gap.

Ontario lacks mega firms

The *Fortune 500* lists the largest companies in the United States by revenue. The revenue cutoff was $4.4 billion, earned by the 500th company in the 2011 edition of the list.[46] Canada has 83 companies with over $4.4 billion in revenue. In other words, if Canadian firms were included in the US *Fortune 500* list, nearly 17 percent of the companies listed would be Canadian. This is a positive sign for Canada when the populations of the two countries are taken into consideration. Canada has approximately 10 percent of the population of the United States. On the *Fortune 500*, 10 percent represents 50 companies. Since Canada has 83 companies, or 17 percent of the list, it has a greater share of *Fortune 500* companies on the US list based on the US-Canada population ratio.

Applying the same analysis to Ontario also yields positive results. Of the 83 companies, 34 (40 percent) are headquartered in Ontario. Since 37 percent of people in Canada reside in Ontario, the province has a greater share of *Fortune 500* companies.

Examining the Fortune 200 (the top 200 firms in the *Fortune 500*), Canada would still have 27 firms that qualify, which again exceeds the Canada-US population ratio of 1 to 10. In Ontario, there are 11 qualifying firms, or 40 percent, which again exceeds the percentage of individuals living in the province (37 percent) relative to the country.

However, where these companies rank on the *Fortune 500* is important because, although Canada has a greater share of companies on the list, they reside near the bottom. While Canada and Ontario have a higher share of large firms compared to their populations, Canada's top company, Manulife Financial (headquartered in Toronto, Ontario) generated almost $37.7 billion according to the 2011 Canadian *Fortune 500*, which would place this company at the 75th place on the US *Fortune 500* ranking. That means that 74 US companies produced more revenue than the top Canadian firm, including the largest US firm, Walmart, which generated over $421 billion in revenue in 2011. The fact that Canada's (and Ontario's) largest firm is more than eleven times smaller by revenue than the largest US firm is concerning, because this indicates that the Canadian firms that are on the *Fortune* lists rank near the bottom.

Businesses in the size range of the top 74 US companies that are bigger than Canada's largest company are especially valuable to the economy. One reason for this is their ability to drive innovation, as estimated by their R&D spending. Among the 1000 R&D heavyweights in the world, 100 (or 10 percent) of them are "very large." These firms together accounted for 44 percent of the R&D expenditure in the group. Among the US global R&D heavyweights, 7 percent are "very large," and they accounted for 33 percent of the R&D. Therefore, a disproportionately high amount of the world's corporate R&D spending is done by firms of a size that Canada currently does not have.

Although there are many reasons why large firms are better at generating revenue, R&D is clearly one of the driving forces behind their success. Innovation increases the value added of products and services and also helps employees become more productive. This in turn makes a firm more competitive in domestic and international markets and contributes to a region's GDP growth. If Ontario firms can scale up their operations and invest the appropriate resources in R&D, this would be one way to close the prosperity gap.

The push for growth requires the efforts of all Ontarians. Yet businesses have been reluctant to take risks and invest, firms are sitting on large cash reserves, and small businesses are less able to compete in the seemingly uncertain economic environment. Now is the time for businesses and individuals to step up and work together to overcome these hurdles to stimulate growth.

45 David Halabisky, "The Growth Process in Firms: Job Creation by Firm Age," Industry Canada, Small Business Policy Branch, Growth Firms Project: Phase IV, November 2006.

46 CNN Money, "*Fortune 500* 2011: *Fortune 1000* Companies 400-500," accessed July 30, 2011, http://money.cnn.com/magazines/fortune/fortune500/2011/full_list/401_500.html.

Is special public policy required to support smaller and entrepreneurial firms?

It is often said that small and medium enterprises are the backbone of Ontario's economy, that they are the engine of job growth, and that innovation performance is highly dependent on their success.

Small- and medium-sized suppliers are thought to be critical to the success of globally competitive firms and exporters. And it is generally accepted that ambitious entrepreneurial firms challenge the current business environment, making the status quo uncomfortable and sometimes providing the spark for the creative destruction described by the noted economist Joseph Schumpeter.

It is true that small and medium enterprises (SMEs) are valuable springboards for growth in the economy. However, much of Ontario's public policy is based on an exaggerated sense of the importance of smaller businesses to the economy, and on the need for special support for these firms.

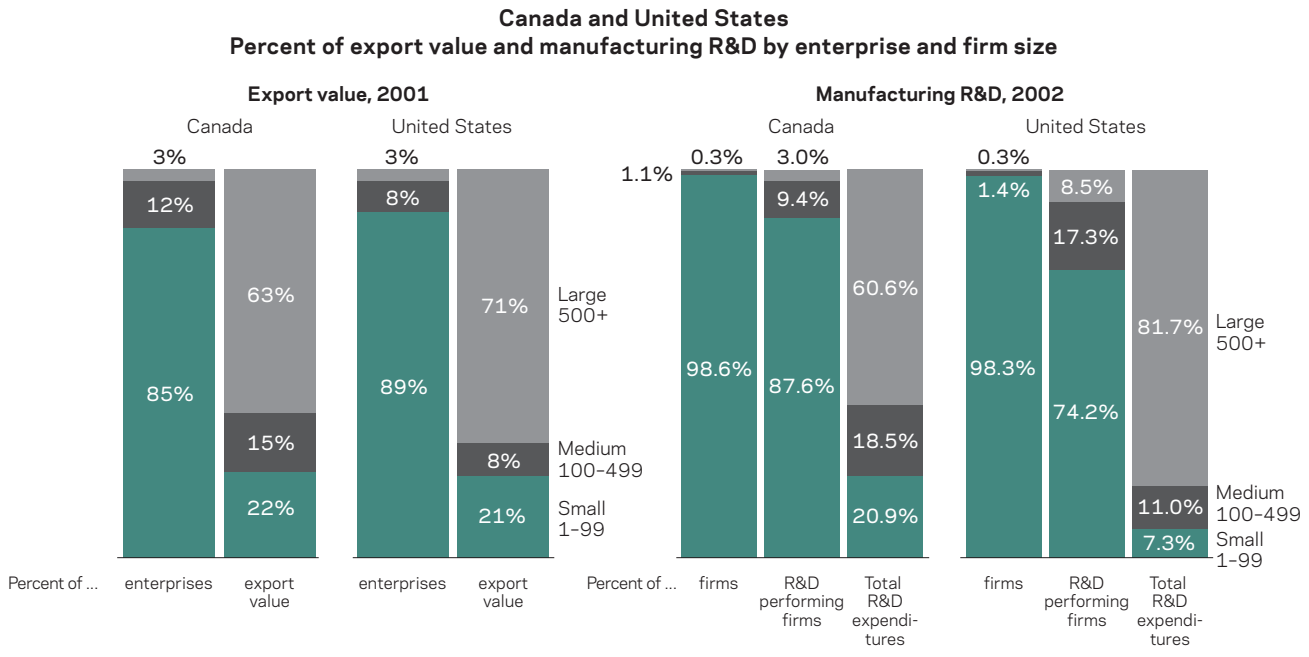
In Working Paper 15, *Small Business, Entrepreneurship, and Innovation*, the Institute conducted research that scrutinized SMEs and their contribution to the economy. By using share of employment, GDP, R&D, and exports, the Institute found that, as much as SMEs are an integral part of the economy, they do not punch above their weight (Exhibit D). They generate less value added than bigger firms, conduct less R&D, and have a lower propensity to export.

The failure rates for start-up companies are high. Only 40 percent of the firms started in one year are still in business after five years. Most of the initial employment that was generated at the start-up is lost as firms fail.

These findings indicate that public policy should avoid over emphasizing the importance of SMEs. The focus, instead, should be on helping, where necessary and possible, the entrepreneurial, high-growth, high-impact firms with the potential to become strong global players – a very challenging goal. Entrepreneurial firms – ones that are innovative and are realizing success in the marketplace through growth – are the firms that will help drive Ontario's productivity and prosperity.

The Institute proposed an approach to public policy for the SME sector that is based on the premise that a small fraction of these businesses have the potential to grow

Exhibit D Large firms generate most export value and manufacturing R&D spending



Note: US data exclude firms with fewer than 5 employees. R&D expenditures in Canada are "intramural" and in the United States are "industrial."
Source: Institute for Competitiveness & Prosperity analysis based on data from Thitima Songsakul, Bernice Lau,and Daniel Boothby, *Firm size and research and development expenditures: A Canada-U.S. comparison*, Industry Canada Working Paper Series, Working Paper No. 2008-12, 2008.

significantly and become major contributors to innovation, productivity, and prosperity. This means that over arching policies for all start-ups and smaller businesses should be avoided, and the focus instead should be on creating a supportive environment that breeds success and on eliminating frictions for growing businesses.

The Institute also recommended that government policy continue to pursue ways of providing specialized support to specific companies that have the best chance of success by fostering networks of like-minded entrepreneurs, promoting mentoring opportunities, and encouraging industry/academic research collaborations. The Ontario government has several such programs in place, and they should undergo ongoing assessment to ensure they are having the desired impact.

More specifically, public policy should:

Continue to support economic policy that promotes innovation and productivity growth in all sectors

SMEs track the economy as a whole and are an integral part of its various sectors; they will succeed to the extent the economy succeeds. But of particular relevance to small- and medium-sized businesses are policies related to education and industry clusters. If more young people pursue post-secondary education, the quality of start-up businesses will improve. Governments and educators should work with small business groups to increase the breadth and depth of business education and training opportunities. Public policy that strengthens the environment for industry clusters will also help improve the quality of entrepreneurial start-ups.

Build on current approaches that are customized to specific businesses

The needs and aspirations of a stable, locally focused small business – the corner grocer or local trades person – are different than those of an aggressive, export-oriented entrepreneur. It is less risky to design programs for all SMEs. But this has the drawback of spreading scarce public resources too thinly. It is riskier for governments to seek out high-potential firms and provide tailored support for their success. But governments should be encouraged to experiment in this area – identifying opportunities for assisting specific firms in areas like market research funding, export market development, and management training. Ontario already has some tailored programs, and these should be monitored closely for expansion opportunities – and for relentless pruning where results are not achieved.

Expand smart procurement by governments to create opportunities for small- and medium-sized businesses – and all businesses

More and better government outsourcing is a significant opportunity for government service and for the success of the private sector. In areas like customer service, transactions processing, human resources systems, and information circulation, governments will find service improvement and cost reduction opportunities by contracting the private sector. The Institute does not recommend special treatment for domestic firms – or for smaller firms, but because of proximity and local knowledge, domestic firms will have an advantage in winning open competitions for providing these services. Winning such contracts will give growth-oriented entrepreneurs reference customers and valuable experience to support their success.

Make the tax system as neutral as possible, but explore specific changes to help growth-oriented small- and medium-sized businesses

The Institute's research reveals little reason for much of the preferential tax treatment given to small- and medium-sized businesses. They are not challenged with market inefficiencies that require government correction, and they do not, as a group, provide economy-wide benefits for which they are not already rewarded. Where governments have determined that they will reduce corporate taxes, they should focus such reductions on the general rate to reduce the disparity with smaller business rates. If increases are planned, the Institute recommends an opposite approach. At the same time, governments should explore tax changes that promote investments by growth-oriented firms of all sizes, reduce capital gains taxes when firms go public, and lower the impact of capital gains taxes as barriers to asset sales for entrepreneurs looking to sell their businesses.

HOW DOES ONTARIO INVEST?

A competitive economy is the product of many factors working together. Innovation and productivity performance is driven not only by the environment where people live and work, and the way businesses compete, but also by the investments they make in physical and human capital. Physical capital investments, particularly in machinery and equipment, increase productivity by upgrading workers' tools, improving information flows, and transforming business processes. For human capital, education investment is key. With high quality education, children become more likely to succeed. When workers are better educated, they have the knowledge and skills to become more productive and innovative.

The Ontario economy still faces uncertainty as it slowly recovers from recession, and the capacity for governments and businesses to invest is sure to be impaired. While this is the practical reality, spending in areas that strengthen human and physical resources needs to be a high priority.

Capital investment enhances productivity

Investments by businesses in machinery, equipment, and software enhance productivity and drive economic growth. Such investment data can be further disaggregated into Information and Communication Technology (ICT) investment, and all other traditional categories, such as investment in transportation and factory equipment.

In 2011, ICT typically accounted for 40 percent of investment in machinery, equipment, and software. ICT is a proven driver of productivity. Investment in ICT enhances productivity on three levels.[47] At the most basic level, equipping staff with computers and software increases firm and national productivity. At the second level, connecting computers in networks and drawing on more technologies can drive productivity even higher because of increased efficiency. But the most significant benefit of ICT adoption is enabling profound transformations in business processes and organizational design.

Ontario is not keeping pace with US productivity-enhancing investment

On a per worker basis, US peer state businesses out invest Ontario businesses in machinery and equipment overall, with a larger gap in ICT. In 1987, Ontario businesses invested 13 percent less per worker in all machinery, equipment, and software (Exhibit 24). In 2001, this gap grew to 28 percent. Since much of the machinery and equipment is imported, the strengthening of the Canadian dollar has been an advantage for Ontario businesses. Consequently, the gap between Ontario and the US peer state investment per worker began to narrow in 2005. However, the gap has widened again recently, currently standing at 38 percent.

In 2011, the Ontario-US peer state gap in ICT investment per worker was $1,500 or 34 percent, while in other machinery and equipment the gap was $2,600 or 41 percent. The accumulated effect of this under investment each year means that Ontario workers have less capital to support them on the job.

