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TD Economics
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THE PRODUCTIVITY PUZZLE: WHY IS THE CANADIAN RECORD SO POOR AND WHAT CAN BE DONE ABOUT IT?

Executive Summary

Productivity growth is the key to sustainably improving the quality of life of Canadians. Over the long run, wages, wealth and GDP per capita are integrally linked to a country's productivity performance. Yet the alarming reality is that labour productivity growth in Canada's business sector has been in structural decline since the 1970s. Even more concerning is that since 2000, labour productivity growth has slowed to a crawl. The scope of this trend has not been mirrored by other developed countries, and it is taking a toll on Canada's international economic clout. Between 1990 and 2008, Canada's GDP per capita slipped from 5th to 11th among OECD countries.

If Canada wishes to maintain its place as one of the world's richest countries, productivity growth must improve. But there are reasons beyond international standings that necessitate the need for action. Demographic challenges are poised to place enormous pressure on Canada's economy into the foreseeable future. The simplest way to confront this reality is through improved productivity. Further, if the recent trends in globalization persist, Canada can expect global competition to become a lot more intense over the next two decades. Unlike the historical experience with globalization, these competitive pressures will increasingly come from high value industries. If Canadian firms cannot become more productive, they will simply go out of business. No matter how you look at it, Canada must find ways to become more productive.

So why has Canada's productivity failed to keep pace with the rest of the world? Examining the sources of productivity growth suggests a key measure of innovation – 'multifactor productivity' (MFP) – lies at the heart of Canada's woes. Broadly speaking, MFP captures increases in productivity from utilizing a given set of resources more efficiently. For instance, a new management technique that increases output without employing additional workers or capital is recorded as MFP growth. Today, Canada's level of MFP is the same as it was during the early 1970s. This suggests that Canadian firms are failing to innovate and find better ways to employ their existing resources.

One bizarre aspect of this story is that firms in many industries could improve their productivity by simply adopting the best practices used across the world. The large gap in business sector productivity between key industries in Canada and the United States suggests that Canadian firms could immediately improve their productivity by mimicking American firms. It is strange for such a gap to exist in a market economy, since firms would benefit through higher profits. This gap is made all the more puzzling given the close ties between the two countries. Canadian firms generally have access to the same machinery and equipment as the U.S., and recently such investments have become increasingly affordable thanks to a strong Canadian dollar.

This anomaly has lead many economists to ponder whether Canadian public policy has discouraged firms from improving their productivity. Such a view has merit, but numerous reforms widely believed to encourage productivity have been implemented over the past twenty years to seemingly no avail.

- The Bank of Canada has been successful in maintaining a low and stable inflation rate
- Federal and provincial governments have taken important steps to shore up public finances since the near-crisis of the mid-1990s
- Trade agreements, notably NAFTA, have enhanced competitive pressures across the economy
- And taxation policy has become dramatically more favourable towards capital investment

Of course, there remains considerable scope for further policy improvement.

- Key industries within Canada remain shielded from adequate competition which likely stifles the incentives to innovate

- The corporate income tax structure discourages small firms from growing into highly productive large firms
- And Canada's immigration system is not meeting the country's labour force needs as efficiently as it could

Still, the post 2000 productivity slowdown suggests the important reforms enacted to date have not had the desired impact.

It is perplexing that substantive policy reforms moving in the right direction have been met by slowing business sector productivity growth. As such, economists must look beyond the typical policy prescriptions, and seek other answers to the country's productivity shortfalls.

One possibility is that businesses in Canada are simply not industrious and adventurous enough to drive productivity growth forward. A qualitative claim of this nature can not be proved, but recent evidence suggests the possibility cannot be ruled out. Indeed, key elements of Canada's history and industrial structure may have nurtured a complacent business culture. Unfortunately, even if Canada's productivity challenges could be explained by business attitudes, such a diagnosis offers no cure. As such, new approaches to tackling Canada's productivity challenges are needed.

The Institute for Competitiveness and Prosperity (ICP) has done some pioneering work in this regard by finding that Ontarians' attitudes towards business are remarkably similar to Americans. These results suggest that cultural attitudes towards business are not the source of Canada's slow productivity growth. Rather, the ICP has found that important differences lie in the attitudes of Ontario's business leaders towards education. Digging deeper, the ICP also finds that there are important differences in the level of education recommended and obtained among managers in Canada and the United States.

Such research illustrates the value of expanding the productivity research agenda beyond policy. In fact, we believe that many answers to the puzzle lie buried in the fabric of the behaviour of individual firms. For example, fruitful research could study companies with operations in Canada and the United States. Is the productivity of these firms consistent on each side of the border? If not, what factors seem to be impacting these different outcomes? Expanding the scope of the productivity research agenda will require detailed data and a new set of skills. Luckily, most of these ingredients exist, but considerable collaboration is needed to bring them together.

As researchers delve deep into the nuances of Canadian firm behaviour, the skills and expertise of economists must be complemented by other researchers using other approaches. The knowledge of management experts and business consultants could be very useful to the degree they can build upon their typical firm and industry focus to aggregate their findings to a level that sheds light on the overall productivity malaise in Canada.

So based on what we know, how can Canada most effectively address its pressing productivity challenge?

The Government of Canada must continue to maintain and develop a supportive policy environment. These policies will not always have public support in the short-run, but continual steps must be taken to allow the powerful effects of competition to propagate through Canadian businesses. In recent years Canada's governments have done a good job, but the task remains unfinished.

Canada's economic future depends on developing and maintaining one of the most skilled workforces in the world. This area remains a competitive advantage for Canada, but that advantage should be enhanced and the weak economic integration of immigrants must be improved.

Canadian businesses must invest in new and better capital equipment. As technology improves, the opportunity to provide Canada's skilled labour force with sophisticated capital equipment grows. Indeed, without state of the art capital, businesses cannot fully exploit the skills of its employees.

Firms and businesses must be innovative and find new ways of doing things better. Good policy can only align the incentives for innovation. Canada's business leaders must provide the spark that drives new thinking and productivity. As we show in this report, improvements in a rough measure of business innovation – MFP has been sorely lacking over the past thirty years. And a meaningful improvement to Canada's MFP would make a world of difference in improving the standard of living within Canada.

Finally, economists and other researchers must strive to fill the gaps in their understanding of the forces driving productivity. The answers to many of the questions surrounding Canada's productivity woes are awaiting discovery, but an aggressive and substantial research effort will be necessary to uncover them.

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HIGHLIGHTS

- **Slow productivity growth has caused Canada's economic status to decline relative to much of the world.**
- **Productivity growth is an unambiguous plus for Canadians. It is the only sustainable way for wages to increase, and the quality of life to improve.**
- **Governments across Canada have done a lot of the right things to promote productivity growth, unfortunately these reforms have not produced the desired results.**
- **Does the seeming indifference with which Canadian businesses have reacted to recent policy reforms suggest that Canadian culture is partly to blame?**
- **Bold new avenues of research will be needed to try and really get at the heart of Canada's productivity challenges.**
- **Ultimately, slow productivity growth will make the approaching demographics squeeze and fierce global competition unbearably painful for Canadians. As such improving productivity should be recognized as Canada's #1 economic challenge today.**

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Productivity Growth: Canada's #1 Economic Issue Today

Canadians have plenty of reasons to feel good these days. Canada weathered the global financial crisis relatively well, in good part due to the sound performance of its banking sector. Housing prices have posted an impressive rebound – and now surpass pre-recession levels. The loonie is strong, trading close to parity against the U.S. dollar. Government debt remains manageable despite enormous government stimulus spending. So it would seem Canada has got things right…right?

Wrong! As the great recession of 2008 and 2009 fades, two unstoppable forces are poised to drastically alter the global economic landscape – demographics and the development of emerging economies. As the baby boomer generation enters retirement, labour force growth will slow and pressures on government entitlement programs will mount. Meanwhile, developing economies will continue to unleash an unprecedented wave of global competitiveness. The lynchpin of success in this new environment will be finding creative ways to make more from less – or as economists like to say, becoming more productive. Despite Canada's robust recovery from the global recession, the country's historical productivity growth has been appalling, and this does not bode well for the future.

Hence, we are inclined to believe that productivity growth is the number one issue facing the Canadian economy. Improving productivity is the simplest solution to many of the country's challenges. Greater productivity would raise wages and increase overall wealth. As a result, Canadians could afford to improve health care services, increase educational outcomes and expand social safety nets without increasing the tax burden.

Now that the global recession is easing, Canada's economic future stands at a crossroads. One option is to ignore the elephant in the room and assume that the recent success of Canada's economy will continue. Another – more sensible option – is to seize this moment of strength and tackle the most profound challenge facing the country's long-term economic success. It is time for Canadians to face reality, and our aim is to provoke a renewed call to arms to combat Canada's largest structural problem – anemic productivity growth.

This report starts by exploring why Canadians should care about productivity and showing that Canada does in fact have a problem. We then move to the heart of the matter. Why has Canada's productivity been so dismal? The conventional approach has been to look at public policies that distort incentives. But we find that Canadian businesses have not responded to a variety of key policy initiatives specifically designed to foster productivity growth. So could Canadian culture be the culprit? Perhaps, but this claim offers no guidance as to how Canadians can halt their rapid descent down the list of 'developed countries'. Hence, we propose expanding and integrating the research agenda to peer deep into the productivity 'black-box' and get to the source of Canada's productivity woes.

Productivity redux

Productivity is frequently misunderstood. In the workplace, employees worry that 'improving productivity' is code for working harder or longer. Yet, such notions could not be further from the truth. In essence, productivity has been improved if the same level of effort produces a greater level of output. When viewed in this light, higher levels of productivity are unambiguously a positive thing.

To accurately measure and study productivity, economists have developed a fairly simple framework that identifies three major sources of output growth in an economy.

$$\frac{GDP}{Population} = Labour\,productivity \times WorkEffort \times EmploymentRate$$

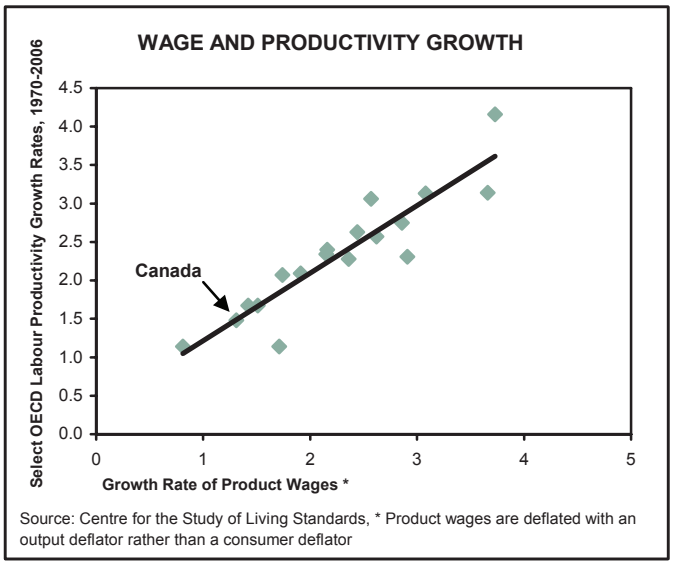
The employment rate signals the portion of the population actively working and contributing to producing output in the economy. Work effort communicates the number of hours each worker puts in their job. And finally, labour productivity - as typically measured by economists - tells us how much output is produced per hour of work.

Why should I care?

Over time, labour productivity is closely linked to a country's standard of living. Between 1947 and 2006 Canadian labour productivity grew on average by 2.4% per year, while GDP per capita advanced by 3.8%. During this period, over 63% of the increase in Canada's GDP per capita was the result of increased productivity[1]. The rest came from a higher employment ratio, which more than compensated for declining work effort. In the future, Canada will not be able to rely on a higher employment ratio as the baby boomer generation retires. Ergo, future growth in GDP per capita will either come from increasing work effort or improved productivity. The only sensible option is to improve productivity.

Productivity growth is necessary for real wages to increase over time. The level of labour productivity acts as a ceiling on real wages. Firms cannot remain profitable if they pay wages that exceed the value of output produced by their workers. Empirically, the correlation between labour productivity growth and real product market wage growth[2] is remarkable - see the chart on this page. Without productivity growth, real wages stagnate, and the quality of peoples' lives does not improve.