The major source of the ICT investment gap is in the area of software. In 2011, for each dollar US peer state firms spent on software, Ontario firms only spent 56 cents. The investment gap with the US in telecom equipment also calls for attention. Ontario meets the US peer state investment levels only in computer hardware. In 2011, Ontario businesses actually out invested US counterparts in computer hardware by 13 percent. Ontario businesses have a higher propensity to purchase hardware, which tends to be off-the-shelf, than to acquire software, which can be customized to meet specific business needs. This is a clear example of Ontario businesses attenuating their investment profile. They invest in the basics, but lag in spending on the more sophisticated elements that are required for innovation strategies.

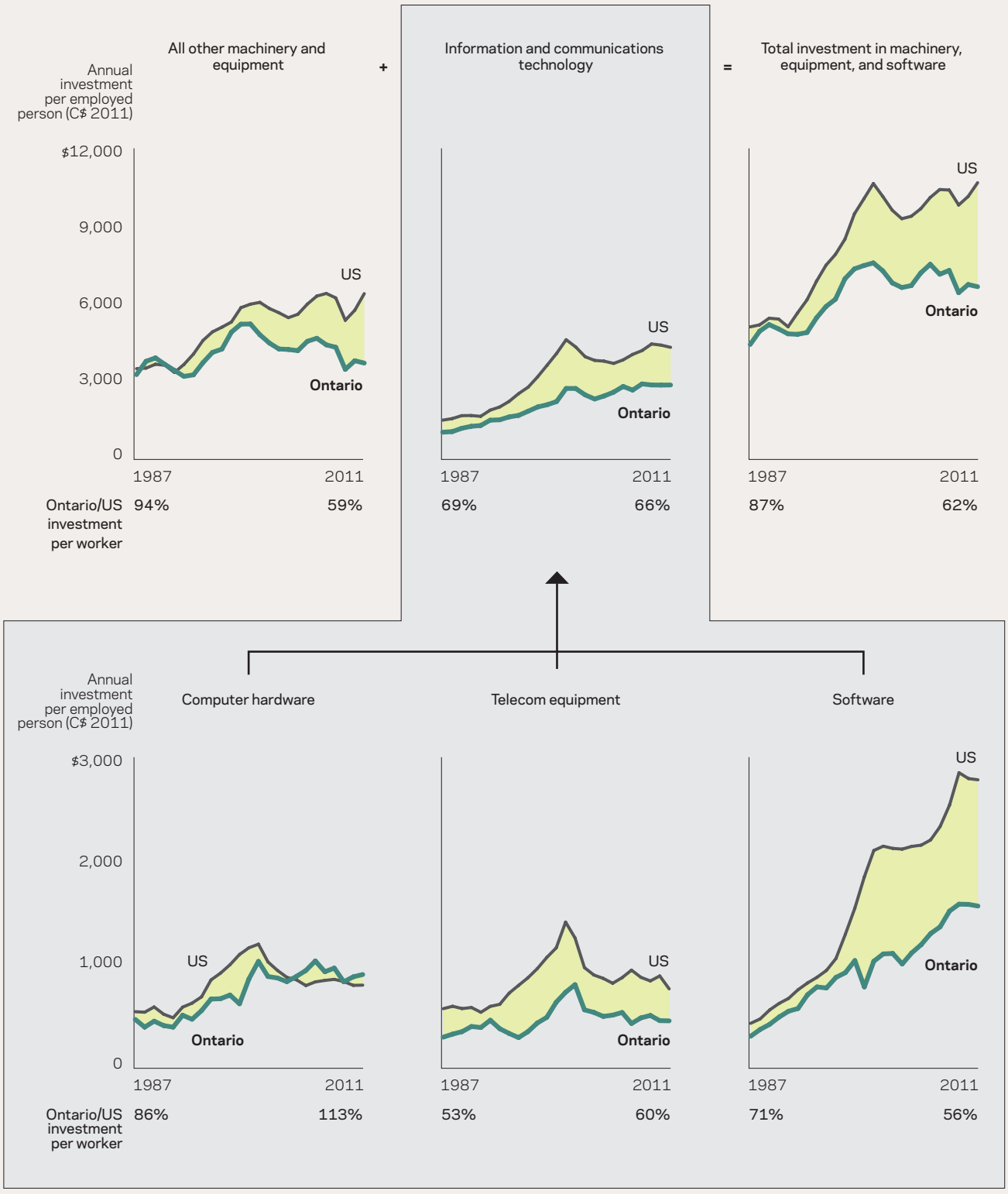
There are multiple reasons why Ontario and Canadian businesses invest less in machinery and technology. One is the lack of training among managers. Another is the lower competitive intensity in Canada that does not force businesses to invest. However, the value of the Canadian dollar is not a reason, since there is no relationship in the trend of the exchange rate and the pace at which Ontario invests in machinery, equipment, and software. While high marginal tax rates on business investment were a factor in the past, federal and provincial governments' improvements to the tax system are an advantage for investment in recent years. Opening up the trade with Europe and China will also increase the pressure and support for investment.

Closing the investment gap offers the potential for closing the prosperity gap. With more machinery, equipment, and software investment, Ontario's work force could be more productive. This is a potential place for businesses to spend their cash reserves.

47 Roger Martin and James Milway, *Enhancing the productivity of small and medium enterprises through greater adoption of information and communication technology*, Information and Communication Technology Council, Ottawa, March 2007.

Exhibit 24 Ontario businesses lag US counterparts in software investment

Ontario and US peer states, 1987–2011
Private sector machinery, equipment, and software investment (C$ 2011)



Note: US dollars converted to Canadian dollars using PPP for machinery and equipment.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, *Labour Force Survey* (special tabulations); US Department of Commerce, Bureau of Economic Analysis; US Bureau of Labor Statistics; US Census Bureau, *Current Population Survey*; and Centre for the Study of Living Standards, Database of Information & Communication Technology (ICT) Investment and Capital Stock Trends: Canada vs United States.

Education investment is an important ingredient for future prosperity.

Education investment is key to long-term growth

Broadly speaking, public expenditures can be broken into two fundamental types: investment in building future prosperity, and consumption of current prosperity. Education investment is an important ingredient for future prosperity. It increases the competitiveness of an economy in two ways. A better-educated work force is more productive, and has a higher propensity to innovate. Better-educated workers form a more sophisticated customer base that demands more competition. The Task Force commends the government for making investments in post-secondary and early childhood education. While health care is crucial for keeping the current population viable and productive, it is nevertheless a major expenditure for current consumption. It is imperative that governments do not neglect investment in education in favour of spending in health care.

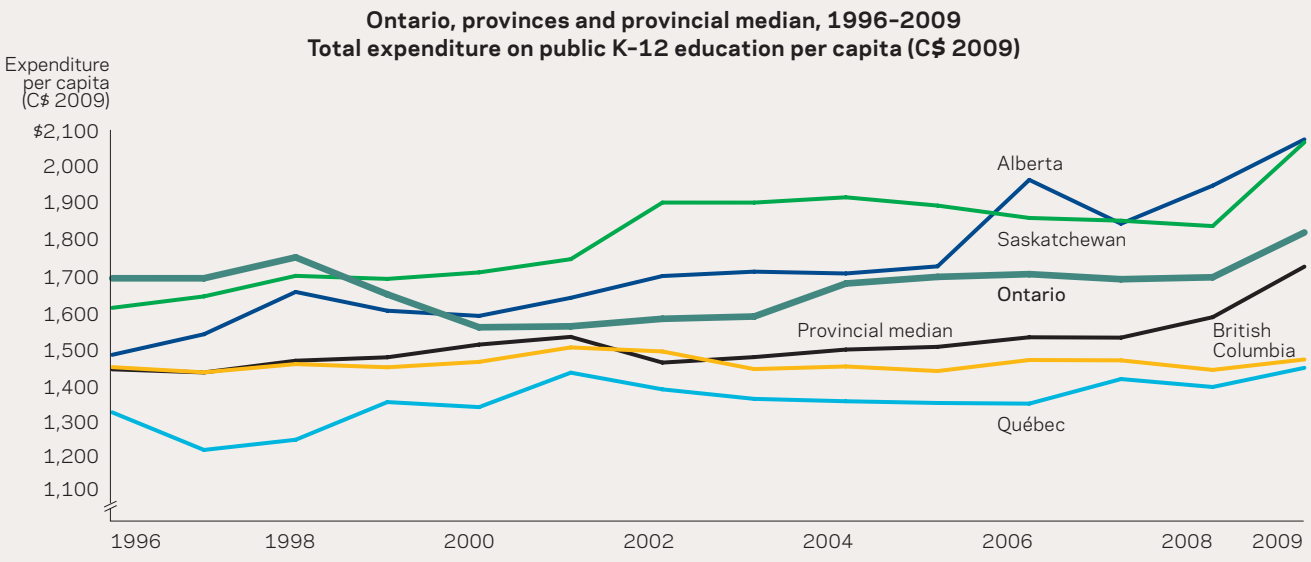
K-12 education plays an important role

The diversity and richness of human capital are crucial to innovation and productivity performance. Education contributes to both the individual and the society. On a personal level, it leads to higher quality of life and develops individuals' knowledge and skills necessary for lifelong learning. As such, secondary and post-secondary education are becoming the standard necessary to be competitive in the labour market.[48] Investment in education leads to an accumulation of human capital and drives economic development. Realizing the importance education plays in Ontarians' lives, it is valuable to compare Ontario's education investments and outcomes with those of US peer states as well as other international players.

K-12 education, which includes basic and compulsory education in kindergarten, elementary, and secondary schools, provides the environment for an individual to acquire basic language, arts, mathematics, and science knowledge. Ontario was a provincial leader in K-12 education expenditure per capita during the mid-1990s, but relinquished its lead later in that decade to Saskatchewan and Manitoba

48 UNESCO Institute for Statistics and OECD, "Financing Education – Investment and Returns: Analysis of the World Education Indicators, 2002 Edition," 2003.

Exhibit 25 Public K-12 education spending is lower in Ontario than in leading provinces



Note: Values deflated using GDP deflators.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, Riley Brockington, "Summary Public School Indicators for Canada, the Provinces and Territories, 2005/2006 through 2009/2010," *Culture, Tourism and the Centre for Education Statistics Research Papers*, November 2011.

(Exhibit 25). In 2009, Alberta was the provincial leader in per capita K-12 education expenditure at $2,080, compared to Ontario at $1,820 (fourth) and Québec (the lowest) at $1,450. Considering Ontario's high concentration of economic activities and industrial developments, more efforts by the Ontario government to keep its education investment in line with that in other Canadian provinces are required.

A comparison between Ontario and US peers shows that Ontario lags peer states in public K-12 education per capita. Another comparison of total public K-12 education expenditure per student, which eliminates potential noise relating to population profile differences, shows similar results (Exhibit 26). In 2008, Ontario spent $10,600 per pupil per year, compared to the US peer leaders of New York and New Jersey, which spent $22,700 and $21,250 per student per year, respectively.[49] Ontario even fell behind North Carolina and Indiana, the peer states with the lowest per student expenditure in K-12 education at $10,970 and $12,130.

The sizeable variation in spending cannot be perfectly compared between the two countries, as schooling systems and expenditure sources differ across the border, but it does indicate a significant shortfall in education spending in Ontario. This investment gap can potentially limit Ontario's ability to produce innovative and productive workers, hurting the province's future competitiveness and prosperity.

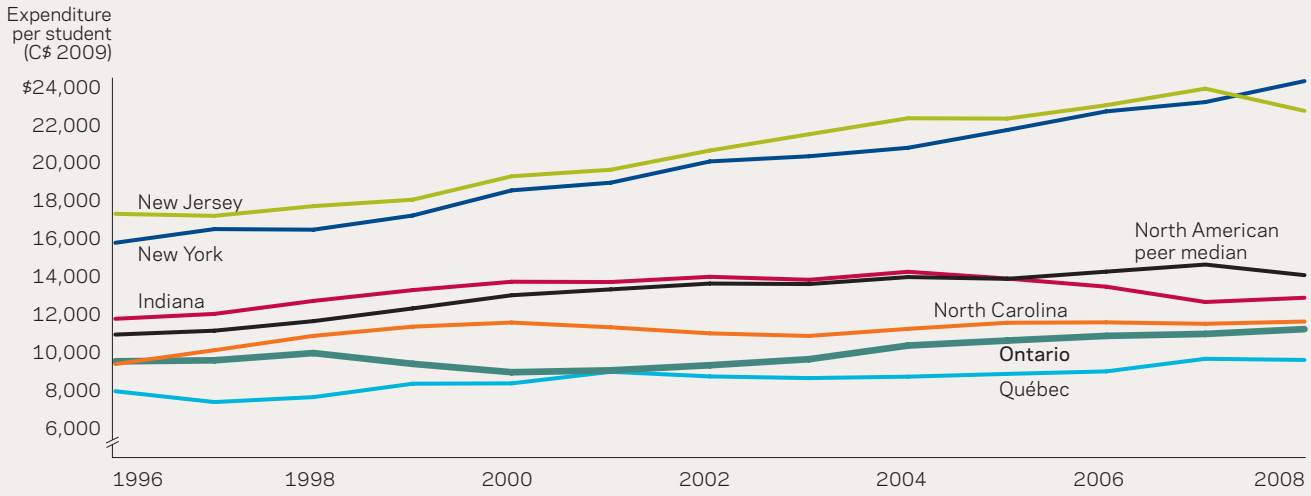
Ontario's education outcomes remain competitive

Governments of industrialized economies have devoted large amounts of their budgets toward developing well-rounded and engaged citizens who contribute to their nations' competitiveness and prosperity. As a measure to evaluate the effectiveness of K-12 schooling systems, the Organization for Economic Co-operation and Development (OECD) and partnering countries devised the PISA (Programme for International Student Assessment)

49 In 2009 Canadian dollars.

Exhibit 26 North American peers out spend Ontario in public K-12 education per student

Ontario and North American peers, 1996–2008
Total public expenditure per student on K-12 education (C$ 2009)



Note: US dollars converted to Canadian dollars using 2009 PPP. Values deflated using GDP deflators.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, Riley Brockington, "Summary Public School Indicators for Canada, the Provinces and Territories, 2005/2006 through 2009/2010," *Culture, Tourism and the Centre for Education Statistics Research Papers*, November 2011; and US Department of Education, National Center for Education Statistics, Common Core of Data, *National Public Education Financial Survey* and *State Nonfiscal Public Elementary/Secondary Education Survey*.

How governments, businesses, and individuals invest in Ontario will determine the province's future growth.

test in 2000. PISA is administered every three years and performance data are collected and analysed to measure the outcomes of youth education across different countries. The 2009 PISA test was administered in 65 countries (including all 34 OECD countries), and approximately 23,000 15-year-old students took part in Canada.[50]

Results show that Ontario students perform better than the Canadian average in reading, and at the Canadian average in mathematics and science (Exhibit 27).

Unfortunately, the test is not tabulated on a state-to-state basis, but instead only at a national level. Consequently, comparisons between Ontario and peer states cannot be performed. However, Ontario and Canada both significantly out perform the US average in all three categories.

The PISA results show that Ontario's education results significantly exceed US performance, despite less funding. This should not stop governments from investing in education, but rather take the lessons learned from the successes achieved in K-12 results and find a way to duplicate them in other areas, particularly post-secondary education. Future studies are required to compare Ontario's performance to each of the peer states specifically on a more granular level to establish a correlation between education investment and outcomes.

How governments, businesses, and individuals invest in Ontario will determine the province's future growth. Capital investment, especially in machinery, equipment, and information and communications technology, leads to higher productivity. Currently, Ontario lags the North American peers, especially in software investment, which places a drag on productivity gains. Investment in education is also a major contributor to productivity growth. While Ontario invests less in K-12 education, outcomes are better than in many jurisdictions, and recent investments in post-secondary education are helping to generate the knowledge and skills the province requires for future growth. The government should maintain its commitment to both.

Exhibit 27 Ontario matches or out performs the Canadian and US average PISA scores

Country/province	Reading	Math	Science
OECD average	496	497	501
United States	500	487	502
Canada	524	527	529
Alberta	533	529	**545**
British Columbia	525	523	535
Manitoba	495	501	506
New Brunswick	499	504	501
Newfoundland & Labrador	506	503	518
Nova Scotia	516	512	523
Ontario	**531**	**526**	**531**
PEI	486	487	495
Québec	522	**543**	524
Saskatchewan	504	506	513

Note: Green shading indicates the country/province scored statistically better than the Canadian average at the 95 percent confidence level and purple shading indicates the country/province scored statistically worse than the Canadian average at the 95 percent confidence level.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, Human Resources and Skills Development Canada, and Council of Ministers of Education, Tamara Knighton, Pierre Brochu, and Tomasz Gluszynski, "Measuring Up: Canadian Results of the OECD PISA Study," December 2010.

50 Tamara Knighton, Pierre Brochu, Tomasz Gluszynski, "Measuring up: Canadian results of the OECD PISA study," Statistics Canada, Human Resources and Skills Development Canada, and Council of Ministers of Education, 2010.

HOW CAN ONTARIO ACHIEVE ITS PROSPERITY POTENTIAL?

The future economic growth of Ontario's economy is clouded. It is clear that actions need to be taken to guide the economy toward greater prosperity. One of the most important problems that needs to be addressed urgently is the public deficit. As of 2011, Ontario's net debt amounted to $214.5 billion, which is equivalent to 35 percent of the province's GDP. If the current trajectory continues, the debt-to-GDP ratio will become the largest in the country in the next five to six years. More important, higher debt creates a higher interest burden, which means that fewer resources can be allocated to public services. How Ontario gets out of debt matters.

Previously, government sacrificed education investments, which helped balance the budget, but hurt long-term competitiveness. The Institute encourages decision makers not to make the same mistake.

At the same time as the government tackles the deficit, it should also take initiatives to reduce poverty and raise literacy in the province. That way, all Ontarians will benefit as prosperity rises.

Implement a balanced approach to recovery

Controlling public deficits can be more feasibly achieved by reducing government spending rather than by increasing taxation. Nationally and provincially, Canada used this strategy to control and reduce deficits in the 1990s. Managing spending cuts is not, however, a trivial task. Downsizing public services must be done without jeopardizing critical areas such as education and health care. While Ontario's fiscal situation is not yet in crisis, action must be taken sooner rather than later to avoid a negative future outcome.

When analysing fiscal policy, it is always wise to take into account both sides of the equation: revenues and expenses. For that reason, growth prospects depend not only on controlling the deficit, but also on reviewing taxation structures. Over the years, Ontario and Canada have advanced toward more efficient tax structures, especially with regards to business taxation. Nevertheless, there is still room for improvement to ensure that the most supportive environment is in place for businesses and citizens. The Institute will tackle the issue of tax reform in a white paper in the months ahead.

Governments implementing policies that are in favour of austerity face a delicate balancing act between appeasing their citizens and convincing financial markets that the fiscal situation will improve. Many countries in Europe are finding this task particularly difficult and, while the situation is not as dire in Ontario, the province faces a big challenge in dealing with its own fiscal situation.

The Ontario government can draw on the example of the successful austerity measures implemented by the Canadian federal government in the mid-1990s. *Business Week* called this the "Maple Leaf Miracle."[51] Canada was successful in the 1990s at eliminating the fiscal deficit and, even though the economic climate is different now, the Institute believes that the Ontario government can also successfully implement deficit reduction.

Implement tax cuts sooner than planned

Tax revenue is necessary to fund government services and programs, and to achieve equitable income distribution. However, taxation, specifically proportional tax rates, tends to distort economic behaviour. That is, changes in taxation levels can affect investment and consumption decisions directly, leading to inefficient outcomes. Then, the challenge for most governments is to determine the level of taxation that can simultaneously raise enough revenue to cover expenditures and minimize the economic distortions.

In the past seven years, Canada has considerably reduced its Marginal Effective Tax Rate (METR) on capital investment (Exhibit 28). Along the same lines, Ontario also decreased its METR on capital investment in recent years. The steady decrease in the METR on corporate income in Canada and Ontario was not followed by a decrease in tax revenue from corporate income. Ontario greatly reduced its METR on capital investment from roughly 44 percent in 2005 to 21 percent in 2010. In the same period, Ontario's corporate tax revenue as a share of GDP remained roughly between 1.4 and 2 percent. A similar pattern emerged for Canada. From 2005 to 2010, the METR on capital investment in Canada decreased from 39 to 20 percent, while the corporate income tax as a percentage of GDP remained roughly constant – going from 3.5 to 3.3 percent.

51 Ezra Klein, "'Maple Leaf Miracle': How Canada and four other countries regained AAA ratings," Ezra Klein's WonkBlog, *The Washington Post*, 12 August 2011, http://www.washingtonpost.com/blogs/ezra-klein/post/maple-leaf-miracle-how-canada-and-four-other-countries-regained-aaa-ratings/2011/08/02/gIQAD7PY9I_blog.html (accessed September 24, 2012).

Two compelling arguments explain these findings. First, as the tax rates on capital investment decrease, firms tend to increase their investment in equipment and machinery. This higher investment in capital is likely responsible for increases in productivity and economies of scale. Hence, in simple terms, companies become more profitable, generating more taxable income. As the marginal tax rate decreases, which lowers overall revenue collection, the tax base (or the overall taxable income from firms) increases by at least the same proportion. The end result is an increase in the revenue from the corporate tax, despite the decrease in the METR on capital investment.

The second possible explanation is a pure gain in effectiveness of the taxation system. When tax rates are high, firms tend to engage in what is called tax avoidance: companies study the taxation structure and try to find loopholes to minimize their tax burden. Tax avoidance, however, is costly, since companies must pay experts and devote time to analyse their tax situation fully. As tax rates decrease, the benefits of tax avoidance also fall. That is, a reduction in METR on capital investment could nullify the advantages of implementing tax avoidance techniques, instead of simply accepting the tax burden. Once again, the tax base would be increasing by at least the same proportion as the reduction in the tax rates, leading to an overall increase in the tax revenue from corporate income.

The latest numbers for the METR on capital investment show that the trend of lower taxation continued in 2011, to 18.7 percent and 18.2 percent for Ontario and Canada, respectively. This trend is expected to reverse, however, in the near future. By 2014, the METR on capital investment for Ontario and Canada is expected to be 19.8 and 19.9, respectively.[52]

Reassess Ontario's surtax

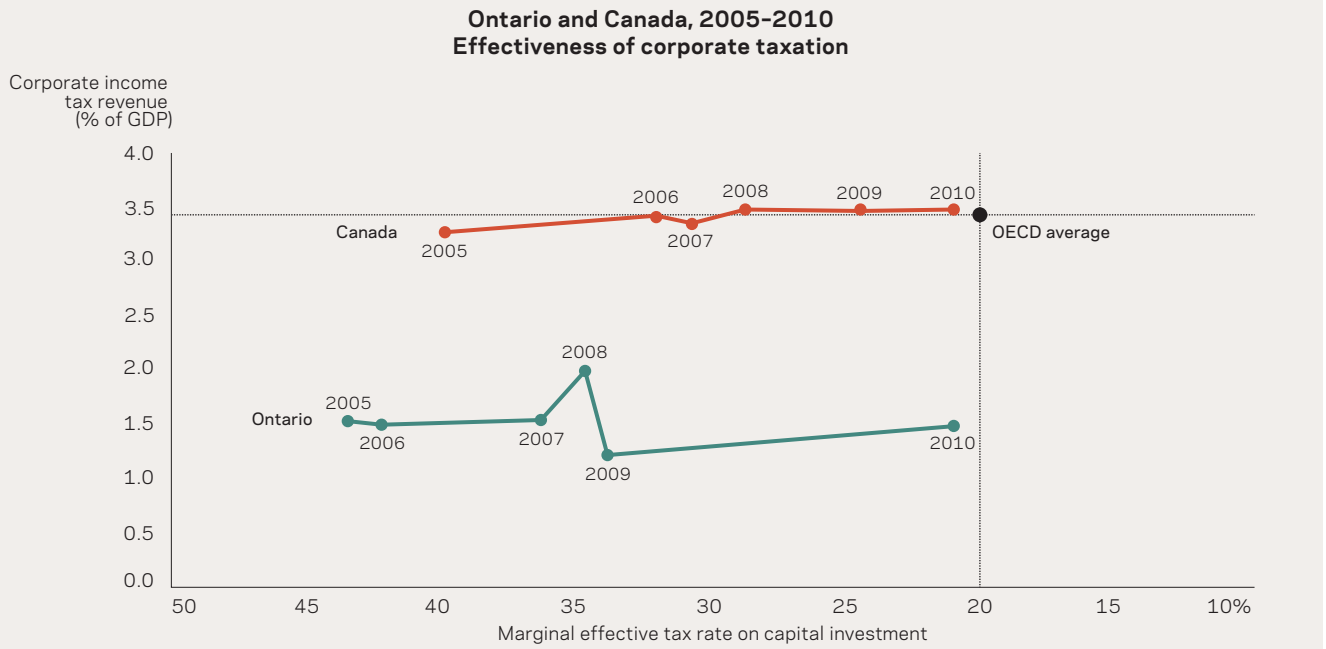
In the 2012 Budget, the Ontario government introduced a 2 percent personal income surtax applicable to tax payers earning more than $500,000 a year. This was intended to help balance the provincial budget and was expected to bring in $470 million a year in tax revenue for the government over five years.

The C.D. Howe Institute analysis of the economic implications of this policy concluded that it is not likely to achieve the desired increase in revenue.[53] Tax increases have traditionally had an adverse effect on people's work effort, as well as reported taxable income. After a tax hike, people reduce hours worked, because an extra hour of work will bring a lower economic return. They also reallocate their income to other jurisdictions or report it in forms

52 Duanjie Chen and Jack Mintz, *2012 Annual Global Tax Competitiveness Ranking – A Canadian good news story*, University of Calgary, School of Public Policy Research Papers, Vol. 5, Issue 28, September 2012.

53 Alexandre Laurin, "Ontario's tax on the rich: Grasping at straw men," C.D. Howe Institute, E-Brief, 2012.

Exhibit 28 Canada and Ontario improved the effectiveness of taxation regimes



Note: Corporate income tax revenue as a percentage of GDP for the year 2010 are estimated values.
Source: Institute for Competitiveness & Prosperity analysis based on data from OECD, *Revenue Statistics 1965-2010, 2011 edition*, November 2011; Statistics Canada, Provincial Economic Accounts; Ontario Ministry of Finance; Duanjie Chen and Jack Mintz, "Canada's Tax Competitiveness After a Decade of Reforms," *University of Calgary School of Public Policy Briefing Papers*, Vol. 3, Issue 5, May 2010; Jack Mintz, "Ontario's Bold Move to Create Jobs and Growth," *University of Calgary School of Public Policy Communiquem*, Vol. 1, Issue 4, November 2009.

other than personal income to avoid being taxed at a higher rate.