That said, improved labour productivity does not necessarily translate into higher median wages in Canada. Between 1980 and 2005 the annual median real income hardly changed, moving from $41,348 to $41,401, even as the economy became 37% more productive[3]. Andrew Sharpe of the Centre for the Study of Living Standards (CSLS) has found that nearly one-quarter of the gap between labour productivity growth and wage growth can be accounted for by rising income inequalities[4]. A host of other factors including higher non-wage benefits accounts for the rest. The inequitable distribution of income gains from productivity improvements is a real concern that must be addressed if ordinary citizens should be expected to support productivity inspired policies. While the only way for Canadians to improve the quality of their lives is through improved productivity growth, careful attention must also be paid to the distribution of incomes.

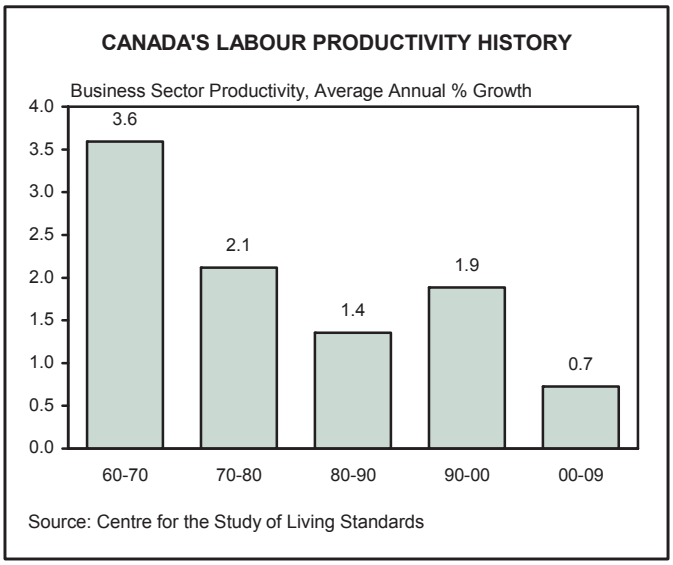


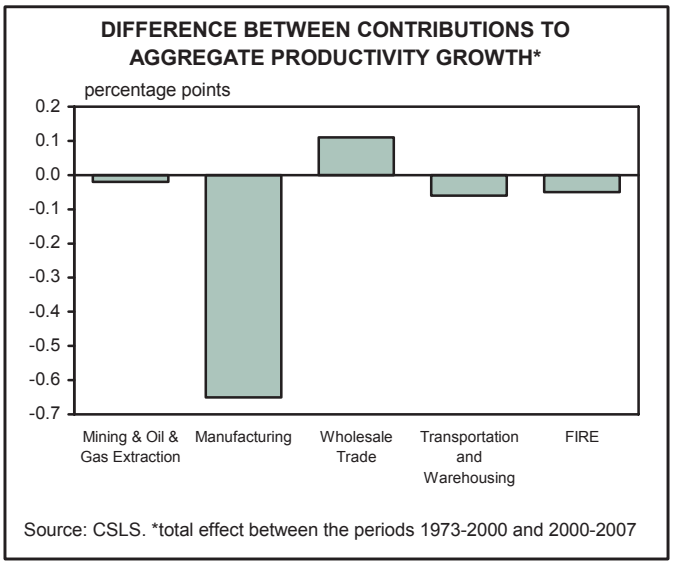
Source: Centre for the Study of Living Standards, * Product wages are deflated with an output deflator rather than a consumer deflator

As a consequence of enhanced GDP per capita and improved wage growth, higher levels of productivity raise the stock of wealth and expand the range of economic choices available to Canadian society. This could involve improving government services or lowering taxes. Regardless, a more productive economy can give you more of the things you like and less of the things you don't, which is the key to improving the quality of life.

Canada has been plummeting down world rankings

Canada's recent labour productivity growth has lagged relative to past performance and to the trends of other developed countries. Lamentably, this means Canadians today are not privy to the same improvements in the quality of life as their parents were and peers in other countries still are. A brief survey of these trends should remind Canadians that their place among the richest countries in the world is not





preordained and requires immediate action to address the country's productivity challenges.

The alarming reality is that Canadian business sector labour productivity growth has been in structural decline since the 1970s. Between 1947 and 1973, productivity grew at a robust annual pace just over 4%. In the mid 70s, this trend shifted. From 1973-2000, productivity only managed to eke out 1.6% annual growth. There was a brief resurgence during the 1990s, as innovative new technologies propagated across most sectors of the economy. Yet, in spite of the new opportunities created during the Information and Communication Technology (ICT) revolution, Canadian businesses were not able to bring the momentum of the 1990s into the 2000s. Throughout 2000 to 2009, productivity growth slowed further to a depressing 0.7% per year. This most recent decade has bordered on catastrophe.

Recent research by the Centre for the Study of Living Standards has explored the sources of the post 2000 slowdown in national productivity growth[5]. Using detailed industry data, these studies present compelling evidence that all of the slowdown experienced after 2000 can be accounted for by the manufacturing sector. Specifically, while most forms of manufacturing contributed to the slowdown, over half the decline can be accounted for by computer-electronic and transportation equipment manufacturing[6]. One theory suggests that as output in these sectors fell sharply between 2000 and 2007, high fixed labour requirements limited the ability of firms to reduce labour input by a proportional amount, slowing productivity growth. Without question, there is value in knowing the source of the recent slowdown. Yet over any given period, productivity growth will be fast in some industries and slower in others as new technolo-

Natural Resource Extraction and the Post 2000 Slowdown in Productivity Growth

The price of many industrial commodities rose sharply during the 2000s, and resource producers responded to these prices by increasing output. Entering the decade, many conventional sources of supply were old and could not increase output. Thus, firms began investing in non-conventional supply including the oil sands and coal bed methane. Accessing these resources requires much more effort than conventional reserves, so it is not surprising that productivity declined across the industry at an average annual rate of 2.2% between 1997 and 2007[7]. This experience highlights a challenge measuring resource extraction productivity as it is difficult to adjust output to account for the quality of reserves. Hence, the reality of Canada's recent resource productivity performance remains something of a mystery.

Some observers have suggested that declining productivity in the resource sector may have explained the slowdown in Canada's productivity during the post 2000 era. Andrew Sharpe has shown that the total impact of this decline only reduced average annual productivity growth from 1.16% to 1.10% between 2000 and 2007[8]. As commodity prices boomed, resource companies employed large numbers of new workers. Frequently, these workers would leave jobs in industries that were less productive than resource extraction. Thus as productivity in the resource sector declined, the aggregate impact was largely mitigated by a shift within the labour force towards a more productive industry.

Sources of Labour Productivity Growth

Labour productivity can increase for three reasons. The first important driver of productivity growth is 'capital-deepening,' which refers to increases in the stock of capital per hour worked. One example of capital-deepening is the use of nail-guns rather than hammers by homebuilders. A second major driver of productivity growth is through 'labour composition'. With experience and training, workers develop a better understanding of how to make the most efficient use of their time and available capital. Finally, multifactor productivity (MFP) expresses improvements to productivity not explained through capital deepening or labour composition. For example, a new management technique which increases output using the same quality and quantity of labour force and stock of capital is recorded as growth in MFP. MFP is inherently difficult to measure, and subject to measurement errors and omissions. However, its importance cannot be overstated. One reason economists pay careful attention to the growth of MFP is that changes largely reflect the ability of businesses to innovate and find new and better ways of making use of a given set of resources.

gies have asymmetrical affects on different sectors. Hence, as manufacturing productivity slowed after 2000, service industries failed to pick of the slack, despite an enormous range of new ICT technologies at their disposal.

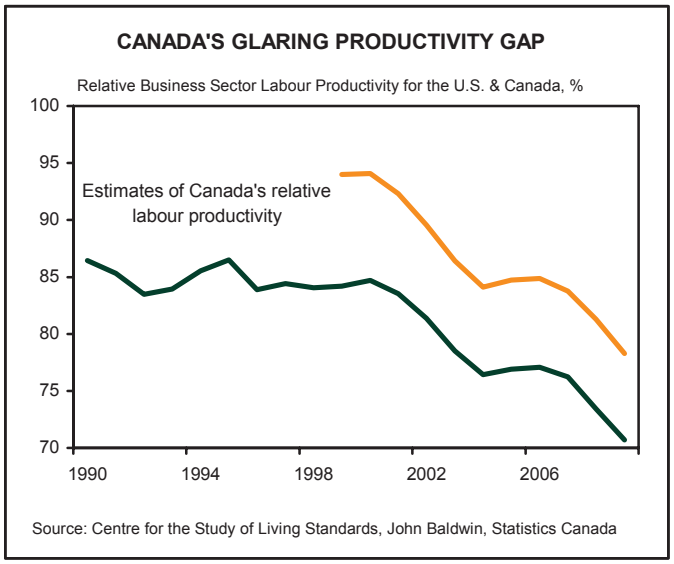
As Canada has struggled to straighten out its productivity woes, the rest of the world has continued to press forward. In 1970, Canada was the fifth most efficient economy out of twenty-four OECD countries. By 2009, out of the same twenty-four economies Canada had fallen to fifteenth[9]. As one would expect, this weak productivity performance has started to affect the country's international standing in terms of output per capita. Between 1990 and 2008, Canada's GDP per capita slipped from 5th to 11th among OECD countries.

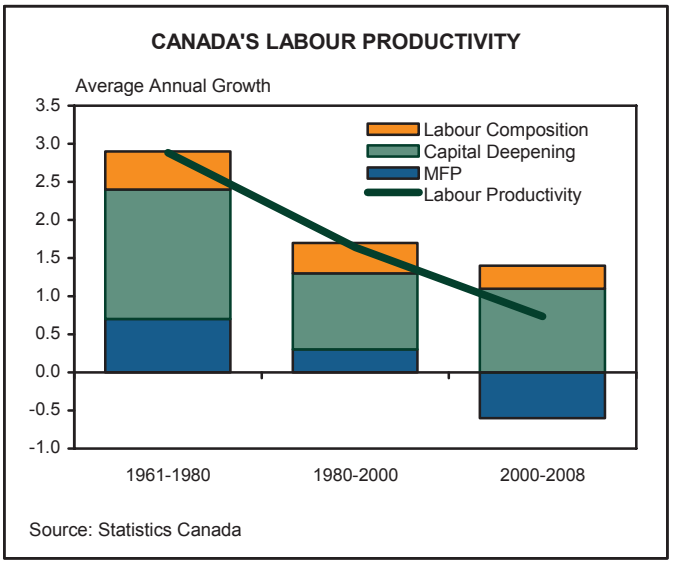
Recently, Canada's performance has also trailed the U.S. Since 1984, growth in Canadian business sector productivity averaged 1.2%, while America surged ahead at a rate of 2.2%. This discrepancy grew markedly wider between 2000 and 2009 when U.S. productivity grew by 2.7% as Canadian growth slowed to 0.7%. The compounding effect of slower growth over the past thirty years has taken a big toll. By 2009, Canada's relative business sector productivity had fallen to just over 70% of the U.S. level[10]. Naturally, this poor productivity performance has contributed to a widening in the GDP per capita gap with the U.S. from $2,600 in 1981 to $8,700 in 2008[11]. For a discussion of an alternative measure of output -- net national income -- please see the appendix.

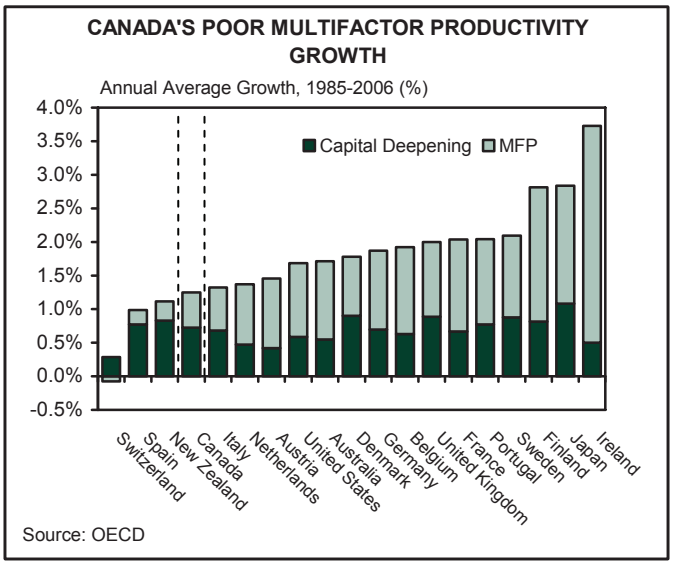
It is also worth noting that Canadian productivity does not trail the U.S. across all industries. An Industry Canada study[12] found that mining, construction and a number of resource manufacturing sectors were more efficient in Canada than the U.S. in 1999. However, the study also shows that, the productivity gap is broadly pervasive across sectors. Canada was found to have weaker productivity in 17 of 26 service and goods producing industries.

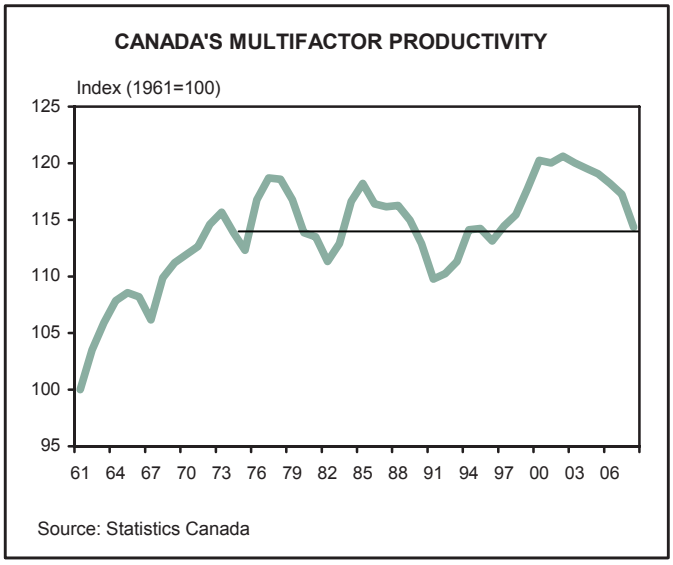
A multifactored problem

This empirical evidence highlights the severity of









Canada's productivity shortfall relative to the U.S. and the rest of the world. To shed further light on why Canada's productivity growth is falling short, labour productivity growth can be broken down into three elements – capital deepening, labour composition and multifactor productivity – see box for details. Improvements to productivity growth through capital deepening and labour composition in Canada remain broadly in line with international trends. As the chart above highlights, it appears that anemic multifactor productivity growth has accounted for the bulk of Canada's shortfall measured against a broad cross section of industrialized nations.

Vast gap between Canadian and US MFP

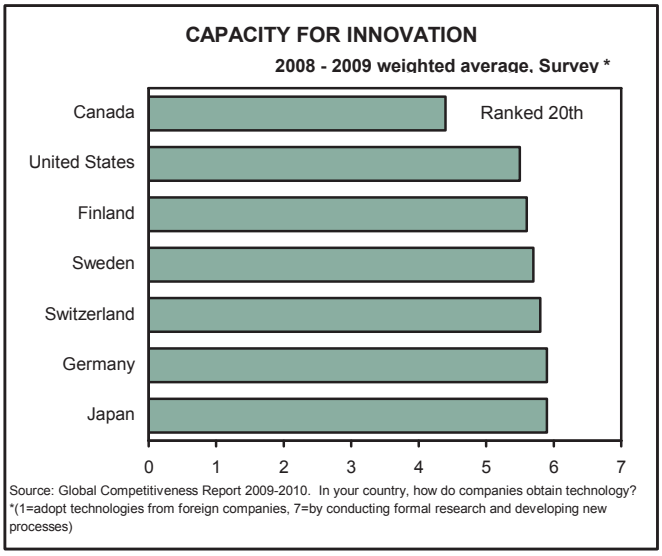
The bulk of Canada's productivity gap with the U.S. is also manifest in multifactor productivity. One Industry Canada study[13] estimated that between 70 and 80% of the labour productivity gap was accounted for by a lower level of multifactor productivity. Despite not accounting for differences in the quality of labour and capital, this study offers striking evidence of a vast shortfall in Canadian MFP. Further, a recent Statistics Canada study found that between 1996 and 2006, nearly the entire differential in productivity growth was accounted for by MFP[14]. Regrettably, identifying Canada's MFP ailments does not constitute a meaningful diagnosis. Given the multitudes of intangible factors comprising MFP, this is an area which warrants deeper study – a point we will to return at length later.

Since the studies mentioned in the previous paragraph, Canada's MFP has continued to deteriorate. The most recent data shows that Canada's multifactor productivity has failed to grow in nearly 40 years. Yes, you read that correctly, 40 years. In other words, by 2008, the level of MFP in Canada was the same as during the early 1970s. Most of the strong gains realized during the 1990s have been erased since the start of the 2000s. No other single piece of evidence summarizes Canada's productivity challenges more acutely than MFP.

Innovation, best practices, key solutions

There are two key sources of productivity growth: new innovations, and the adoption of best practices. A new innovation could include a process that reduces the cost of producing a good or service, or the development of an entirely new product. Some new innovations are powerful, diffusing quickly across the economy and profoundly impacting the way things are done. But the vast majority of innovations are gradual, as products and processes are subtly refined, until enormous efficiency gains are realized over time. The adoption of best practices occurs when a firm imports existing innovations to improve their production process. Examples of this include purchasing state of the art machinery and equipment (M&E) or new software, and hiring consulting experts to improve management structure.

Distinguishing between these two sources of productivity growth is important. While capacity to develop new innovations is a slippery concept to quantify, there is anecdotal evidence suggesting that Canadian innovation lags other developed countries. Based on international surveys of business executives, the World Economic Forum's[15] "Global Competitiveness Report 2009-2010," ranked Canada's capacity for innovation – a measure of whether companies acquire their technologies through development or from licensing – 20th in the world, well behind leaders such as the United States, Japan and Germany. Further, between



2001 and 2007, Canada's venture capital market generated rates of return persistently 10-15% lower than in the United States[16]. The success of a country's venture capital market is directly linked to the innovative capability of its entrepreneurs. Granted, there remains some debate about the availability of venture financing within Canada, but these persistently low rates of return highlight that new innovative ventures underway are not as successful in Canada as the United States. Indeed, it seems likely that at least some of Canada's productivity woes originate from the business sector's failure to develop new innovations.

Even if Canada's ability to generate new domestic innovations is lagging, businesses can remain competitive by adopting best practices developed elsewhere. Yet this does not appear to be happening. Canada has fallen sharply behind the 'productivity frontier' of the United States. Thus, independent of new innovations, by simply adopting the best practices used in the United States, Canada should be able to improve aggregate productivity a considerable margin. Across the country, there is a tremendous opportunity to increase income and wealth. It is unusual in a well functioning market economy for such large opportunities to go unexploited. Therefore, a key question that needs to be addressed is why Canada has failed to adopt this accessible and existing stock of knowledge?

Why don't Canadian firms adopt best practices?

A partial answer to this question is that a firm's attitude towards innovation is almost certainly linked to the priority placed on adopting an industry best practice. If Canadian firms are not innovating and failing to rapidly adopt existing opportunities, then perhaps something is distorting the incentives that motivate businesses to make profit maximizing decisions. If this is the case, then it would appear that one solution to Canada's productivity challenge would be to reform the existing policy environment and align the incentives for businesses to become more productive.

Regrettably, while there remains room for improvement, recent policy reform has not boosted the country's productivity growth. As such, it appears that there is more to Canada's challenges than simply misaligned incentives. If policy alone cannot account for Canada's struggles, economists and policy makers need to broaden their horizons and explore other potential causes of Canada's productivity shortfall.

One possibility is that businesses in Canada are simply not industrious and adventurous enough to drive productivity growth forward. A qualitative claim of this nature can not be proved, but recent evidence suggests the possibility cannot be ruled out. Indeed, key elements of Canada's history and industrial structure may have nurtured a complacent business culture. Unfortunately, even if Canada's productivity challenges could be explained by business attitudes, such a diagnosis offers no cure. As such, new approaches to tackling Canada's productivity challenges are needed.

Innovation Policies

While most public policies impact productivity by setting the economic and business environment, others target specific activities linked to innovation. The largest such programs in Canada have involved R&D. A prime example is the Scientific Research and Experimental Development (SR&ED) program which offers tax credits in excess of $4 billion a year to encourage R&D. Yet, as Andrew Sharpe has pointed out[17], R&D is only a small part of the innovation process.

Many researchers feel that government initiatives should focus more on the complete process of improving productivity rather than just encouraging R&D. Part of this would involve programs that facilitate the adoption of best practices. But it could also be expanded to other areas as well. For instance, an important part of the government's innovation plan involves ramping up post-secondary research. This is great, but it could be more effective from a productivity context if businesses were closely involved and driving commercialization within the research process.

Lifting the lid of the productivity black-box...

A new approach to studying productivity is to think of it as a 'black-box'. Firms collect inputs from a variety of sources – workers, raw materials etc. – place these inputs into the production process – our so called 'black-box' – and out come finished goods. Typically, economists leave this 'black-box' untouched and assume firms are doing their best to extract as much output as possible from a given set of inputs. If firms are failing to do this, then the blame is generally placed on policies that discourage businesses from maximizing their efficiency. Yet, if policies are not distorting the production process in a major way, then economists must start exploring the box's internal circuitry.

Peering into this 'black-box' requires analyzing productivity on many levels. For the most part, the figures mentioned in this report have addressed the aggregate productivity of Canada's economy. Yet, Canada does not produce just one good, and national productivity reflects the combined impact of many different industries and thousands of individual firms – both large and small. Every industry and firm has unique capital requirements, indicators of key performance and management structures. And within every industry, some firms perform well while others struggle.

…which is at the bottom of the sea

This heterogeneity of productivity performance down to the firm level creates an enormous challenge for researchers, which is why much productivity policy research over the past 20 years has taken an aggregate view. This has allowed economists to diagnose Canada's anemic productivity growth and develop a useful framework of key policy recommendations. Unfortunately, they haven't hit their mark.

Serious questions are now being raised about what is going on at the firm level. As a result, research has been increasingly geared towards untangling the intricate workings of the 'black-box' – an enormously unwieldy task. Given the peculiarities of every industry and firm, it is easy to miss seeing the forest for the trees. It will take a small army of researchers to tackle the sheer volume of questions. Yet somehow, economists and others such as business behaviour specialists must find a way to utilize the knowledge of firm behaviour available at the micro level and integrate it into the larger macro framework.

Andrew Sharpe's Framework for Unbundling Productivity Growth in Canada
Overarching Research Question
Research Diagnostic
Identification of Knowledge Gaps
Development of a Research Strategy and Methodologies
Policy Recommendations

Success will depend on clearly defined goals for the researchers. Recognizing this necessity, Andrew Sharpe recently set forth[18] an excellent research framework in his 2010 paper: "Unbundling Canada's Weak Productivity Performance: The Way Forward." Sharpe's research agenda clearly states the goal of future productivity studies, the research tools available, those that need to be developed and the knowledge gaps to be filled. A coordinated research effort such as this will ensure progress towards detangling the black box is as productive as possible.

Lack of Skilled Managers an issue

Ultimately, deeper micro analysis may help identify the key sticking points slowing productivity growth, which can then be integrated back into the broad macro framework. An example of the results achievable through this method are recent detailed micro-analyses of peoples' attitudes conducted by the Institute of Competitiveness and Prosperity (ICP)[19]. These surveys have led its leader Roger Martin to conclude that a key source of Canada's productivity challenges originates from a lack of skilled managers. Once key shortcomings such as these are identified, the appropriate macro policy prescriptions can be put in place.

There remains considerable scope to deepen our understanding of the forces holding back Canada's productivity growth. And integrating micro analysis with the macro setting will eventually help clarify exactly what form Canada's future policy agenda should take. But, policy can only do so much to nudge the balance of decision making in the right direction. If the cornerstone of Canada's productivity challenges originates from the attitudes of the country's businesses, policies further sheltering competition are counter productive. As global competitiveness continues to grow in the coming decades, Canadian business will have to relearn how to swim with the world's top innovators or Canada will continue to sink down the chain of global economies.