The study estimated that high-income earners in Ontario will reduce their taxable income by about 2 percent in the short run, and by more than 10 percent in the long run as they gradually adjust to the change in policy. As a result, net proceeds to the Ontario government may be close to zero by the proposed end date of this surtax.

However, other studies have shown that the response of taxpayers to a tax rate change may be unique to the situation. This issue was recently raised in a review of the United Kingdom's increased marginal personal income tax rate to 50 percent for the top 1 percent of income earners. The UK's Institute for Fiscal Studies noted that "studies that have examined labour supply behaviour tended to find that weekly hours of work, particularly among prime-age men, are almost completely unresponsive to changes in marginal tax rates."[54]

In the wake of global recession, governments need to be wary of making changes to the tax code where the outcome of the change is unclear. They need to be especially careful that their policies do not create disincentives for economic activities. The Institute encourages governments at all levels to pursue innovative tax policies and to consider a personal tax system based on consumption, not income, such as the Dual Income Tax model. (See *Ontario should adopt a dual income tax system*.)

Differentiate municipal property taxes

In the competition to attract businesses, municipalities have only a few tools at their disposal. Across North America, the most relevant part of business taxation at the regional level is property tax. By creating a tax differential vis-à-vis their neighbouring regions, municipalities try to attract new businesses by providing lower tax rates to establishments.

Academic research has attempted to demonstrate the true effects of municipal business tax on what is known as *new business creation* – the ability of a region to attract new companies or more branches of an already established company. Most authors have found a negative effect of municipal business tax on the probability of new business creation.[55] That is, an increase in these taxes leads to a lower probability of new businesses coming to a certain municipality or region. Moreover, this effect is enhanced by the tax differential between regions, which means that if one region is perceived to have higher taxes than its surrounding municipalities, that region will present an even lower probability of new business creation.

These findings seem to be applicable to Ontario as well. The series of tax reforms mandated by the provincial government represents a rare opportunity to perform an event study: assessing the impact of business property tax is facilitated by analysing business activity before and after the reforms took place. That is precisely the approached used by Michael Smart.[56] Smart concluded that business property tax has a negative effect on business location. The higher the property taxes on business establishments in a certain region, the lower the number of businesses locating there. Moreover, Smart also showed that there is an offset effect driven by regional differences in business property taxes. As neighbouring municipalities decrease their tax rates in the competition to attract businesses, the effect of decreasing the business property taxes in a certain region is attenuated. Therefore, it is the business property tax differential that will ultimately provide the final impact on business location.

Perhaps the most interesting effect is the concept of tax exportation. When the business property tax is higher than residential property tax, there is a shift in the tax burden from the main users of the local public services to the non-resident, business establishments. That is, even though businesses tend to spend more in fundamental services that are generally provided by the government, such as property protection (which makes them secondary users of such services), they are still taxed more heavily than residents (main users of public services) in most municipalities. To have a more efficient tax system, municipalities should reduce the tax on business property and ensure that the residential property tax is higher than the business property tax.

Even though business property taxes in Ontario have fallen in the past decade, municipalities could benefit from further reductions. By continuing to reduce the property tax, municipalities should be able to attract more businesses and boost economic growth. It is worth remembering that Ontario municipalities are not only competing among themselves for the new business creation, but also with US states that have lower municipal business taxes and, given their proximity, represent cost-effective options for new businesses. In addition, to avoid tax exportation, marginal tax rates on business property should be lower than residential property tax rates.

54 Mike Brewer, James Browne, and Paul Johnson, "The 50p Income Tax Rate: What is Known and What Will Be Known?" in C. Emmerson, P. Johnson, and H. Miller (Eds.), *The IFS Green Budget*: Feburary 2012, London: The Institute for Fiscal Studies, 2012, pp. 180-196.

55 Leslie E. Papke, "Interstate Business Tax Differentials and New Firm Location: Evidence from Panel Data," *Journal of Public Economics*, 1991, Vol. 45, No. 1, pp. 47-68; Timothy J. Bartik, "Business Location Decisions in the United States: Estimates of the Effects of Unionization, Taxes, and Other Characteristics of States," *Journal of Business & Economic Statistics*, 1985, Vol. 3, No. 1, pp. 14-22; Dennis W. Carlton, "The Location and Employment Choices of New Firms: An Econometric Model with Discrete and Continuous Endogenous Variables," *The Review of Economics and Statistics*, 1983, Vol. 65, No. 3, pp. 440-449; and Yonghong Wu, "Property Tax Exportation and Its Effects on Local Business Establishments: The Case of Massachusetts Municipalities," *Economic Development Quarterly*, 2010, Vol. 24, No. 1, pp. 3-12.

56 Michael Smart, *The reform of business property tax in Ontario: An evaluation*, Institute on Municipal Finance & Governance Papers on Municipal Finance and Governance, Paper No. 10, 2012.

Ontario should adopt a dual income tax system

In Working Paper 7, the Institute recommended a smart tax system that is equitable and efficient. This would transparently raise tax revenue for the Canadian and Ontario governments from those who can afford it, while decreasing any negative implications. Such a tax model would encourage more productive economic activities.[a]

TO DEVELOP SUCH A TAX MODEL, the government must employ innovative tax policies with the goal of taxing consumption instead of capital investment. Canada's current progressive comprehensive income tax system has many advantages, but other models that are better at maximizing equity and efficiency should be considered.

The Institute has made many recommendations in the area of tax policy and will continue to do so in upcoming publications. The Institute now recommends that Canada implement a structural change to the current tax system and adopt the Dual Income Tax System (DIT). Jack Mintz has endorsed this model for many years and is one of the few scholars to examine how the DIT would look if embraced by the federal and provincial governments.[b]

The "dual" aspect of the model refers to the separation of the capital income tax rate from the labour income tax schedule. It would set a lower capital tax rate that is in line with the lowest marginal tax rate in the labour income tax schedule. A lower capital tax rate would prevent capital flights or the movement of money out of the country and into lower tax rate countries. It would also eliminate tax avoidance and decrease the distortions that arise from taxing certain types of capital that are difficult to report for political or practical reasons. Furthermore, a lower capital tax rate would encourage taxpayers to save earlier in their lifetimes, instead of avoiding saving in the form of RRSPs or similar instruments, as any redemptions would be treated as income and hence taxed.[c] Any income generated from individual investment portfolios, capital gains, or businesses would all be taxed at a single low rate, which combines both federal and provincial portions.[d]

The Nordic countries including Norway, Finland, and Sweden pioneered the DIT in the early 1990s to overcome the flaws in their progressive comprehensive income tax systems and to redistribute income more effectively. Prior to implementing the DIT, high-income earners lowered their tax bill by deducting interest from their income and increasing savings assets with lower tax rates. The DIT discouraged high-income earners from employing these tax avoidance measures, hence increasing tax revenue for the government. This, in turn, enabled the Nordic governments to lower the marginal tax rates on labour income to match the pre-DIT implementation tax revenues.[e]

The successful execution of a DIT proves that Nordic governments were able to increase their tax base while reducing the discrepancies of the former progressive comprehensive income tax model and benefiting their citizens and businesses. The Canadian federal and provincial governments can expect similar results if the DIT were adopted.[f]

Ultimately, the DIT would help close the prosperity and productivity gaps by enabling businesses to invest the money – otherwise paid in taxes – in software (and other machinery), which increases productivity, or distribute profits to shareholders and employees, which increases prosperity.

a Institute for Competitiveness & Prosperity, Working Paper 7, *Taxing smarter for prosperity*, March 2005, p. 8.

b Jack Mintz, "The 2006 Tax Competitiveness Report: Proposals for Pro-Growth Tax Reform," C.D. Howe Institute Commentary, 2006.

c Peter Birch Sørensen, "The Nordic Dual Income Tax: Principles, Practices, and Relevance for Canada," *Canadian Tax Journal*, 2007, Vol. 55, No. 3, pp. 565-6.

d Mintz, "The 2006 Tax Competitiveness Report,"p. 18.

e Sørensen, "The Nordic Dual Income Tax,"p. 564.

f *Ibid*, p. 564.

Better living standards would help Ontarians develop and adopt more productive ways to work smarter, instead of harder.

Enhance social policies to improve living standards

Reforms in taxation are not only integral to fostering long-term growth for businesses but also affect the prosperity potential for all Ontarians. In addition to taxation policies, the Ontario government should enhance social policies to boost living standards. Improving policies committed to further decrease the number of those living in poverty and building the lifelong literacy skills of all Ontarians would eliminate some of the barriers to participating in the work force and increase productivity. Ontario has a demographic advantage, because it has a large percentage of individuals who are able to work, but the province suffers from inefficiencies that are curbing productivity growth. Better living standards would pave the way to helping Ontarians develop and adopt more productive ways to work smarter, instead of harder.

Continue to improve social policies to lower poverty

There is no official measure for poverty in Canada unlike in the United States. Despite the desire for a national poverty measurement, there is simply no internationally-accepted definition, as poverty is made up of both absolute and relative components, and who is "poor" varies from country to country, especially between the developed and developing worlds. [57]

Instead of a single national poverty rate, Statistics Canada employs a number of measures that examine "low income." Part of the reason for the use of "low income" in lieu of "poverty" is simply due to the moral imperative associated with "poverty."[58] Nevertheless, the definitions of low income and poverty are intrinsically linked, and the Institute has employed and will continue to use the terms "low income" and "poverty" interchangeably.

Statistics Canada examines low income using four measures, of which two are the same measure split into before- and after-tax calculations:

- **Low-Income Cut-Off (LICO) – before and after-tax:** Statistics Canada computes household income cut-offs at which economic family units spend 20 percentage points or more of their income on food, shelter and clothing than the average household. For example, for a two person household living in a large metropolitan city (population more than 500,000), the LICO after tax for 2010 is $22,831.[59] This is done using the 1992 Family Expenditures Survey as the base and applying the corresponding Consumer Price Index. The cut-offs are then adjusted depending on the size of the family (ranging from single individuals to seven or more individuals in a household) and the community size (ranging from rural to urban areas) for a total of thirty-five cut-offs.[60]
- **Low-Income Measure (LIM):** LIM is the most commonly used measure of low income and is the only one suitable for international comparisons. Any household with less than 50 percent of the median household income, adjusted for the number of family members, is considered to be low income. LIM is calculated three times, using before- and after-tax income from the Survey of Labour and Income Dynamics and market income.[61]
- **Market Basket Measure (MBM):** The MBM is calculated using a standard basket of basic expenditures (for example, food, clothing, shelter, and transportation) for a family of two adults (25-49 years old) and two children (9-13 years old) and adjusting for the differences across provinces, communities (that is, rural or urban), and size of community. A person is categorized as low income when their family's

57 *Absolute poverty* occurs when a family or individual lacks the ability to purchase basic human needs, such as food, safe drinking water, health, shelter, education and information. Overall or *relative poverty* occurs when a family or individual has access to basic needs items but still lacks the money to pay for shelter in a safe environment, have a social life, or basic transportation. These items vary from country to country. Dennis Raphael, *Poverty in Canada: Implications for Health and Quality of Life*, Second Edition, Toronto: Dennis Raphael and Canadian Scholars' Press Inc., 2011, pp. 57-8.

58 Dennis Raphael, *Poverty in Canada: Implications for Health and Quality of Life*, Second Edition, Toronto: Dennis Raphael and Canadian Scholars' Press Inc., 2011, p. 29.

59 This is using a 1992 base.

60 Statistics Canada, "Low income lines, 2009-2010," Income Research Paper Series, 2011, p.7.

61 *Ibid*, p. 10.

disposable income falls below the cost of a fixed basket of goods and services.[62] The MBM was developed in 1997 at the request of a Federal-Provincial-Territorial Working Group on Social Development Research and Information. The social services ministers of the Working Group wanted a low income measure that was more sensitive to the prices of a fixed basket of goods and services between communities in different provinces and regions.[63] Because collecting extensive price data from various communities is expensive, data are only available from 2000.[64]

LICO before tax shows the highest percentage of low-income population in Ontario (Exhibit 29). To account for such variations in percentages as a result of calculation differences across the measures, the Institute presents all four poverty gauges.

Lifting Ontarians out of poverty leads to benefits that extend beyond the individual. While children are not one of the six poverty risk groups, they are often members of risk group households, and they are also factored into poverty line calculations.[65] At the end of 2008, the Ontario government introduced its Poverty Reduction Strategy with the goal of reducing child poverty by 25 percent over five years. The Ontario government prides itself on accomplishing a 4 percent reduction during the first year alone, moving 20,000 children out of poverty.[66] Furthermore, the Ontario government appointed Francis Lankin and Munir A. Sheikh in 2010 to lead the Commission for the Review of Social Assistance in Ontario as part of 2008 Poverty Reduction Strategy. The Final Report, published in October 2012 outlined specific recommendations for transforming the two major Ontario social assistance programs,

62 Disposable income refers to income after taxes and deductions (e.g., supplemental health and union dues, child support and alimony, and additional childcare). Human Resources Skills and Development Canada, Low Income in Canada: 2000-2007 Using the Market Basket Measure, August 2009, available online: **http://www.hrsdc.gc.ca/eng/publications_resources/research/categories/inclusion/2009/sp-909-07-09/sp_909_07_09e.pdf**, p. 7.

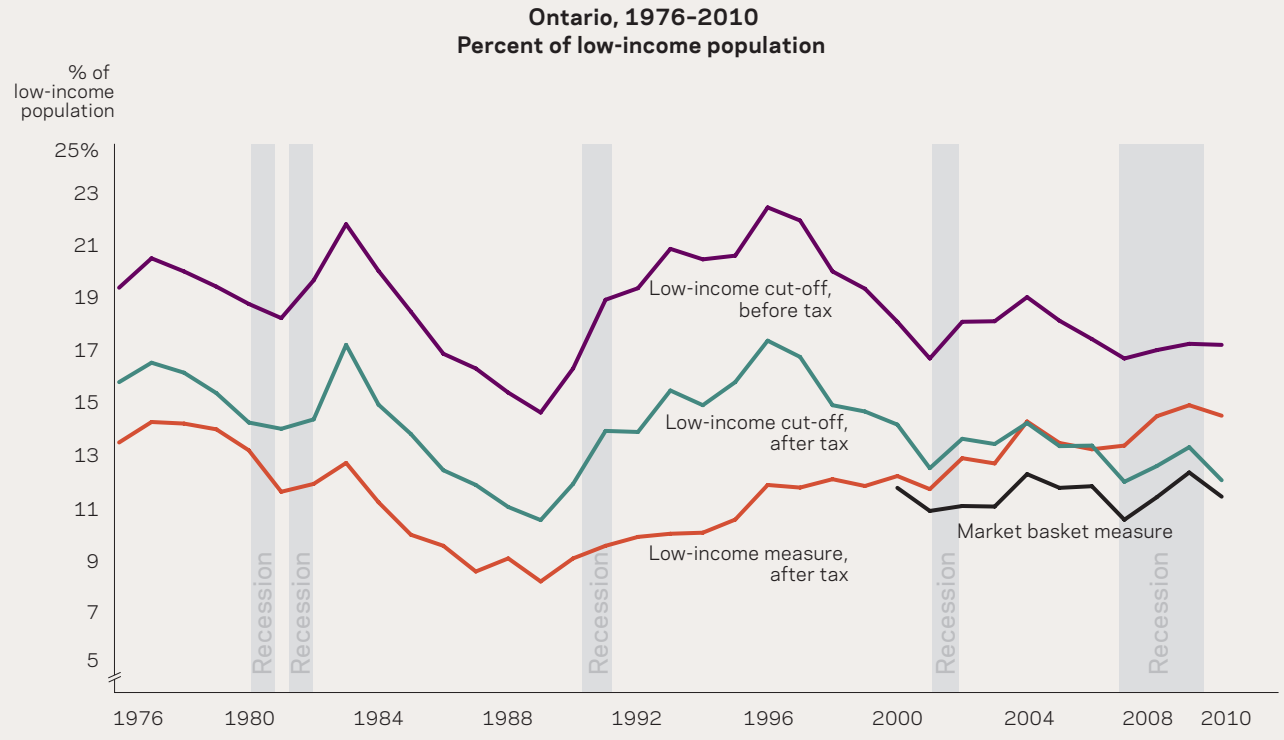
63 Human Resources Skills and Development Canada, Low Income in Canada: 2000-2007 Using the Market Basket Measure, August 2009, available online: **http://www.hrsdc.gc.ca/eng/publications_resources/research/categories/inclusion/2009/sp-909-07-09/sp_909_07_09e.pdf**, p. 4.

64 Statistics Canada, "Low income lines, 2009-2010," Income Research Paper Series, 2011, p. 11

65 The six at risk groups are: high school dropouts, recent immigrants, lone parents, disabled individuals, aged 45-64 unattached individuals, and Aboriginals. Members of these risk groups are more likely to be in low income than those who do not fall into any (or more) of these categories.

66 Ontario Ministry of Children and Youth Services, *Breaking the Cycle, The Third Year Progress Report: Ontario's Poverty Reduction Strategy 2011 Annual Report*, 2012, available online: **http://www.children.gov.on.ca/htdocs/English/documents/breakingthecycle/2011AnnualReport.pdf**, p. ii.

Exhibit 29 **Fewer Ontarians are living in poverty**



Note: Low-income cut-offs are based on 1992 expenditures. Market basket measure is based on a 2008 basket of goods. NBER US recession definition and dates.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada, *Survey of Consumer Finances* and *Survey of Labour and Income Dynamics*.

Ontario Works and Ontario Disability Support Program, both of which are largely used by low-income individuals and families. Subsequently, the Ontario government has announced that it will work with its partners to identify the implications of system transformation and begin creating a responsible and specific action plan.

The Poverty Reduction Strategy also includes the Ontario Child Benefit (OCB) that was introduced in 2007, which is distributed to almost one million children in 530,000 low-income families. The maximum monthly payment per child is $92 or $1,100 a year, with the amount adjusted for the net household income.[67] This payment will increase in 2013 to $1,310 a year. The result of the Ontario Child Benefit is a 12 percentage point decrease in the number of single-parent families on social assistance from 42 percent in 2002 to 30 percent in 2011.[68] Furthermore, research shows the importance of education in its ability to move low-income individuals into the economic mainstream.

Closing the prosperity gap in Ontario requires not only the efforts of businesses, but all Ontarians who are able to work. If the provincial social assistance programs were improved, they would ideally enable those who are able to participate in the work force, yet living in poverty, to maintain a higher quality of life while they looked for work. Once these individuals are able to secure employment that would lift them beyond the poverty lines and out of these programs, they will become full contributors to the Ontario work force. The Institute looks forward to seeing the public policy changes that are implemented as a result of the Report.

There are many public policy initiatives that are helpful in supporting individuals as they move from living in poverty to becoming fully participating contributors to the work force. Investing in children through education and other similar measures not only raises their chances of escaping poverty but also benefits their families. Poverty negatively affects one's standard of living and quality of life, and increases public expenditures on health and social assistance. While there are many positive efforts and achievements in the fight against poverty, there is still much more to be done, as alleviating poverty is one step toward closing the prosperity gap.

Higher literacy skills enable lifelong skills development

Even before the current recession, the impact of globalization and plant closures caused hardship among many Ontario families. Layoffs are not expected to stop, as the economy will always feature shifts in job opportunities across sectors and locales. The opportunity is to focus on helping workers be more adaptable to changes in the available job opportunities. The evidence indicates that formal job retraining programs – often the panacea for plant closure – do not help as much as hoped. Many workers who have been displaced by plant closures lack the literacy skills they need to adapt. Higher literacy skills are associated with greater propensity for lifelong learning habits, which are likely to improve prospects for workers needing to find new jobs – and are to be encouraged.

Literacy is a better bet than retraining

While both government and displaced workers turn to retraining programs to curb the rising unemployment in Canada's manufacturing sector, there is little evidence to suggest that the traditional approach to retraining displaced workers is effective. Research carried out here in Canada and the United States tends to reject the conclusion that formal training programs help workers re-establish themselves in the job market. However, some positive results have been found.

IMPAQ International, a US consulting firm, completed an extensive study of the US Workforce Investment Act for the US Department of Labor. They tracked the labour market outcomes of 160,000 laid off workers who participated in job retraining programs in the US between 2003 and 2005.[69] The study found that there was very little difference in earnings three to four years later between those who took part in the programs and those who did not. The study also determined that the impact on earnings was no different among age groups – the impact was similar for those under the age of 25 compared to those aged 50 or over.

A study conducted by the Canadian Auto Workers, Chrysler Canada, and the Ontario government assessed the experiences of laid-off auto workers moving through the adjustment process at CAW Action Centres, the first point of contact for workers seeking retraining.[70] Three-quarters of the workers in the sample used the Action Centres to find job retraining courses. However, only about 25 percent of the workers in the study found jobs, and most of the jobs were low paying or part time.

The Federal Reserve Bank of Chicago found, however, that under certain conditions, job retraining can help.[71] It followed the outcomes of laid-off workers who took a year of community college courses in the State of Washington. The results showed that the laid- off workers who

67 "Ontario Child Benefit," Ministry of Children and Youth Services, last modified October 26, 2011, accessed August 15, 2012, **http://www.children.gov.on.ca/htdocs/English/topics/financialhelp/ocb/what.aspx**.

68 Ontario Ministry of Children and Youth Services, *Breaking the Cycle, The Third Year Progress Report*, 2012, available online: **http://www.children.gov.on.ca/htdocs/English/documents/breakingthecycle/2011AnnualReport.pdf**, p. 8.

69 Jacob M. Benus, Carolyn J. Heinrich, Peter R. Mueser, Kenneth R. Troske, "Workforce Investment Act non-experimental net impact evaluation: Final report," IMPAQ International, 2008.

70 Sam Vrankulj, "CAW Worker Adjustment tracking project: Preliminary findings," Canadian Auto Workers, 2010.

71 Louis Jacobson, Robert LaLonde, and Daniel G. Sullivan, *Estimating the returns to community college schooling for displaced workers*, Federal Reserve Bank of Chicago Working Paper Series, Working Paper 02-31, December 2002.

took "quantitative" courses raised their long-term earnings significantly compared to the laid-off workers who took "non-quantitative" courses. The workers who took quantitative courses raised their long-term earnings by 13 percent for women and 9 percent for men compared to "next to zero" growth for those who took "non-quantitative" courses. It appears that literacy skills are an important reason laid-off workers benefit from the quantitative courses.

In 2011, Statistics Canada analysed the impact of training in a post-secondary institution. Those surveyed were split into two age groups, 25-34 and 35-44, and by sex.[72] The statistically significant estimated impact of post secondary training on earnings was positive for those who took a year of post-secondary education, except for men aged 35 to 44. The authors suggested that those who availed themselves of this retraining were already positively inclined to pursue retraining and those who did not were not. The authors hypothesized that attitudes are relevant in the decision to pursue retraining.

Displaced workers, especially older ones, have difficulties re-engaging in the labour force. With the loss of over 300,000 manufacturing jobs in Canada between 2002 and 2008 and with the current economic sluggishness, the challenge of helping workers re-engage in the labour force is more pronounced.[73] According to Ross Finnie and David Gray, displaced workers find it hard to reintegrate into the work force.[74] These displaced workers also fail to attain their former earnings level, especially older workers (Exhibit 30).

Re-integrating into the labour force requires displaced workers to have transferable skills. In many cases, lost jobs are "not coming back" – they have been taken over by lower skilled,

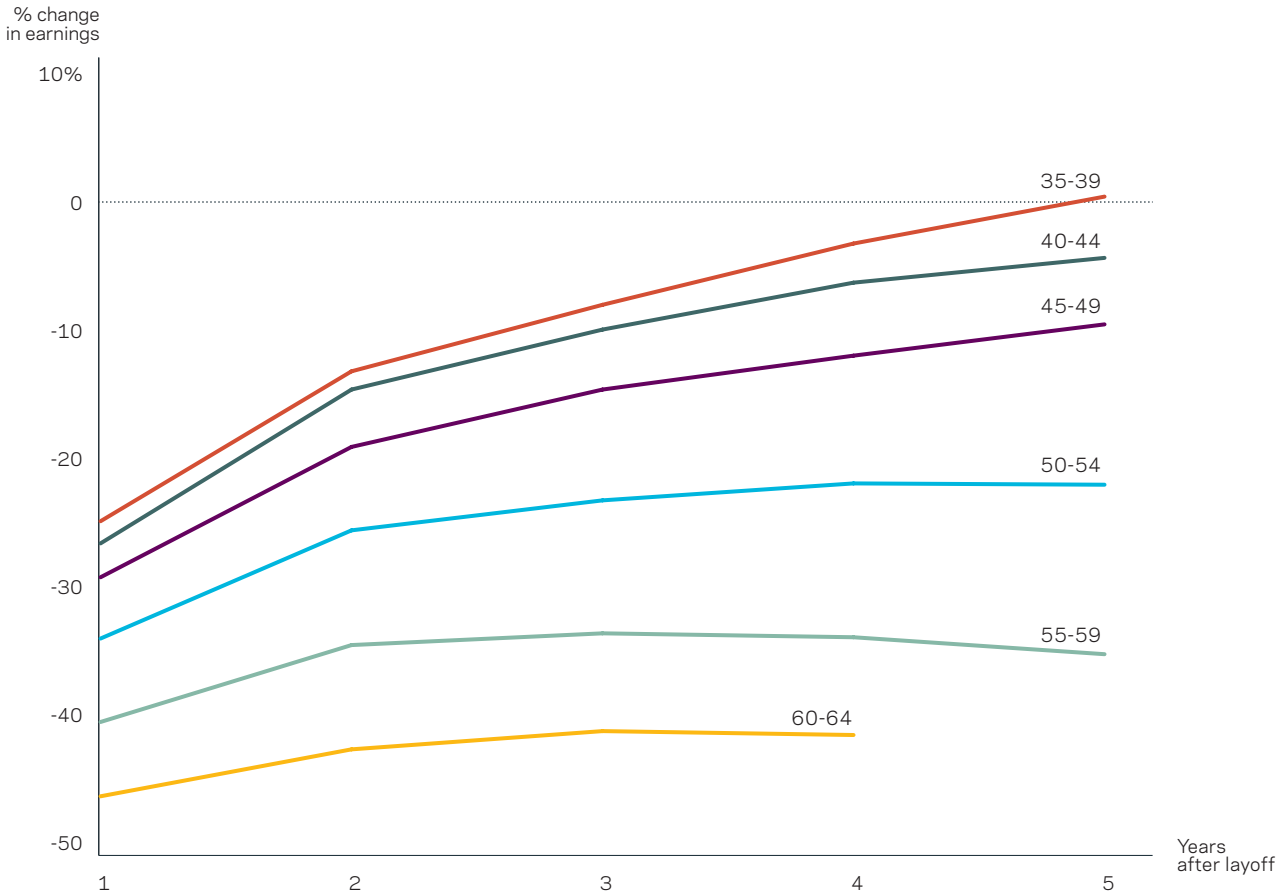
72 Marc Frenette, Richard Upward, and Peter W. Wright, *The long-term earnings impact of post-secondary education following job loss*," Statistics Canada Analytical Studies Branch Research Paper Series, March 2011.