The Battle Plan

The remainder of this report delves into the topics identified above. To start, we explore the state of Canada's policy environment with respect to major issues impacting productivity. While Canada's productivity woes appear to be deeper than just policy, there remains considerable scope for improvement. Next, we address the hypothesis that

historical policies and economic structure have adversely affected the attitudes of Canadian business culture, and led to the development of a business sector that lacks the entrepreneurial gusto necessary to compete effectively in the newly globalized economy. Following this, we investigate recent efforts to break open the 'black-box' and really get to the heart of what has been holding Canada's economy back from realizing its potential. Finally, we present our thoughts on a future approach to tackling the productivity issue in Canada.

Policy has not remained idle…or had desired effects

As a first step in analyzing the recent slowdown in Canada's productivity growth, we explore how the Canadian public policy environment has evolved in recent history. One key conclusion is that while a number of important reforms remain, policymakers in Canada have done a lot of the right things to promote productivity growth in Canada over the past twenty years. Yet, in spite of these changes, Canadian businesses have failed to make full use of these reforms by adopting new and innovative practices.

It is something of a running joke that economists disagree more often than not, yet there exists a surprisingly broad consensus over a number of policies thought to foster competition and encourage productivity growth. In a previous report, Don Drummond identified and compiled these ideas into an 'Economists' Manifesto for Curing Ailing Canadian Productivity'[20].

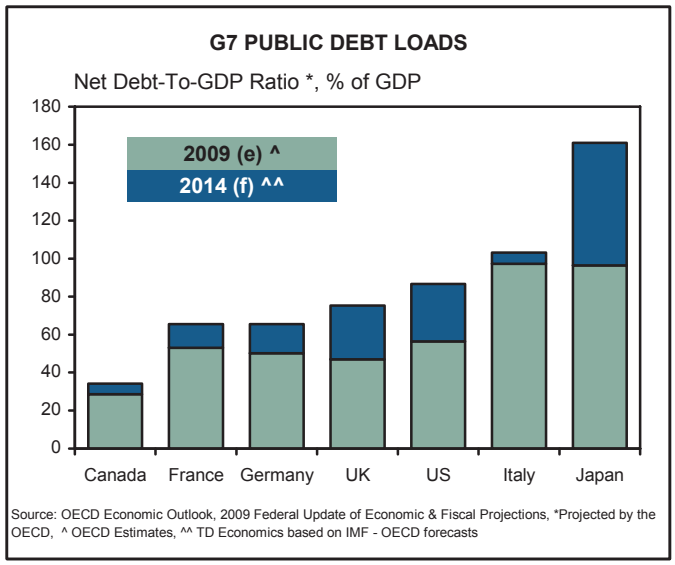
According to The Manifesto, there are six areas in which public policies directly affect an economy's productivity – the macroeconomic environment, the business environment, taxation, immigration, education and infrastructure.

Economists' Manifesto for Productivity
Public Policy
Macroeconomic Environment
Monetary Policy
Fiscal policy
Business Environment
Free Trade Agreements
Interprovincial barriers
Foreign ownership restrictions
Barriers to firm growth
EI Reform
Regulatory Burden
Taxation
Reduce the cost of capital
High marginal effective tax rates on personal income
Immigration
Infrastructure
Education & training

The recent recession, demographic trends, and enormous public debts have renewed discussions among many macroeconomists about the importance of productivity growth. Indeed, a boom in productivity growth would alleviate an enormous amount of the pressures building throughout the developed world. As such, experts at the OECD and IMF have started revisiting these issues and encouraging countries to stimulate their productivity by reforming public policies. Such initiatives are encouraging, but to date no conceptually new ideas have been introduced. While this is discouraging for Canada who has implemented so many of these policy reforms, the seeming lack of innovative new ideas speaks volumes about the broad consensus among economists surrounding the value of these key reforms.

To the credit of Canadian policy makers, a number of market orientated reforms suggested by the Manifesto have been put into action since the 1980s – of course the Manifesto did not influence these actions, rather these are policy reforms supported by the Manifesto. To start, macroeconomic policy has become more stable and is generally considered quite credible. In 1991, the Bank of Canada adopted an inflation target which has been an enormous success in maintaining low, stable inflation. Further, moves in the mid 1990s by the Department of Finance to shore up the country's fiscal position have made Canada's public purse one of the most stable in the developed world. The government of Canada has shown considerable willingness to seek-out and engage in free-trade agreements. Notably, the North American Free Trade Agreement (NAFTA) has boosted competitive intensity within Canada by liberalizing trade with the country's largest trading partner – the United States, and reduced the cost of imported capital equipment. Other significant reforms include the privatization of numerous Crown corporations, and considerable reductions in the taxation of capital.

Sadly, the recent trends in Canada's productivity performance suggest that these reforms have not had the desired impact – even though they have likely mitigated what would have been even worse productivity growth. There remains plenty of room for additional efficiency enhancing reforms within Canada. But one would expect that even incomplete policy initiatives focused in the right direction would be having a more sustained impact. Given this seeming paradox whereby Canada's productivity growth has slowed even as prudent reforms have been implemented, a thorough review of the principles addressed in the Economists' Manifesto is in order.



Source: OECD Economic Outlook, 2009 Federal Update of Economic & Fiscal Projections, *Projected by the OECD, ^ OECD Estimates, ^^ TD Economics based on IMF - OECD forecasts

Don't provoke unnecessary storms

The first principle of the Manifesto calls for a stable macroeconomic environment. Businesses and households confront a multitude of unknowns whenever they make decisions for the future. Families face uncertainty over future interest rates when they take on a fixed or a floating rate mortgage. Firms often estimate consumer preferences when they develop new products. An uncertain future is a part of all decision making, but too much uncertainty discourages people from undertaking otherwise worthwhile ventures. Governments can do a lot to promote a stable backdrop by maintaining a predictable price level and stable public finances. Low, consistent growth in a country's prices bestows firms and households with confidence in the long-term real return of their current investments. Persistent deficits and high levels of government debt force the public sector to borrow money from capital markets – which raises interest rates – and heightens the prospects of future tax increases. These higher borrowing costs and steeper future taxes lower expected returns, discouraging current investments.

On this front, Canada has performed quite well. As mentioned above, the Bank of Canada (BoC) has kept inflation low and predictable for the better part of twenty years. Meanwhile, since the mid 1990s, the federal government and most provincial governments made meaningful steps to reduce the country's total debt burden. Also contributing to the country's fiscal stability are the key reforms to the Canada and Quebec Pension Plans (CPP & QPP) which have ensured that the government's enormous pension liabilities are funded as the baby boomer generation enters retirement. Granted, the 2008-09 economic recession has dealt something of a setback to this progress, but the March 4, 2010 budget lays out a plan for an orderly return to budget balances over the next four to five years and most provinces have also set out plans to return to balanced budgets. Meanwhile, the only changes to the inflation targeting regime being considered at the upcoming 2011 renewal talks are a lower inflation target and a possible switch to a price targeting regime – in all likelihood, nothing that will have a meaningful impact on macro-stability. Overall, Canada's macroeconomic policy remains a distinct advantage relative to other developed countries.

Canadian business: Survival of the Fittest?

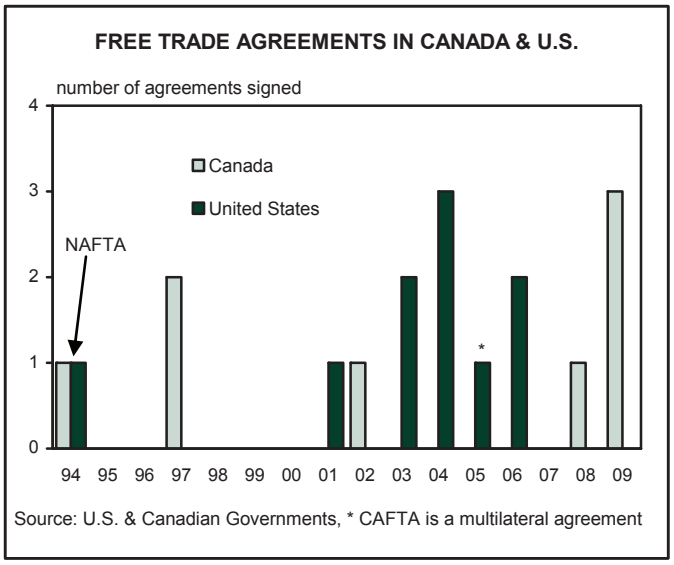
The second principle of the Manifesto calls for increasing competitive intensity in Canada's business environment. Businesses aim to generate and maximize profits. When the competitive pressures in an economy are weak, firms can often times achieve hefty 'low hanging' profits while ignoring the potential profits that come from harder to reach places. As competitive intensity builds, low hanging profits are quickly swallowed up, leaving firms with no choice but to fight for market share. This process forces businesses to take on new challenges, spurring innovative thinking and driving productivity growth.

Canada's historical track record for encouraging healthy competition is mixed, with the balance tilted towards limiting competitive pressures. Encouragingly, the past twenty years have seen policy become more supportive of competition. One of the first moves in this new trend was Canada's Free Trade Agreement (FTA) with the United States, adopted in 1988. This put many Canadian firms in direct competition with American firms. In 1994, the FTA was then superseded by the larger trilateral North America Free Trade Agreement (NAFTA) which included Mexico. Around this time, the government also took the important step of privatizing some key crown corporations such as Petro Canada and Air Canada. Yet still to this day, competitive pressures in Canada remain mixed.

Opening the floodgates!

The benefits to free and open trade are well known and generally acknowledged by economists. Removing barriers to trade lowers the cost of exchanging goods between countries. Free trade opens up new markets and makes Canadian exports more competitive. As well, fewer trade restrictions imply that Canadians can import foreign goods – including capital equipment – for less money, increasing competitive pressure.

Research has examined the impacts of trade competition from NAFTA on Canada's economy. Daniel Trefler of the



University of Toronto[21] found that tariff cuts over 1988-96 had a significant short-run impact, particularly in the manufacturing industry where employment fell by 5%, output by 3% and the number of plants by 4%. While some readers may be shocked by these figures, they provides clear evidence of the competitive forces at work as inefficient firms were put out of business. In contrast to the job losses and plant closures, these same tariff cuts were found to boost labour productivity growth by 0.6% per year in the manufacturing sector and supported increased annual earnings for production workers by 0.8% per year.

The above illustrates that competitive pressures will naturally force some companies out of business. Yet, it is these same pressures that generate strong incentives for domestic firms to adopt the most efficient means of production available. In the long run, these forces will prevail and improve the country's productivity. Rather than fight the constructive forces of competition, Canadians concerned about their fellow citizens should focus on developing a strong social safety net that allows people to regroup, retrain and encourages future efforts to build a successful, competitive business.

The Canadian government has shown a willingness to liberalize the country's trade relations beyond NAFTA. Initially, Canada aggressively sought inclusion with a large multilateral agreement such as those proposed during the Seattle, and Doha trade talks. The benefits of a multilateral agreement would be far greater than a patchwork of smaller bilateral agreements, as any meaningful multilateral agreement would include most of the world's large economies. As a consequence, Canada would immediately gain trade access to a multitude of economies with whom arranging a bilateral agreement would be nearly impossible – for instance, China. Unfortunately, such a wide reaching global agreement has thus far proved elusive, as individual countries find themselves unwilling to let go of policies that protect key domestic industries. In particular, Canada has refused to liberalize its agricultural marketing boards, one of the major sticking points to trade talks.

Unable to secure a multilateral agreement, Canada started actively pursuing bilateral FTAs. Since 2000, Canada has signed FTAs with Jordan, Costa Rica, Columbia and Peru. Negotiations are underway with South Korea, Singapore, and Europe – Canada's second largest trading partner. Generally, these agreements will continue to increase competitive pressures on Canadian firms, open foreign export markets and reduce the cost of imported capital. While these agreements are preferable to nothing, Canada should continue pressing for multilateral deals and when possible, coordinate future deals with the United States.

One concern is that the recent economic crisis has increased populist pressures to protect local industries. Still, the value of FTAs is generally well understood and as the recession fades, support for existing and future agreements should be fully restored.

Why are we shielding key industries?