73 Institute for Competitiveness & Prosperity, Working Paper 14, *Trade, innovation, and prosperity*, September 2010.

74 Ross Finnie and David Gray, *Labour-force participation of older displaced workers in Canada*, IRPP Study, No. 15, February 2011.

Exhibit 30 Older workers are more affected by layoffs

Canada, 1996–2002
Average change in earnings for displaced workers by age of worker



Source: Institute for Competitiveness & Prosperity analysis based on Ross Finnie and David Gray, "Labour-Force Participation of Older Displaced Workers in Canada," *IRPP Study*, No. 15, February 2011, Table 5.

lower wage workers in developing economies. Success in overcoming this setback will depend upon the ability of workers to adapt to new skills requirements. The welder of today may be a fork lift driver or data analyst of tomorrow. And even welding is becoming more technically sophisticated. Two complementary approaches can help workers adapt more readily to the ebbs and flows of the labour market: lifelong learning and formal job retraining. In both areas, low literacy skills are a major challenge.

Literacy and formal retraining are complementary. People with higher literacy skills are more likely to pursue job retraining programs than those with low literacy skills. This pattern holds across different age profiles of workers (Exhibit 31).

This may be another way in which low literacy skills are holding back workers' ability to find new, high paying jobs when they are displaced from current jobs. However, increasing enrolment of less literate workers in job training programs is not recommended as formal retraining for them has not proved to be a successful contributor to regaining employment.

Literacy is an advantage. Literacy is more than an ability simply to read the written word. Literacy, as defined by UNESCO, is the "ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society."[75]

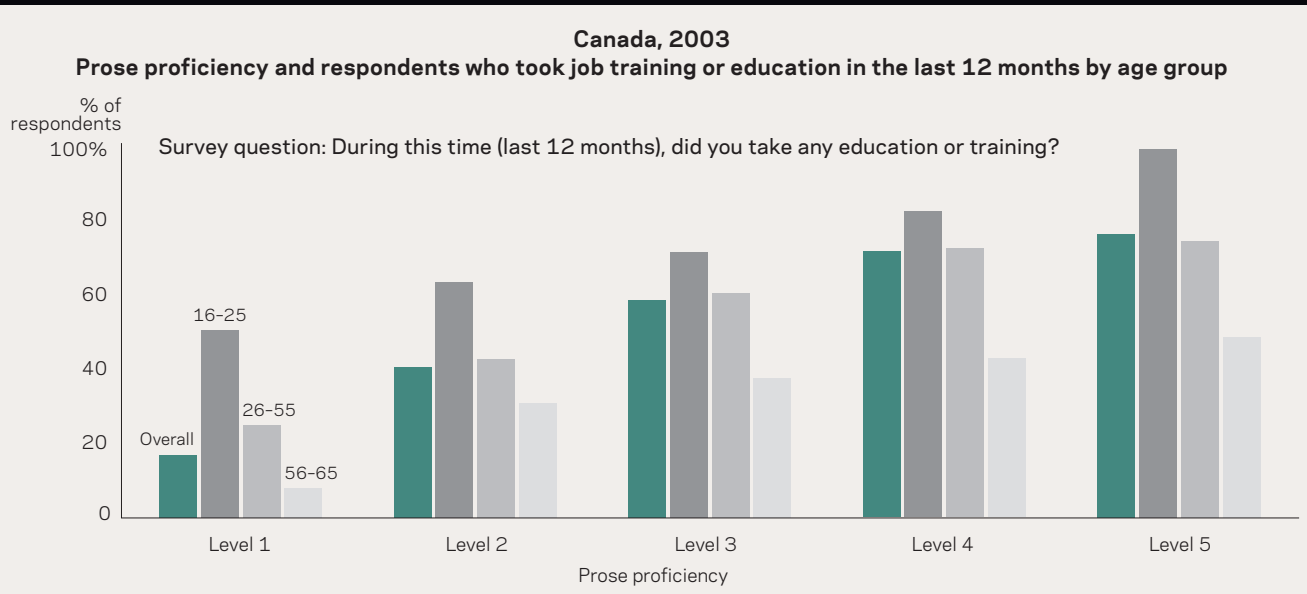
The International Adult Literacy and Life Skills Survey (IALSS) was developed by the OECD. Its main use is to help policy makers and researchers track developments over time and across jurisdictions and to deepen understanding of the causes and effects of low literacy levels. IALSS measures abilities across four sets of skills. The most relevant skill for the analysis is prose literacy, which encompasses skills in reading and creating written material to gain or transmit information. At the lowest prose literacy level (Level 1 of 5), an individual has an ability to identify recommended dosages in instructions on a medicine label. At the highest level, Level 5, an individual has an ability to write in one's own words the difference between a panel and a group interview. According to the IALSS, a Level 3 score is the minimum literacy level that adults needed to function in daily life. Results from the prose literacy ability of the 2003 survey indicate that 52.4 percent of adults aged 16 and over in Canada had the required literacy skills to be capable of adapting to changes in the work force and long term sustainability.[76]

Literacy and lifelong learning are linked. Low literacy is a vicious cycle. Those who finish school with low literacy skills are less likely to read for pleasure or to enhance their work skills. This in turn lowers their skills and their ability to learn new skills. There is a relationship between literacy skills and some habits or activities that are likely related to lifelong learning. For example, among Canadian adults, 90 percent of those with the highest level of prose literacy

75 UNESCO Education Sector, "The plurality of literacy and its implications for policies and programs," UNESCO Education Sector Position Paper, 2004.

76 Brigid Hayes, "Literacy in Ontario," Ontario Literacy Coalition, June 2009.

Exhibit 31 People with higher literacy skills are likely to take formal job training courses



Note: 16-25 year olds exclude students.
Source: Institute for Competitiveness & Prosperity analysis based on data from the OECD, *International Adult Literacy and Skills Survey*, 2003.

report that they "read manuals, reference books and journals" compared to only 33 percent of those with the lowest level of prose literacy. The rate changes directly with each increase in the level of prose literacy. There is a clear upward trend, where those with higher literacy skills engage more in specific lifelong learning habits, such as the propensity to have more than twenty-five books in the household, the incidence of attending lecture seminars and workshops, and the incidence of visiting trade fairs and professional conferences.

Those who are in routine-oriented physical occupations[77] – on the assembly line, in construction and other trades, and other traditional blue collar jobs – exhibit the same positive relationship between literacy skills and lifelong learning habits.

To the extent that developing the capability for gaining new skills is enhanced with lifelong learning habits, those with higher literacy skills will be more adept. Those with lower levels of literacy are much less likely to have developed the capabilities of gaining new skills to adapt to changing job requirements.

Researchers and policy makers should continue to deepen the understanding of why formal job training does not seem to yield the expected results. In noting the lack of success of job re-training programs, programs that focus more on literacy skills will be more beneficial to the participants of these programs. This presents an ideal opportunity for the government and private sector to coordinate in improving the literacy skills of the workers.

Ontario also needs to find ways not only to improve literacy among adults, but also to redouble efforts to ensure children are not leaving school with inadequate literacy skills. Higher literacy is associated with a greater commitment to lifelong learning – and this is very likely an important defence against unemployment and low wages.

Strengthen support and pressure to drive innovation

Specialized support and competitive pressure drive productivity and innovation (Exhibit 32).

Support refers to the conditions that provide a foundation of assistance to all firms and individuals as they develop and compete. Typical support elements include the availability of capital to entrepreneurs, well-educated and skilled workers, specialized suppliers of goods and services, easy access to markets, and excellent infrastructure.

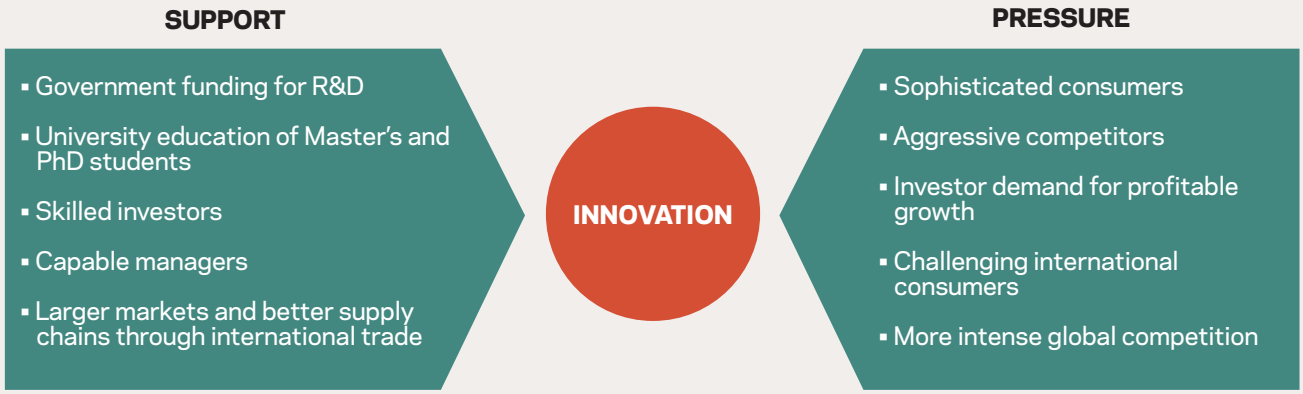
Pressure comes from aggressive and capable competitors who threaten complacency and from sophisticated customers who demand innovative goods and services at low prices.

These two drivers of higher productivity and continuous innovation in an economy need to work in balance – both have to be present. Each element of the economy needs to have not only support to make its task easier, but also pressure to provide incentives to move ahead. All support and no pressure creates a cushy and lazy environment inimical to productivity and innovation. All pressure and no support creates a harsh and barren environment, equally detrimental to productivity and innovation.

Higher productivity and more innovation result in product and process upgrades across the entire economy. But if one element of the economy lacks the necessary support or pressure, then the whole system will not perform to its potential. Having an imposing strength in one element will not make up for weakness in another. But in combination they drive productivity and innovation which form the wellspring of broad based prosperity and key

77 Richard Florida refers to these as "working class" occupations. For a complete discussion of creative and routine occupations, see Martin Prosperity Institute, *Ontario in the Creative Age*, February 2009, pp. 5-9.

Exhibit 32 Support and pressure drive innovation



Source: Institute for Competitiveness & Prosperity.

paths toward national well-being. So it is important to understand how innovation policies affect the support and pressure Ontario firms face.

Stem the loss of Ontario's global leaders

The Institute defines global leaders as Canadian-based firms with more than $100 million in revenues that rank fifth or better in the global market for their products or services. These companies are important, since they are responsible for most innovative efforts, generate more employment and value added, and serve as models for small and medium enterprises.

Canada has around 90 global leader firms, and this number has not changed significantly since 2003. But Ontario has been consistently losing global leaders (Exhibit 33). In 2003, Ontario had 47 global leaders, out of the 90 companies identified in Canada. In 2008, the number of Ontario global leaders decreased to forty-one companies. Today, Ontario has only 34 global leader companies.

In past years, most of the global leader companies reached their leadership status through innovation rather than invention. In general, global leaders achieve their leadership status by consistently investing in innovation, and subsequently maintain that innovative edge through mergers and acquisitions.

Given the importance of these companies, as Ontario loses its global leaders it also loses economic importance within the country.

Exhibit 33 Ontario has lost global leader companies

Ontario, 2003–2012
Change in global leaders

2003
47 Companies

Ashton-Potter (MDC)
ATI Technologies
ATS Automation Tooling Systems
Barrick Gold
CCL Industries
Celestica
Chemtrade Logistics
Cinram
Connors Bros.
Coolbrands
Cott
DALSA
Falconbridge
Four Seasons
George Weston
GSW
Harlequin (Torstar)
Hummingbird
Husky Injection Molding (Onex)
IMAX
Inco
Lallemand
Magna International
Manulife Financial
Masonite
MDS
Mitel Networks
Moore Corporation
Norbord
Nortel
North American Fur Auctions
OpenText
Patheon
Pollard Holdings
Rand A. Technology
Research in Motion
Scotia Mocatta
Shaw Industries
Skyjack (Linamar)
Student Transportation
TD Waterhouse
Thomson Corporation
Timminco
TLC Vision
Wescast Industries
Zarlink
Zenon Environmental

2008
41 Companies

Ashton-Potter (MDC)
ATS Automation Tooling Systems
Barrick Gold
Brookfield Asset Management
CCL Industries
Celestica
Chemtrade Logistics
Cinram
COM DEV International
Connors Bros.
Cott
DALSA
FirstService (Colliers)
George Weston
Harlequin (Torstar)
Husky Injection Molding (Onex)
IMAX
Lallemand
Magna International
Manulife Financial
MDS
Mitel Networks
Neo Material Technologies
Norbord
Nortel
North American Fur Auctions
OpenText
Patheon
Research in Motion
Russel Metals
Samuel, Son & Co.
Scotia Mocatta
ShawCor
Skyjack (Linamar)
Student Transportation
TD Waterhouse
Thomson Corporation
Timminco
TLC Vision
Wescast Industries
Zarlink

2012
34 Companies

ATS Automation Tooling Systems
Barrick Gold
Brookfield Asset Management
Bruce Power
CCL Industries
Chemtrade Logistics
COM DEV International
Cott
easyhome
Exco Technologies
Fairfax Financial Holdings
FirstService (Colliers)
Harlequin (Torstar)
Harry Winston Diamond Corp.
Husky Injection Molding (Onex)
IMAX
Lallemand
Leisureworld Senior Care
Magna International
Mitel Networks
Mood Media
Neo Material Technologies
Norbord
Nordion
North American Fur Actions
OpenText
Research In Motion
Royal Bank of Canada
Scotia Mocatta
ShawCor
Skyjack (Linamar)
Student Transportation
TLC Vision
Wescast Industries

Departures between 2003 and 2008
Departures between 2008 and 2012
Arrivals between 2003 and 2008
Arrivals between 2008 and 2012

Note: Hummingbird was acquired by OpenText; Neo Material Technologies was acquired by Molycorp (U.S. company), and the deal will be settled in the fourth quarter of 2012.
Source: Institute for Competitiveness & Prosperity analysis.