While Canada has made progress in adopting numerous FTAs, many sectors of the economy still remain shielded from adequate competition. Firms in these industries are not pushed to develop new products, find innovative ways to reduce costs and improve productivity. The general competitive intensity of four major sectors is affected by government policies – financial services, telecommunca-

tions and broadcasting, publishing and air transportation.

In financial services, there are no longer any foreign ownership restrictions, but 'widely held' requirements limit the amount of equity an individual entity can hold. A recent Competition Review Panel[22] suggests that this 'widely held' requirement does not meaningfully impact competitive intensity. Instead, panel members point out that de-facto limits preventing bank mergers greatly reduce the ability of Canadian banks to compete on the international stage which could promote competition.

A separate but important factor reducing efficiency in Canada's financial services industry is the presence of thirteen separate securities regulators across the country. The 2010 federal budget calls for negotiations with willing provinces to create a single securities regulator. Of course, consolidation of the regulatory process would be an unambiguous plus by reducing red tape, but the total impact on productivity would be limited and should not be overstated.

In the air transportation, telecommunications and broadcasting industries, government regulations specifically limit foreign ownership. For instance, non Canadians cannot own more than 25% of voting equity in a Canadian airline. Internationally, foreign ownership restrictions in the airline industry are common practice. However, potential open sky agreements could lead to the development of so called 'global carriers' who would have a distinct competitive advantage over national Canadian carriers.

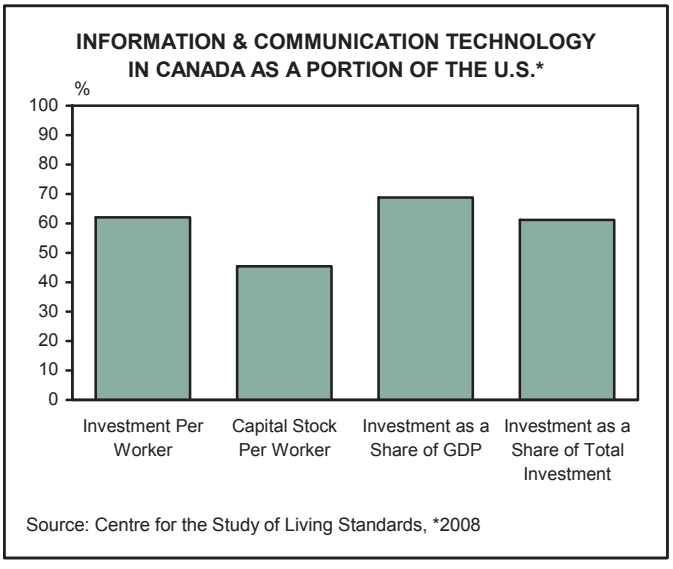
The Investment Canada Act protects Canadian publishing and cultural businesses from competition. Any foreign investment exceeding $5 million in these industries is subject to review by the Department of Canadian Heritage. Limits to foreign competition are put in place to preserve an industry seen as crucial to sustaining Canadian culture. While there may be some merit to these concerns, protecting an industry from competitive forces may not be an effective long run strategy for achieving a strong cultural services industry. Restrictions also disserve Canadians as they limit choices and raise costs.

The Telecommunications Act and the Broadcasting Act both strictly limit foreign investors from establishing control over telecommunications and broadcasting companies. These restrictions have severely limited the competitive intensity of the industry, as capital for new ventures must be raised predominately within Canada's domestic market.

ICT equipment plays a key role improving productivity in a modern economy. Yet, Canadian businesses have consistently underinvested in ICT – particularly communications equipment. In 2008 Canada's business sector held just 27.2% of communications[23] ICT equipment per employee as the United States.

By making investment in ICT technologies more expensive and discouraging the adoption of best practices, a non-competitive telecommunications industry could be adversely affecting the decisions by Canadian businesses to invest in crucial ICT equipment. The impact of this distortion could be profound. One study conducted by Bell Canada on behalf of the 2005 Telecommunications Policy Review Panel[24] found that underinvestment in "ICT accounted for 60% of the Canada-U.S. labour productivity gap in 2000 and 56% in 2003," -- other studies have found the impact is significantly less. Regardless, this study highlights that Canada has not kept pace in adopting and maintaining state of the art ICT capabilities necessary in today's high paced information driven economy. As such, they propose reducing telecommunications regulations and encouraging firm investment into ICT through accelerated capital depreciation.

Thankfully, recent developments may help increase competitive pressure in Canada's highly protected telecommunications industry. Recognizing the limited competitive intensity of the industry, the federal government issued a Policy Direction in 2006 requiring the CRTC to take a more market based approach when implementing the Telecommunications Act. Further acknowledging the necessity for change, the March 2010 Speech from the Throne specifically highlighted the importance of opening Canada's satellite and telecommunications industry to foreign investment. Then, at the end of last year, the government overturned a decision by the CRTC to block Globealive Communication from competing in Canada's cellular phone industry. Initially, the CRTC had blocked Globelalive citing concerns that the company's reliance on foreign financing could lead to de-



facto ownership by a foreign company. While it is too early to tell what precedent this ruling may set, it is encouraging to see a shift in the attitudes of policymakers towards greater competition within the telecommunications industry.

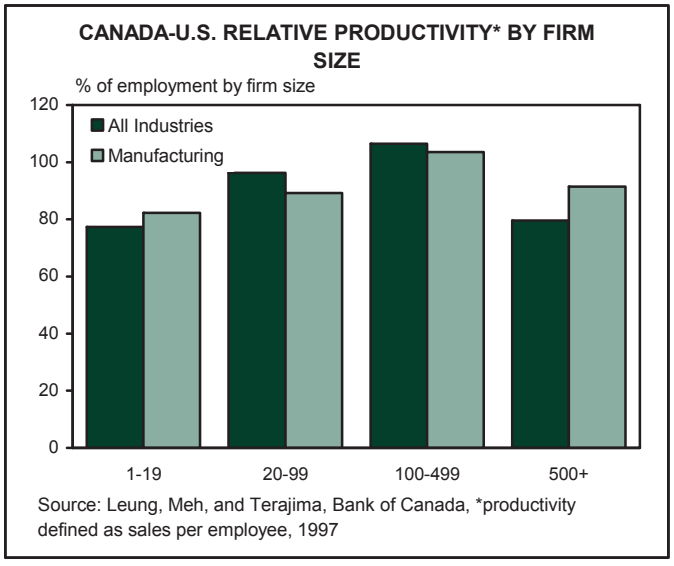
Encouraging small business owners…to stay small?

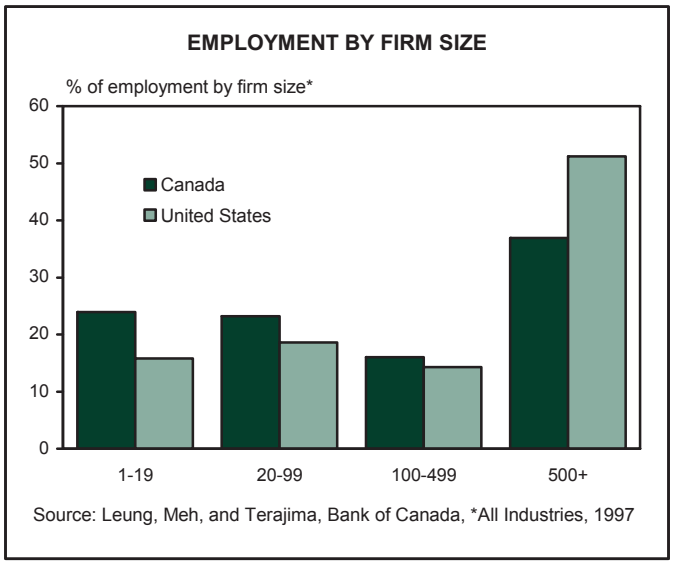
Another area where Canadian policy has failed to promote a competitive business environment is barriers discouraging the growth of small firms. Granted, Canadian policy makes starting a business a relatively simple affair. Research suggests that in 2003, Canada had the fewest barriers to entrepreneurship in the OECD[25]. Still, once small firms are formed; they are discouraged from growing, offsetting the benefits of being able to easily start a business. Small businesses are crucial to economic growth. Young innovative firms introduce fresh thinking and new ideas that can challenge larger existing firms. However, for small firms to effectively increase competitive intensity, it is crucial that they scale up their innovative practices by becoming medium and large sized firms.

Canadian firms tend to be smaller than American firms. The largest differences in firm size between Canada and the U.S. exist at the small (less than twenty employees) and very large (more than 500 employees) size. A 2008 study from the Bank of Canada found that in 1997, around 24% of Canadians were employed by small businesses in contrast to around 16% for Americans[26]. Further, only 37% of Canadians worked for very large firms, whereas 51% of Americans did. With the exception of the mining, oil and gas industry, this trend held across sectors.

Big firms are more productive…

Evidence suggests that large firms are more productive





that small firms. In a 2002 report , Baldwin, Jarmin and Tang[27] found that small Canadian manufacturing firms were 46% as productive as large firms in 1997 – the report also shows that large firms have been growing increasingly productive relative to small firms. Intuitively this makes sense, as large firms benefit from improved scale allowed by large capital investments. In addition, to have grown into a larger firm in the first place, businesses had to adopt productive methods of generating output. Leung et al.[28] from the Bank of Canada extended this notion in 2008, and explored some productivity measures for sectors beyond manufacturing. They found that while the productivity gains realized by firm size are greatest within manufacturing, a positive relationship exists between size and productivity across most industries. Another useful result from this report suggests that roughly 19% of the productivity gap between Canada and the United States can be accounted for by differences in firm size.

One conclusion to be drawn from these studies is that while small businesses are integral to economic growth, the turnover rate of small firms should be high. If a new business has a smart and innovative idea, then that firm should grow quickly into a medium or large sized enterprise. If the new business idea does not pan out, then the firm should go out of business quickly, freeing up its resources for other entrepreneurs.

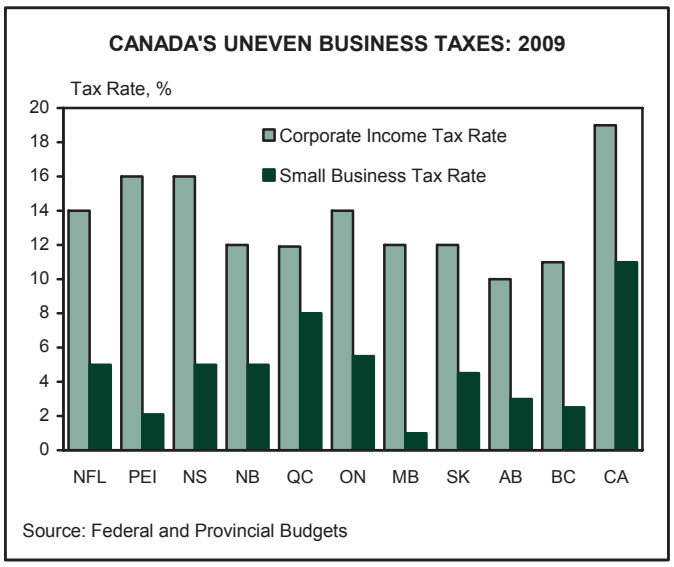
Several reasons might account for different firm size in Canada and the United States. For one, Canada's smaller domestic market may allow for less opportunity to scale operations. This factor has likely had a significant impact. While considerable tariff reduction has helped, many Canadian exporters remain a considerable distance away from their primary markets which has been shown to affect trade

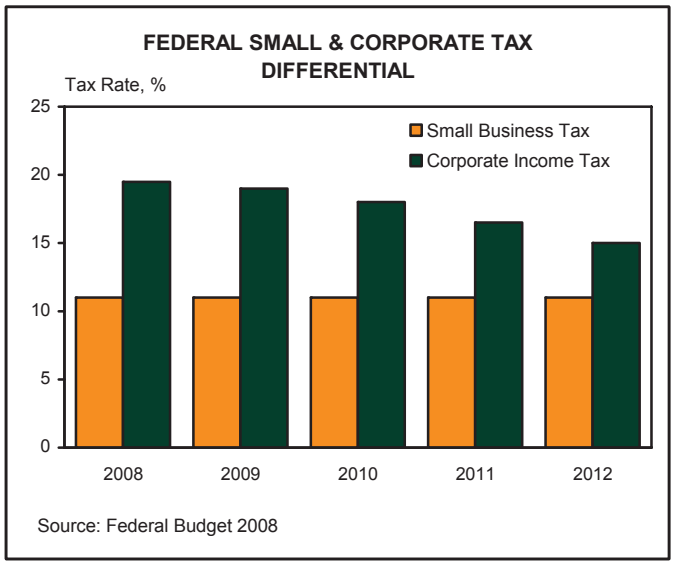
volumes. Still, part of the problem could be that Canadian firms are simply less aggressive in expanding and growing into large firms than in the U.S.