Encourage business R&D investment

Ontario's R&D investment gap with its North American peers exists primarily because of the relatively low spending by the private business sector. On the two other sources of R&D spending, publicly funded higher education and government research and development, Ontario performs well and is surprisingly above its North American peers.

R&D leads to future growth. R&D investment is crucial to broadening the innovation atmosphere within an industry. It can lead to an improvement in existing products or bring about a new product. Many examples could well be in your hand, such as smartphones or tablet PCs and many more.

Gross domestic expenditures on R&D (GERD) are typically assessed for three main performers: business, higher education, and government. Business enterprise expenditure on research and development (BERD) is the largest component of GERD. BERD in Ontario grew from $4.8 billion in 1997 to $8.1 billion in 2007 before falling to $7 billion in 2009. But, as a percentage of GDP, business R&D spending fell more sharply in Ontario than in North American peers when the dot.com bubble burst in 2001 (Exhibit 34). This gap was closing during the 2000s, with the meteoric rise of Nortel. Since Nortel's demise, the gap has reopened and widened sharply. In the area of business R&D, Ontario lags its peers most significantly. This lack of spending in the business sector accounts for most of the gap in investment between Ontario and the North American peer states.

Higher education expenditure on R&D (HERD) has increased steadily in Ontario over the past twenty years. During the late 1990s, HERD rose in response to increases in funding by the provincial and federal governments. Ontario ranks second, above the North American peer median.

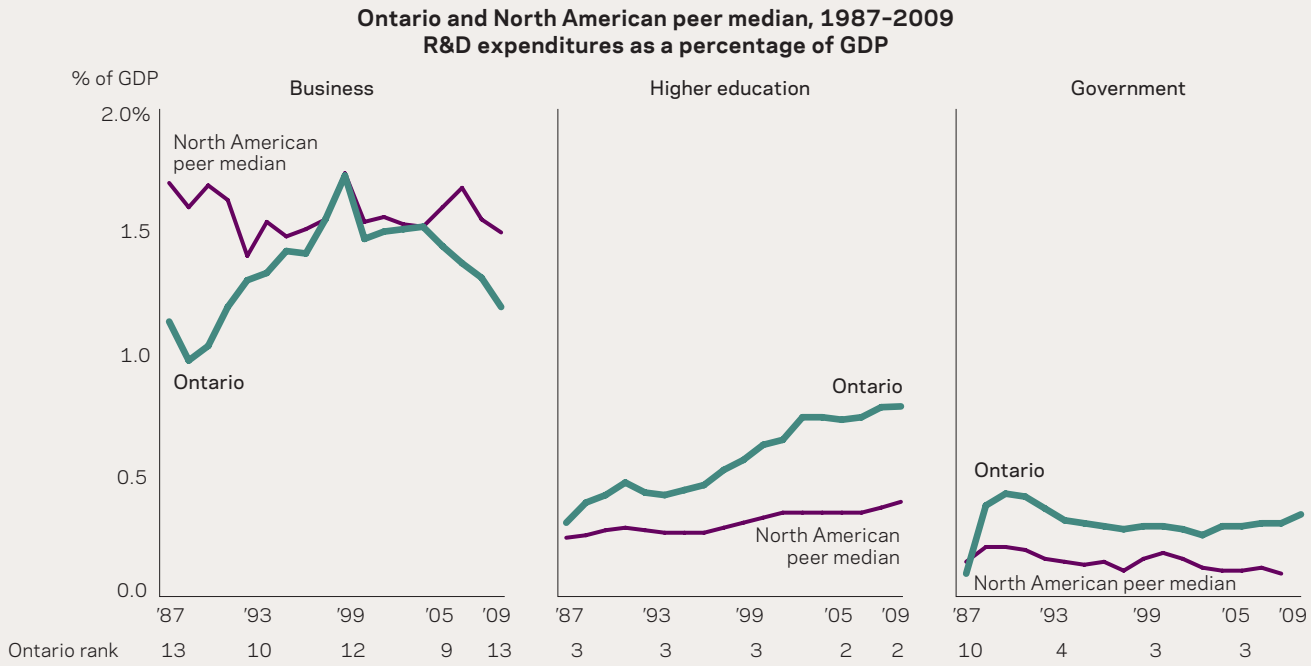
Government expenditure on R&D (GOVERD) makes up a small proportion of total R&D performed in Ontario, at just over 0.3 percent in 2009. Ontario, however, ranks in the top 5, among its North American peers, though the advantage has been declining.

Raise BERD investment

The consequences of having lower business sector investment in R&D than peers extend beyond the direct financial implications of lower capital. A key measure of innovative capacity and processes is patenting.[78] Investments in R&D become inputs to the patenting processes, and the detrimental effect of lower BERD results in reduced innovation output.

78 See Michael E. Porter, "The Economic Performance of Regions," *Regional Studies*, 2003, Vol. 37, No. 6-7, pp. 551 and note 9, and p. 572 for a review of the academic work in using patents as a measure of innovative capacity.

Exhibit 34 Businesses in Ontario continue to spend less on R&D than North American peers



Note: Data for US peer states for the period 1987-1997 are only available bi-annually.
Source: Institute for Competitiveness & Prosperity analysis based on data from Statistics Canada; Mark Boroush, *National Patterns of R&D Resources: 2008 Data Update*, National Science Foundation, Division of Science Resources Statistics, March 2010; and Mark Boroush, *National Patterns of R&D Resources: 2009 Data Update*, National Science Foundation, Division of Science Resources Statistics, June 2012.

Business R&D spending is closely linked to patent output – more dollars spent by businesses on R&D lead to more patents.[79] Expenditure on business R&D in reality is an innovation input, while the innovation output or performance indicator can be measured by patents. Other inputs can, of course, be used to measure innovative capacity. These include direct inputs, such as the educational attainment and proportion of skilled workers in the labour force and the infrastructure quality, as well as the innovation environment, such as intellectual property rights strength, developed financial systems, and foreign investment restrictions.[80]

In Ontario, the government needs to lay the foundation for solid support for R&D to make up for the lack of R&D investment by private businesses. Through post-secondary education investment, government also needs to ensure that it is enabling the proper forces for innovation to occur. The Expert R&D Panel report recommended more support for business innovation through national policies to support R&D and greater use of government procurement to drive business innovation.[81] Government sponsored R&D positively influences business R&D, and this in turn will create the pressure among competitors to making more high valued products.[82] As it stands, public policy over emphasizes invention rather than innovation, and the major challenge is to get the conceptual balance between innovation and investment right.

Closing the R&D gap would require businesses to spend more on R&D than they currently do. Higher R&D investment will have a positive effect on ICT spending since ICT involves significant in-house development. More ICT spending would thus make R&D more efficient because they are complementary activities.

Ontario continues to lag the US peers in patenting output

Patenting represents a key step in the innovation process. By definition, a patent grants exclusive commercial use of a newly invented design or device. The US Patent and Trademark Office defines a patent as "a property right granted by the government of the United States of America to an inventor 'to exclude others from making, using, offering for sale, or selling the invention throughout the United States or importing the invention into the United States' for a limited time in exchange for public disclosure of the invention when the patent is granted."[83]

To measure Ontario's innovative capacity, the Institute gathered patent data from the US Patent and Trademark Office for the years 2006-2010 for all patents in which a Canadian was part of the invention team (Exhibit 35). The results do not paint a favourable

79 Institute for Competitiveness & Prosperity, Report on Canada 2011, *Canada's innovation imperative*, June 2011, p. 40.

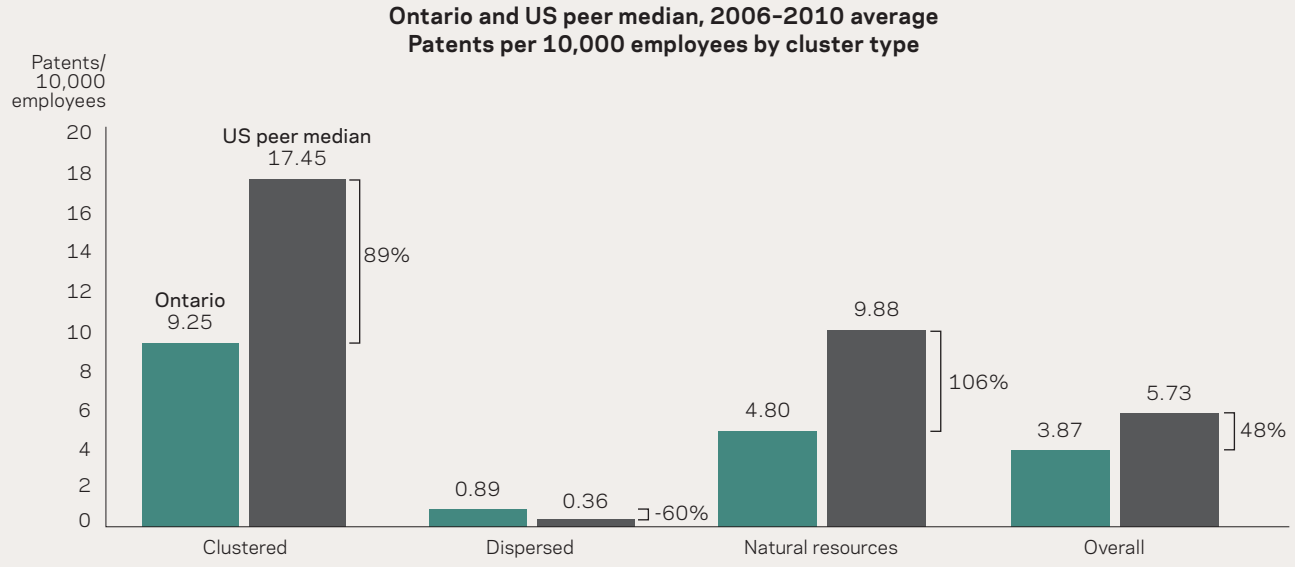
80 Economist Intelligence Unit, "A new ranking of the world's most innovative countries," An Economist Intelligence Unit Report, 2009.

81 Independent Panel on Federal Support to Research and Development, "Innovation Canada: A call to action, special report on procurement," Review of Federal Support to Research and Development – Expert Panel Report, 2011.

82 Zvi Griliches, "Introduction to 'R&D, Patents and Productivity'," in Z. Griliches (ed.), *R&D, Patents and Productivity*, Chicago: The University of Chicago Press, 1984, p.18.

83 "Glossary," US Patent and Trademark Office, last modified June 2, 2010, accessed October 25, 2012, **http//www.uspto.gov/main/glossary/index.html**.

Exhibit 35 Clustered industries patent far less in Ontario than in US peers



Source: Institute for Competitiveness & Prosperity analysis based on data from the United States Patent and Trademark Office and the research of Professor Michael E. Porter and the Cluster Mapping Project.

picture. At 9.25 patents per 10,000 employees, Ontario's clustered industries continue to significantly trail the US peer median of 17.45 patents per 10,000 employees. Ontario patents also trail in natural resource industries. Ontario has an advantage in dispersed industries patents, but they produce very few patents per employee.

Among Ontario's top ten patenting clusters (defined by patents per 10,000 employees), Ontario significantly lags its US peer median. In all but two of Ontario's top ten clusters, *information technology* and *oil and gas products and services*, Ontario patents less than the US peer median (Exhibit 36). It is also worth noting that among the clusters that Ontario leads the US peers, the gap is not large.

As in the US peer states, Ontario's clustered industries are more innovative than dispersed industries, because they are more specialized and face greater competitive pressure from a wider set of competitors and customers. Unfortunately, at 9.25 patents per 10,000 employees, Ontario's clustered industries would need to increase their patent output by 89 percent to reach the median performance of US peers. Ontario also trails in natural resource industries and has a small advantage in dispersed industries, which tend to produce very few patents per employee.

In R&D, Ontario needs to create an environment whereby companies are motivated to innovate and commercialize. The leaders in various industries do not face the same competitive conditions that US peers face, as seen clearly in the patenting activity within clustered industries. The deficits faced by both the support and pressure sides need to be addressed. More important, policy makers need to think about how to encourage businesses to patent more, promote competition, and ensure businesses realize that competition is in their best interest.