Small business subsidies discourage firms from growing

At least part of the unwillingness of Canadian firms to expand is related to policy. Tax and subsidy regimes intended to support the creation of small businesses inadvertently reduce the incentive to become large firms. Currently, at the federal level, small businesses with less than $10 million of taxable capital pay 11.0% tax on the first $500,000 of income and then pay the corporate income tax (CIT) rate of 19.0% on additional income. As a firm's taxable capital increases to $15 million, the tax rate steadily grows from 11.0% to 19.0%. In a notable attempt to address this problem, the federal government has pledged to reduce the corporate income tax (CIT) to 15%, which is much closer to the 11% rate paid by small business.

Such a reduction in the CIT moves part way towards reducing the incentives for businesses to remain small, yet considerable distortions persist across provincial jurisdictions. Despite the federal governments call for all provinces to reduce the general CIT to 10% by 2012, to date, the only provinces to commit to this reduction are Ontario, B.C., and New Brunswick –Alberta already maintains a 10% CIT. In contrast, Manitoba is trying to eliminate its small business tax, while Nova Scotia and Ontario are both set to reduce their tax rates on small businesses, creating wider distortions. As it stands, when a firm's income exceeds the $400,000 or $500,000 mark, median provincial business tax rates jump from 4.75% to 12%. Accordingly, the strategy of many small businesses in Canada will be to keep taxable





capital under $10 million and profits under $500,000.

In addition to the CIT, a number of other policies impede the growth of small business. First, the federal Scientific Research and Experimental Development (SR&ED) program – intended to spur R&D in Canada – provides fabourable terms to small businesses, unintentionally discouraging firms from growing. There is a 35% credit for the first $3 million in expenditure for small firms but only a 20% credit for corporations on expenditures exceeding $3 million. Second, several provinces – Ontario, Newfoundland and Labrador, Manitoba, and Quebec – raise revenues with a payroll tax, yet the tax only kicks in after payrolls cross a certain threshold. Therefore, in addition to avoiding the CIT, firms in these provinces have a greater incentive to keep payrolls at a low level. Third, eligibility conditions for a lifetime capital gains exemption available on $750,000 of income favour small businesses. As well, capital gain deductions for small business investors encourage firms to keep their total assets under $50 million to retain access to key sources of capital. Finally, as firms become larger and hire more employees, they must jump through an increasing number of regulatory hurdles.

Canada should champion its small business owners. But small businesses are not great because they are small. Rather, a fluid and dynamic small business sector with plenty of turnover is a part of a healthy, innovative and well functioning economy. Policy should reflect this and not discourage firms from achieving their full potential. Granted, further research is needed to fully grasp the effect of firm size on Canada's productivity, but the evidence is clear that large firms are more productive, so it simply does not make sense to discourage this growth.

Alberta sounds nice; too bad I'd have to give up my EI

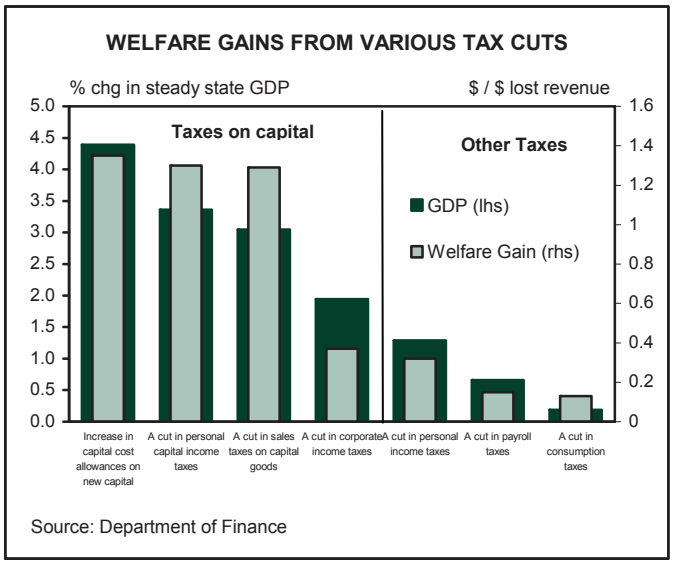
Moving away from firm size, two other key policies continue to stymie Canada's overall business environment by preventing efficient labour market outcomes – interprovincial barriers and the Employment Insurance (EI) program.

Considerable barriers prevent the free flow of goods and people across Canada's provinces. For instance, many provincial accreditations are not recognized nationally, discouraging classes of workers from pursuing opportunities outside of their home province. Further, different provincial product regulations limit trade in certain goods, and have been cited as a stumbling block in FTA talks with the European Union. Recognizing this problem, BC and Alberta recently signed a bilateral agreement –The Trade, Investment and Labour Mobility Agreement (TILMA) – which went into effect in 2007. Then, in the early part of 2010, Alberta, BC and Saskatchewan signed a new interprovincial trade deal. Separate from TILMA, the New West Partnership will eliminate most existing labour and trade barriers between Canada's three western provinces. While this is a positive development it is not an acceptable substitute for an extensive national agreement. On net, the impact of improved provincial trade may not be that substantial, but it remains an embarrassing and unnecessary constraint on mobility across the country.

A second challenge is that Canada's EI program continues to encourage workers to stay in regions of the country with high levels of unemployment. As currently structured, EI participants in areas with high rates of unemployment are not required to work the same number of hours to become eligible for EI as workers in lower unemployment regions. Standardizing these variable entrance requirements would largely remove mobility distortions, while also making the system fairer. Another problem with EI is that workers in many industries are paid more benefits by the system then they pay in. To address this, the ICP[29] suggests adopting an 'experience rating' whereby employers in industries which make greater use of the system pay higher premiums than those that use the system less. Further EI reforms could be geared towards improving the opportunities for workers with obsolete skills to retrain.

Canada's CENTSable reforms on taxing capital…

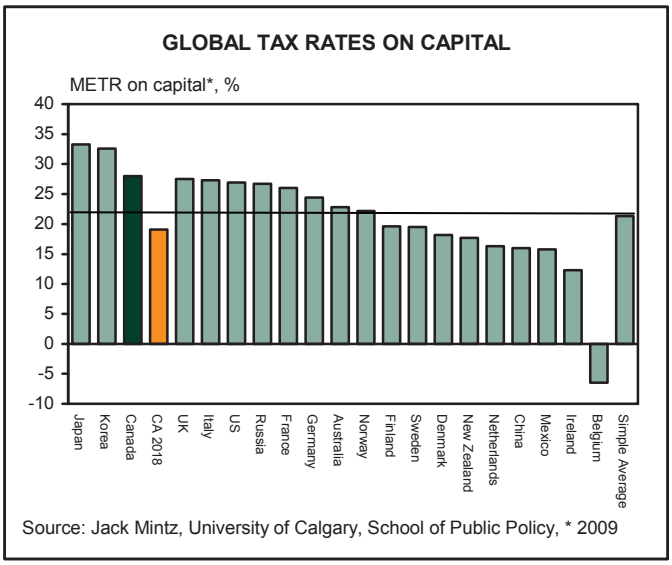
The third principle of the Manifesto calls for a tax system which does not discourage working or investing in capital. Taxes have a direct and noticeable impact on the behavior of firms and households by changing the relative price of goods. An income tax on earnings reduces the relative cost of leisure, encouraging people to work less. Taxes on capital will influence a firm to employ more labour and less capital. As such, ill targeted tax policies can discourage investment in key productivity enhancing capital goods, or affect people's decisions to work.



Source: Department of Finance

The benefits of reducing taxes on capital are founded in economic theory and supported by a wide range of research. For instance, a 2004 Department of Finance report by Baylor and Beausejor[30] found that welfare gains from tax cuts are highest when taxes on capital are lowered. According to this study, increases in capital cost allowances[30] (CCA) are found to have the largest social welfare benefits with a $1 loss in present value of government revenue resulting in $1.35 of welfare improvements. Other tax cuts bearing considerable welfare gains include the sales taxes on capital goods, personal capital income taxes, and corporate income taxes (CIT). In contrast, the welfare costs are found to be lowest for cuts to consumption, payroll and income taxes.

Two federal government initiatives have been instrumental in reducing Canada's tax on capital – the elimination of capital taxes and reductions to CIT rates. A capital tax is a highly distortive tax charged to corporations based on how much capital – eg equity & debt – they hold. Thankfully, capital taxes are almost a thing of the past in Canada – although some provinces still maintain ill-advised capital taxes on financial institutions. These taxes are well known for being very inefficient, as they drive up consumer prices, discourage investment, and punish firms and industries that rely on large stocks of capital. Estimates suggest that the welfare cost of capital taxes is around $0.90 for every dollar of government revenue. The federal capital tax on large corporations was eliminated in 2006. Meanwhile, the federal government has encouraged most provinces to



phase out their remaining capital taxes. Notably, Ontario will eliminate its capital tax in 2010 with Quebec set to follow suit in 2011.

Moreover, steps have been made to lower CIT rates in Canada. While not as damaging as capital taxes – Baylor and Beausejor found CITs impose a welfare cost of $0.40 per dollar raised – CITs diminish a company's net income. In turn, reduced profits lead to smaller dividend payments and lower rates of return on capital investment, causing economy wide capital investment to shrink. The federal corporate income tax rate is set to fall from 19% in 2009 to 15% in 2012. Provincial CIT rates are falling too. Ontario, B.C. and New Brunswick are leading the charge in lowering rates. The CIT is set to fall from 14% in 2009 to 10% in 2013 Ontario, B.C.'s CIT rate will be 10% by 2012, while New Brunswick's rate will shrink from 11% in 2010 to 8% in 2012.

These initiatives and other federal and provincial proposals will further reduce the marginal effective tax rate (METR) on capital across Canada from 28% in 2009 to the internationally competitive level of 18.9% in 2013[31]. Of particular help will be the harmonization of provincial retail sales taxes with the GST in Ontario and in British Columbia, which contribute more than 5% points to this national decline. As these provincial retail sales taxes exist now, goods purchased for final consumption are not distinguished from goods purchased as inputs into the production process. For example, a home renovator will get taxed for purchasing tools used during construction, and ultimately pass these costs onto the home buyer. Estimates in Ontario suggest that around a third of the money raised by the current retail sales tax originates from the purchase of production inputs. Sales tax harmonization will eliminate this 'double' tax and lower the cost of purchasing capital goods used in production.

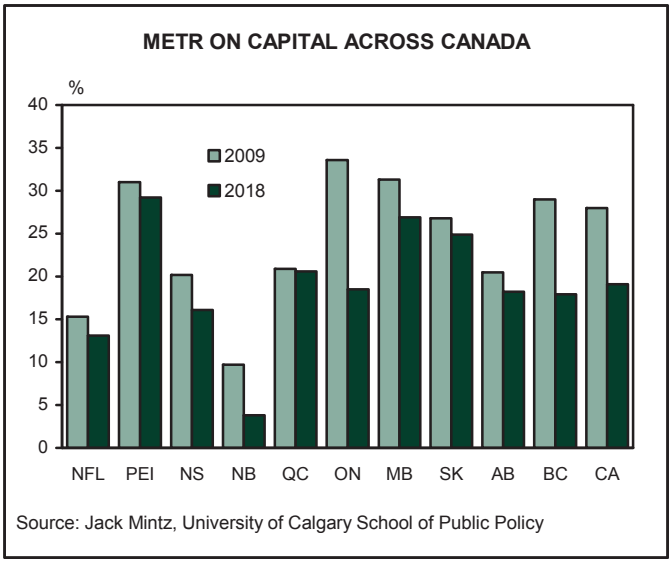
…The payoff could be huge

Indeed, estimates of the probable benefits from sales tax harmonization are large. Research conducted by Michael Smart in 2007[32] indicates that tax harmonization in Canada's Atlantic Provinces may have increased investment in M&E by 12%. In a recent report commissioned by the province of B.C., Jack Mintz estimates[33] that the plans to harmonize the provincial sales tax will result in an $11.5 billion increase in capital investment and the creation of 113,000 new jobs by 2020. Meanwhile, Dr. Mintz has estimated[34] that by 2020, the combined effect of Ontario's extensive range of tax reforms - including the elimination of capital taxes, the lowering of the provincial CIT and harmonizing the sales tax - will result in a $47 billion increase in capital investment, improved annual incomes of 8.8% and nearly 591,000 new jobs. Given the size of Ontario's economy relative to Canada, these reforms will make a noticeable impact on the entire country.

In addition to these reductions, two important measures were announced in the federal 2010-11 budget aimed at reducing the cost of investment in Canada. The first measure calls for eliminating all remaining tariffs on imported machinery and equipment, which will lower the cost of imported capital by an estimated $300 million. The second measure effectively lowers the tax on capital paid by foreigners by lowering the bureaucratic hurdles necessary to invest in Canada. Prior to the 2010-11 budget, foreign investors were subject to a 25% tax on various investments in 'Canadian property,' which included capital gains. Foreigners could obtain an exemption from this tax, but the process involved extensive red tape including long waiting periods that effectively raised the cost of investment. As a result, many foreign investors simply directed their funds towards

ESTIMATES OF ONTARIO'S 2009 BUDGET MEASURES BY JACK MINTZ
Within ten years Ontario will benefit from…
- increased capital investment of $47 billion
- increased annual incomes of up to 8.8%, or 29.34 billion; and
- an estimated 591,000 net new jobs

ESTIMATES OF B.C.'s 2010 TAX INITIATIVES BY JACK MINTZ
By 2020 British Columbia will benefit from…
- increased capital stock of $14 billion
- an estimated 141,000 net new jobs



other countries with less punishing regulatory burdens. The repealing of this rule should encourage more foreign capital investment to flow into Canadian business.

Further productivity enhancing improvements could be made to capital investment policy in Canada if provincial governments stopped encouraging select forms of investment. Provinces including New Brunswick, Quebec and Nova Scotia have seemingly low METRs on capital, but these low rates are the result of different tax rates on capital which favour investment in specific industries. Also, Canada's generous R&D tax credits support investment in research driven industries, and are not included in the METR estimates. The side effect of such distortions is excessive investment in select sectors, which detracts from potential investments in other more efficient areas.

Recent plans have helped put the taxation of capital in Canada on the right track, but Canadians must resist the temptation to reverse these steps to address the country's recent budget deficits. Furthermore, as many of these initiatives have only recently been implemented, Canadians must be patient for the powerful effects of capital investment to propagate through the economy, sparking improved productivity and ultimately higher incomes.

In addition to taxing capital, the METR on low and modest income earners remains punishingly high. For low income families, earning additional income requires sacrificing various social welfare benefits, which can actual lower a household's net income. This clearly provides little incentive to work additional hours. While not directly linked to productivity, lowering this burden could contribute to higher labour market participation, and have a positive long run impact on labour composition as workers skills don't atrophy but improve through on the job experience.

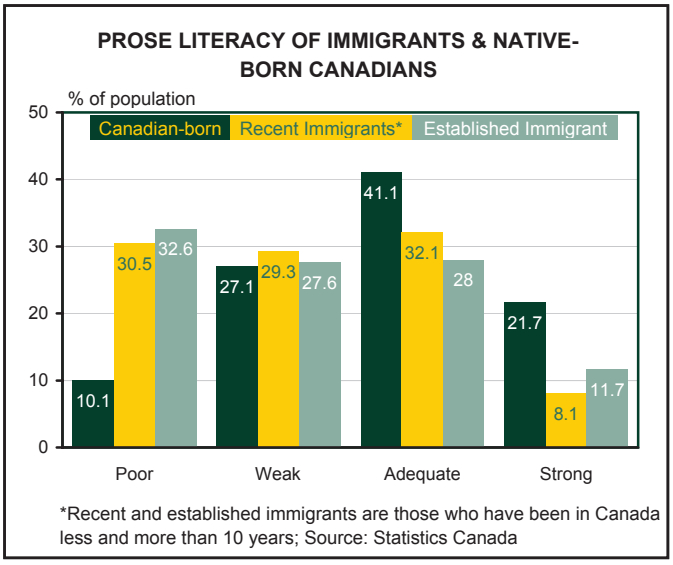
Immigration, a story of underutilized opportunities

The fourth policy principle outlined in the manifesto calls for a more efficient immigration system. Estimates by Statistics Canada suggest that by next year (2011), immigration will account for all of Canada's net labour force growth. As such, this principle could be the most pressing challenge confronting Canadian productivity growth over the next twenty years. To ensure that immigration contributes positively to future productivity growth, policy must deal with two broad sets of challenges. First, Canada must find ways to attract and retain the brightest talent from around the world, even as other developed countries compete to attract these same individuals. Second, upon arriving to Canada, immigrants must be effectively integrated into the economy in a manner which ensures their productive potentials are reached.

Canada could do a better job of attracting and facilitating the immigration of highly skilled candidates who would help improve the country's productivity. During the past nine years, the inventory of unprocessed applications in the Federal Skilled Worker category has ballooned to over 620,000. As a consequence, applicants have had to wait an average of over five years before learning whether or not their applications have been approved. Naturally, these extended waiting periods leave a number of high-quality applicants frustrated with the process and prone to emigrate to other countries, leaving job vacancies in Canada unfilled.

Recent policy reforms have made steps in addressing some of these challenges. In 2008, to reduce the inventory of applications and better tailor immigration to where jobs exist in Canada, Citizenship and Immigration Canada (CIC) made the application process more stringent by requiring all new applicants to have experience within at least one of 38 occupations preselected on the basis of perceived worker shortages. A flexible policy which targets key skills will be crucial to addressing Canada's future labour force challenges. However, the Fall 2009 Report of the Auditor General of Canada points out that sufficient policy analysis may not have been conducted when these new application requirements were adopted. As a result, consultations are underway, and policy should become increasingly geared towards creating a dynamic system that allows applicants with the skills needed by Canadian businesses a quicker route into the country.

Canada must also find better ways to help immigrants effectively integrate into the economy. The recent evidence



on immigrant outcomes is quite distressing. To start, immigrants participate less in the labour force, and those who do have a harder time finding jobs. In 2005, the unemployment rate among Canadian born members of the labour force was 4.9%, whereas it was 11.5% for people who had immigrated within the past five years.

Equally alarming is the inability of Canada's economy to make efficient use of the skills immigrants import into the country. In 2005, the median wage of recent immigrants with a university degree was just $24,636 in comparison to $51,656 for a university educated Canadian born worker. Another key figure shows that roughly 60% of all immigrants with university educations are over-qualified for their jobs, whereas only 40% of Canadian born workers report the same over-qualification.

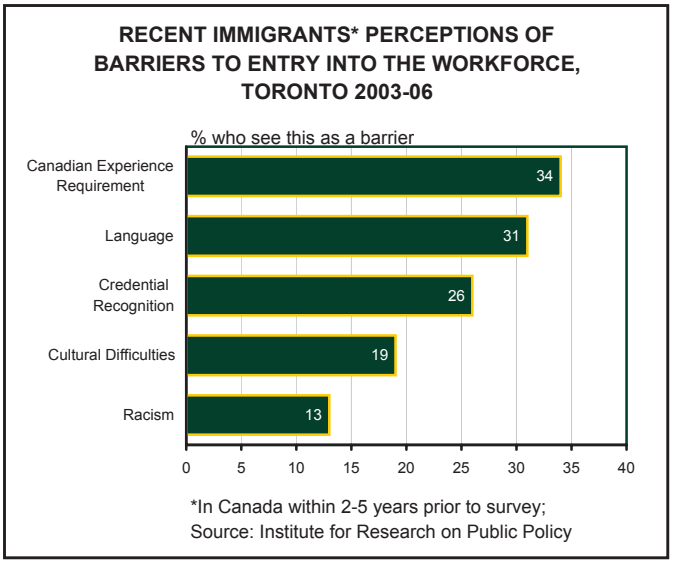
One factor constraining the effective integration of immigrants is enormous language and literacy challenges. In 2006, the native language of 80% of recent immigrants was neither French nor English. Incidence of poor prose literacy among recent and established immigrants was greater than 30% in 2005, while only 12% of established and 8% of recent immigrants demonstrated strong literacy skills. Statistics Canada has also identified language problems as one of the major obstacles preventing immigrants from finding an adequate job. In general, public policy must address these language challenges and find effective ways to recognize more foreign credentials and fill missing requirements more efficiently. On this front, the Pan-Canadian Framework for the Assessment and Recognition of Foreign Credentials – likely to be implemented by 2012 – is a promising initiative which aims to inform applicants within one year on whether or not their qualifications will be recognized within Canada.

Focusing on the characteristics of successful immigrants could be the key to achieving better results across the system and supporting a more productivity society. By utilizing current knowledge – and expanding that knowledge through further research – the immigrant selection process could be better targeted towards those individuals that are most likely to succeed when they arrive in Canada. A sharper focus on selection criteria will address two major problems simultaneously by reducing the inventory of applications and maximizing the economic and social contribution of selected candidates.

There are four characteristics known to impact the prospects of successful integration among new immigrants – language, education, occupation, and Canadian contacts. Quantifying the importance of these attributes to successful integration would require detailed panel dataset that tracked immigrant characteristics and outcomes. While such a detailed dataset may not exist, it is reasonable to suspect that enhancing requirements along the above lines could have an enormous impact based on the data currently available.

While language skills are assessed during the immigration process, a plethora of evidence shows that these skills remain a barrier to success for many immigrants. One reason for this is that the language proficiency necessary to immigrate likely does not reflect the level demanded by Canadian employers. As such, increasing required language skills to fall inline with the levels expected by Canadian businesses could go along way to improving success of immigrants.

Surveys indicated that getting education and experience acknowledged by employers is one of the biggest challenges facing newcomers to Canada. As mentioned above, the wheels are in motion in terms of helping notify immigrants whether or not their resumes will be recognized in Canada.



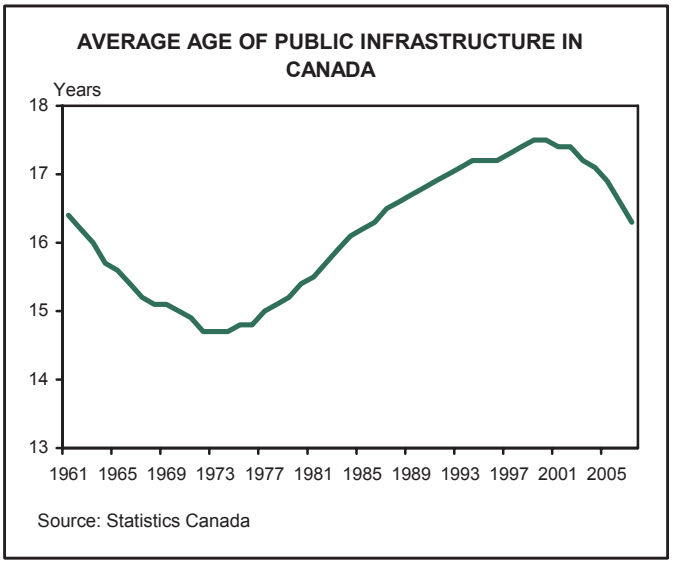
But the process needs to move beyond recognition. Immigrants with jobs lined up immediately face an improved chance at successfully integrating because they are on solid financial footing and have improved social opportunities. Beyond this, candidates with recognized degrees and experience in fields that are in high demand will face a much better chance of finding employment quickly with all its associated social and economic benefits.

Finally, a candidate's connection to Canada must be considered. Those with friends and family are more likely to be successful as they can leverage their networks to find work, and integrate more effectively into society.