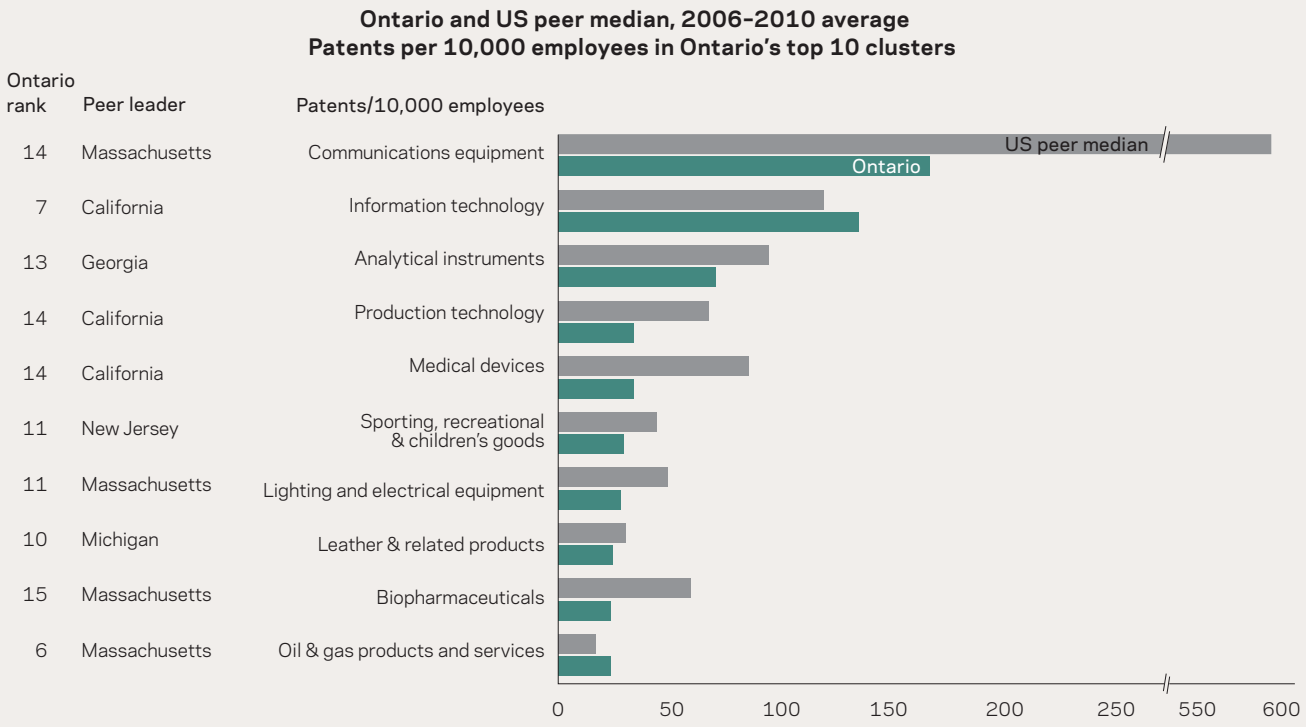
Teach innovation now to ensure future growth

The world has changed rapidly over the decades. Previously, no school taught computer science. Now there are whole departments devoted to the study of computers. Innovation, like computer science, is a natural evolution of technological advances, and innovation must be taught now to sustain the current standard of living and promote growth for the future. Ontario cannot rely solely on what drives growth today. Instead, the economy must be based on the creation of ideas that solve different kinds of problems, or in other words, innovation.[84] Renowned inventor Dean Kamen explains, "The real value is now in the creation of ideas that are scalable, that don't consume resources, they aren't a zero-sum game."[85]

84 Tony Wagner, *Creating Innovators: The Making of Young People Who Will Change the World.* New York: Scribner, 2012, p. 2.

85 *Ibid*, p. 6.

Exhibit 36 Only two of Ontario's top ten clusters patent more than US peers



Source: Institute for Competitiveness & Prosperity analysis based on data from the United States Patent and Trademark Office and the research of Professor Michael E. Porter and the Cluster Mapping Project.

In their book, *Canada: What It Is, What It Can Be*, Roger Martin and James Milway advocated that innovation should be taught at the primary and secondary levels. Unfortunately, Ontario's current education system stifles nearly all aspects of innovation – namely creativity, intrinsic motivation, a trial and error mentality, collaboration, and multidisciplinary learning.[86]

Fortunately, the skills and mentalities that these great innovators have can be taught. In fact, Montessori schools, which emphasize learning through play, are teaching young children before they enter school the very skills that make up an innovator.[87] Moreover, teaching innovative skills and learning is gaining traction in Canada and beyond.

DesignWorks Rotman, housed at the University of Toronto's Rotman School of Management, was created by Roger Martin using the same methodology that birthed the original DesignWorks at Procter & Gamble. The consumer-packaged-goods company called on the expertise of university leaders, including Martin, to help devise a program that would teach executives the skills required for innovation. DesignWorks Rotman conducted a pilot project at the Yorkland School with grade 10 business students, teaching them how to understand customers through empathy, recognize patterns, and design new experiences, all through tactical learning, collaboration, and role-playing. DesignWorks Rotman also recently partnered with Singapore Polytechnic to create DesignWorks Singapore with the same goal of teaching the skills of innovation to students.[88]

Dr. Tony Wagner in his latest book, *Creating Innovators: The Making of Young People Who Will Change the World*, mandates that the education system must foster a "culture of innovation," whereby courses taught in schools should focus on solving problems rather than just meeting academic goals, and students should be tested for how they solved a problem rather than what they memorized. Moreover, learning should cross disciplinary boundaries, enabling students to consider problems from a multitude of perspectives.[89]

Wagner developed the Play, Passion and Purpose educational approach to help students become innovators at a young age. Using play, which is a natural human endeavour, students are exposed to a variety of ideas, problems, and tools, all of which require creativity. For example, without imagination or creativity, Lego are simply rectangular blocks that serve little to no purpose. But when a child puts them together, the blocks can tell stories, solve problems, and generate new ideas. Through play, students develop passions, which help them persevere to do what they enjoy. The combination of passion and play creates purpose that channels a child's innovative skills and passion toward a greater lifetime goal.[90]

The innovator's mentality is especially valuable to the workplace. Of the senior business managers surveyed in the 2012 GE Global Innovation Barometer, 56 percent agreed that the most important requirement for businesses to innovate successfully is to hire more creative, out of the box thinkers.[91] Unless the future work force is trained to become innovators and those Richard Florida call the "creative class," Ontario businesses will be unable to become more competitive.[92] Outfitting students with the tools to be innovative ultimately encourages the pursuit of higher education, which is much needed in order to become capable managers and skilled investors. These elements are part of the specialized support environment that drives innovation and productivity. The other part of this environment is pressure, which this same generation will also contribute to by being sophisticated consumers who demand low priced, high quality products and services. Instilling students with an innovation incentive and purpose now is therefore an investment in Canada's future economic growth, competitiveness, and productivity.

Ontario's fiscal deficit must be addressed now, but with a balanced approach that does not sacrifice long-term growth. Ontario should not, however, cut education spending to achieve a balanced budget as it has in the past.

The Institute encourages the Ontario government to pursue smarter tax policies and not lose sight of the importance of keeping a low tax environment in Ontario. Additionally, the Ontario government needs to revise its policies to lift people out of poverty, and it can implement some policy proposals from the recently released Lankin Report. Ontario also needs to re-address its job re-training programs to improve literacy skills. From a business point of view, Ontario must continue to create the support and pressure that will retain global leaders and spur other businesses to grow and join that group. Ontario's firms now trail the North American peer median in business R&D, and they need to be encouraged to invest more in R&D to broaden the innovation culture, productivity, and prosperity.

86 *Ibid*, p. 22.

87 *Ibid*, p. 27.

88 Rotman DesignWorks. "High School Business Design Bootcamp," 2011, accessed October 1, 2012, http://www.rotman.utoronto.ca/FacultyAndResearch/EducationCentres/DesignWorks/Learning%20Library/Videos.aspx.

89 Tony Wagner, *Creating Innovators: The Making of Young People Who Will Change the World*, New York: Scribner, 2012, p. 2.

90 *Ibid*, pp. 26-30.

91 GE and StrategyOne, "GE Global Innovation Barometer: Global Research Report," 2012.

92 See Richard Florida, *The Rise of the Creative Class*, New York: Basic Books, 2002, for more information on the creative class.

HOW SHOULD ONTARIO PUSH FOR GROWTH NOW?

There has never been a better time for Ontario's leaders to push for growth. With solid economic fundamentals, a stable policy environment, and strategic advantages, now is the time to make the investments necessary to generate growth and close the prosperity gap.

This Report offers recommendations for government, firms, organizations, and individuals to raise Ontario's competitiveness and achieve the 2020 Prosperity Agenda – eighth among the North American peers by 2020. The recommendations address key questions for Ontario:

HOW CAN ONTARIO WORK SMARTER, NOT HARDER?

- Raise intensity and productivity to maintain Ontario's potential for growth in the face of the expected deterioration in the now advantageous demographic profile.

- Strengthen Ontario workers' skills and educational attainment to help them find more hours of work. Involuntary part-time employment is more prevalent among less-educated workers, and the incidence of part-time jobs tends to decline as educational attainment increases. Both public and private employers must take part in this initiative.

- Reinforce Ontario's structures of specialized support and competitive pressure, which are currently inadequate. Enhancing specialized and sophisticated support conditions includes improving university/industry research collaborations, quality of management schools, quality of scientific research institutions, and the local availability of specialized research and training services. Developing competitive pressure conditions include expanding the intensity of local competition, intellectual property protection, and prevalence of mergers and acquisitions.

HOW DOES WHERE ONTARIANS LIVE AND WORK MATTER?

- Ensure that provincial and municipal governments are investing adequately in urban infrastructure, such as roads, bridges, airports, and ports, to facilitate and support the inevitable growth of urban populations and to take full advantage of urbanization effects.
- Focus on creating opportunities for all in urban areas.
- Concentrate efforts to upgrade the skills of workers in service occupations, which employ the largest number of workers. Ontario needs to widen efforts in the education system to cultivate workers' analytical and social intelligence skills, such as problem solving and communication skills, that will be necessary to compete in the creative age.

HOW DOES ONTARIO COMPETE?

- Improve management capability, an important element in expanding innovation and productivity performance.
- Invest in skilled workers to enhance the productive capacity of these sectors and make them more competitive.
- Remove trade barriers that prevent exports to the global economy.
- Encourage business owners and entrepreneurs to invest and innovate, since they currently do not translate positive attitudes into actual investments and innovations.
- Consider the alternatives to holding larger cash balances to address the dead cash conundrum. While the Task Force would prefer a market-based decision, government decision makers may be forced to step in and provide an incentive to stimulate appropriate investment.
- Scale up operations in Ontario firms and invest the appropriate resources in R&D as one way to close the prosperity gap.

HOW DOES ONTARIO INVEST?

- Boost investment in machinery and equipment when the Canadian dollar is high to capitalize on the benefit of stronger purchasing power. On a per worker basis, US peer state businesses out invest Ontario businesses in machinery and equipment overall, with a larger gap in ICT.
- Encourage private sector investment in R&D. Ontario's R&D investment gap with its North American peers exists primarily because of the relatively low spending by the private business sector.
- Maintain education investment in line with that of other Canadian provinces and the US peer states. The PISA survey shows that Ontario's education results significantly exceed those of some provinces and US counterparts, despite lower funding.

HOW CAN ONTARIO ACHIEVE ITS PROSPERITY POTENTIAL?

- Push to balance government budgets. It is important to do this in a way that does not undermine long-term growth. Growth prospects depend not only on controlling debt ratios, but also on devising more efficient taxation structures.
- Implement tax cuts on capital investment sooner than planned.
- Pursue innovative tax policies and consider a personal tax system based on consumption, not income, such as the Dual Income Tax model.
- Continue to reduce the municipal property tax on businesses to enable municipalities to attract more businesses and boost economic growth. To avoid tax exportation, marginal tax rates on business property should be lower than residential property tax rates.
- Invest in social programs to reduce poverty among low-income people through education and other programs, not only raising children's chances of escaping poverty but also benefiting their families. Promote higher literacy skills, which are associated with greater propensity for lifelong learning habits and are likely to improve prospects for workers needing to find new jobs.
- Teach innovation at the primary and secondary levels.

Previous Publications

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
THIRD ANNUAL REPORT – *Realizing our prosperity potential,* November 2004
FOURTH ANNUAL REPORT – *Rebalancing priorities for prosperity,* November 2005
FIFTH ANNUAL REPORT – *Agenda for our prosperity,* November 2006
SIXTH ANNUAL REPORT – *Path to the 2020 prosperity agenda,* November 2007
SEVENTH ANNUAL REPORT – *Leaning into the wind, November* 2008
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TENTH ANNUAL REPORT – *Prospects for Ontario's prosperity,* November 2011

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WORKING PAPER 1 – *A View of Ontario: Ontario's Clusters of Innovation,* April 2002
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WORKING PAPER 3 – *Missing opportunities: Ontario's urban prosperity gap,* June 2003
WORKING PAPER 4 – *Striking similarities: Attitudes and Ontario's prosperity gap,* September 2003
WORKING PAPER 5 – *Strengthening Structures: Upgrading specialized support and competitive pressure,* July 2004
WORKING PAPER 6 – *Reinventing innovation and commercialization policy in Ontario,* October 2004
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WORKING PAPER 14 – *Trade, innovation, and prosperity,* September 2010
WORKING PAPER 15 – *Small business, entrepreneurship, and innovation, February 2012*

Books

Roger Martin and James Milway, *Canada: What it is, what it can be*. Institute for Competitiveness & Prosperity. Toronto: Rotman-UTP Publishing, 2012.

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