Overall, the Government of Canada and CIC have acknowledged the importance of immigration policy to Canada's future. While there is room for improvement, administration and attitudes have become far more proactive than they once were. Moving forward, a sharper focus should be paid on adopting selection criterion that will improve the probability of an immigrant integrating successfully into Canada and potentially reduce the pressures on application inventories.

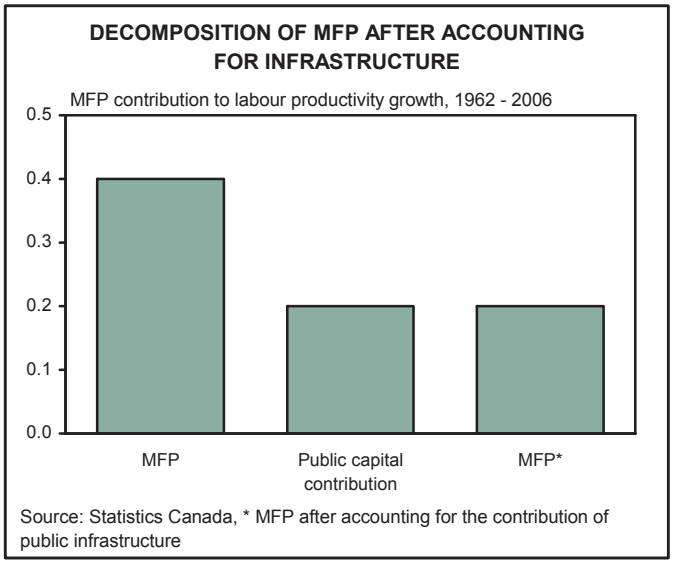
Infrastructure: the bricks and mortar of productivity

The fifth principle in the Manifesto calls for sustained public sector investment in infrastructure. Transportation, communication, electricity, health, education and sewage systems are all at least partial public goods which necessitate government support to maintain at an economically and socially optimal stock. As Jonh Baldwin of Statistics Canada has noted, inadequate public infrastructure can severely disrupt economic activity. For example, national economic output fell by nearly 1.0% in the month of the August 2003 blackout in Eastern Canada. While major disruptions such as the blackout have a clear and direct effect on output and productivity growth, the damaging impact of poor infrastructure is often not nearly as visible. Inadequate transportation infrastructure can reduce the ability of goods producing manufacturers to ship their products, or cause traffic backlogs which increase the time it takes for people to get to and from work.



A recent Statistics Canada report considers the impact of public investment in infrastructure on MFP[35]. The results show that a considerable portion of improvements to MFP during the 1960s and 1970s were the direct result of large public spending on highway and transportation infrastructure – even after netting out the impact of public infrastructure, a distinct slowdown in MFP growth did occur in the 1980s. Overall, the study estimates that public infrastructure spending can result in approximately a 17% rate of return (RoR). Given the current state of Canada's infrastructure, it is unlikely that the considerable low hanging fruit of the 1960s and 1970s still permits such a high RoR. Regardless, considerable productivity enhancing improvements exist through improvements to key transportation and electricity infrastructure within the country's major cities and at busy border crossings.

In general, Canada's governments have increased spending on infrastructure development since around 2002. In part, the response stemmed from an accounting change that allows project costs to be amortized across existing life. This ramped up spending has had a noticeable impact, as the average age of infrastructure has declined throughout the country. Meanwhile, public investment in infrastructure has recently increased through federal and provincial stimulus spending. From 2009 – 2011, the Infrastructure Stimulus Fund alone will provide $4 billion to support various com-



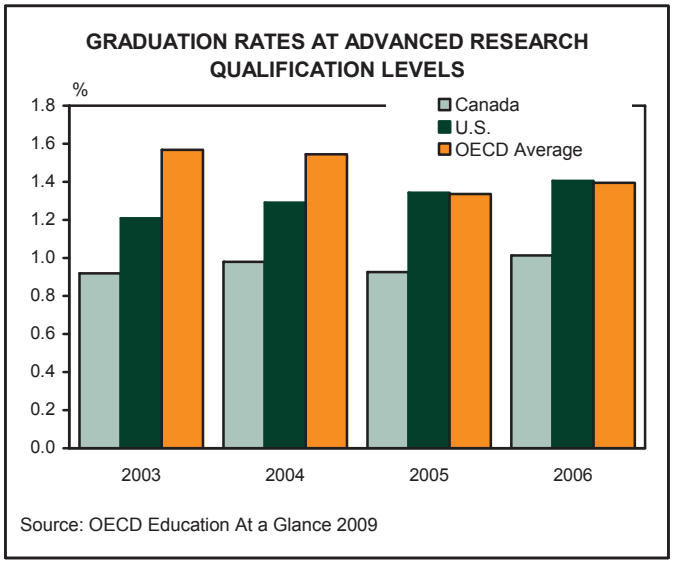
munity projects involving water management, transportation, culture and certain recreational activities.

Given that the program is geared towards supporting the economy over the short-run, the only projects eligible for funding must be completed by March of 2011. While ensuring that stimulus funds are spent timely, placing emphasis on the speed with which a project can be finished does not necessarily mean that projects with the highest rates of return secure funding. Thus, it will take some time to accurately measure the long-run benefits of this recent infrastructure spending. Still, the contributions are likely to be significant. In a November 2009 report , TD Economics estimated that current public infrastructure programs will contribute 0.3 % points annually to labour productivity growth between 2009 and 2011. Thereafter, - 2012 to 2019 - infrastructure spending is expected to contribute 0.1 % points annual to labour productivity growth[36].

Be Cool: Stay in School…

Finally, the Manifesto calls for renewed investment in education and training. An economy's ability to innovate and adapt is largely dependant on the skills and education level of the workforce. Top notch researchers and engineers have the knowledge to develop technologies which allow new innovative products and processes to hit the market. Workers with advanced technical skills are necessary to operate the increasingly complex machinery and equipment used in modern manufacturing and utility facilities.

Naturally, individuals who seek higher levels of education and skills training will be rewarded with higher wages. However, there are also numerous social benefits to having an educated population that improves the overall wellbeing of a society. To illustrate, the 2009 edition of the OECD's



Source: OECD Education At a Glance 2009

Education at a Glance[37] publication states "when factoring in direct and indirect costs for education, the net public return from an investment in tertiary education averages USD 52,000 on average for a male student. This is almost twice the amount of the investment made on the public side." Reasonable debate surrounds the appropriate level of government support, but investment in education and training is a public good and requires public spending.

Generally, primary and post-secondary educational attainment levels are high in Canada relative to other OECD countries. For instance, in 2007 , 48% of Canadians between 25-64 years of age had some level of post-secondary education. In comparison, only 28% of individuals 25-64 years of age in the OECD and 40% of Americans had completed some level of post-secondary training. When it comes to the completion of bachelor's degrees, Canada still fares well, but worse that the U.S. Only around 25% of Canadians between 25-64 years of age have a bachelor's degree whereas nearly 31% of Americans do. Both countries outperform the OECD average of 20%.

For a much more detailed analysis of education, the links to productivity and policies for improving the system, readers are strongly encouraged to refer to the recent TD Economics report[38] "Post-Secondary Education Is A Smart Route To A Brighter Future For Canadians."

Brain over brawn

While the educational attainments of Canadians are generally high, there still remains room for improvements. Perhaps most concerning is the low level of PhD – and generally post-graduate – graduation rates. Relative to seventeen other advanced economies, The Conference Board of Canada found Canada produced the lowest portion of PhD graduates in 2007. These low graduation rates have been a persistent trend. Given the increasing specialization required in today's modern economy, low levels of advanced educational training are a serious concern. Further, evidence suggests that Canada's production of graduates in science and engineering disciplines falls in the middle of the pack relative to other countries. The Conference Board of Canada gave Canada a "C" grade as just over 22% of graduates in 2007 were classified in science and engineering disciplines. Another concerning trend is considerably lower levels of business graduates in Canada relative to the U.S. According to the ICP , on average during the 2005-2007 academic years, Canada issued just 66% of the business degrees at the Bachelor's degree level or higher per capita as the United States[39]. Further, the ICP has shown that demand for

business education far exceeds the availability of space in Canada, suggesting a useful policy would open additional space to Canadian students.

Public spending on post-secondary education was starved during the 1990s when government spending was pulled back to help improve public finances. Between the 1995-96 fiscal year and the 2000-01 fiscal year, public and private expenditure on education fell as a percentage of GDP from 7.3% to 6.3%. Since then, public spending has started to creep up again. From 2004 to 2008, real public spending on education increased by over 9%. Meanwhile, recent stimulus spending has also provided a considerable boost to spending on a variety of post-secondary initiatives in Canada.

Policy reform: Good as far as it goes

After updating and reviewing the Economists' Manifesto, there remains little doubt that additional policy reforms could make important contributions to Canada's productivity performance. As we have seen a variety of taxes and subsidies keep small businesses in Canada's economy from growing, elements of Canada's immigration system need improvement, the business sector could benefit from greater competitive intensity, EI and the high METRs on low and modest income earners are preventing productivity enhancing adjustments from occurring within the labour market, barriers remain to provincial trade, and the university system does not produce enough highly educated graduate students. Nonetheless, we must not lose sight of the considerable progress – ranging from free trade agreements to reforms on the taxation of capital – which have been made to Canadian public policy during recent years, and the seeming indifference with which business sector productivity has reacted. After reflecting on this somewhat strange paradox, it appears public policy is not entirely to blame for Canada's weak productivity growth. Therefore, economists must extend their view beyond just policy and the Economists' Manifesto in seeking a solution to Canada's productivity challenges.

Are we our own worst enemy?

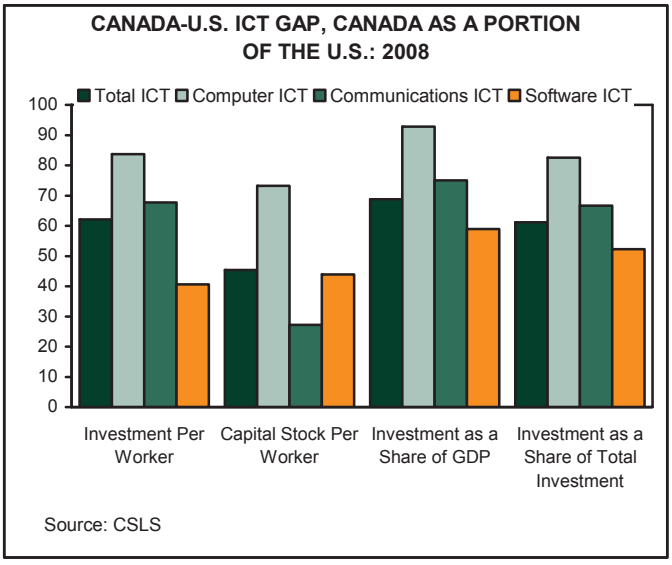
There is a temptation among economists to focus largely on public policy, but what if Canada's business culture – which may be a product of historical policies – simply lacks an aptitude for innovation? This bold claim cannot exactly be proved, but an abundance of circumstantial evidence suggests the theory has merit. The Council of Canadian Academies[40] highlights three disturbing trends that raise questions about the willingness of Canadian firms to innovate and improve their productivity – under investment in key capital goods, low levels of business expenditure on research and development (BERD), and anemic multi-factor productivity growth.

Capital investment – a terminal trend

Investments in ICT and machinery and equipment (M&E) are crucial to succeeding in a high value, developed economy. In the hands of a skilled workforce, these capital goods allow mundane processes to be automated and completed quickly with machine precision – a clear boost to productivity. As well, many high value added products and processes cannot be created without state of the art ICT. A great deal of advanced semi-conductor manufacturing remains in the United States despite high unit labour costs, largely because foreign competitors do not have the capital equipment required to produce these goods.

Ergo, persistently low levels of ICT and M&E investment by Canadian firms are alarming. Between 1987 and 2008, Canadian investment per worker in M&E and ICT was 20 to 30% less each year than the U.S. As a result, the stock of M&E and ICT capital in Canada is sharply lower than in America. By 2008, Canadian workers had just 45% of the ICT and 49% of the M&E capital American workers did[41].

Yet it is not clear what impact these low stocks of capital have had on productivity. John Baldwin has found that unless one assumes ICT and M&E have distinctly higher rates of return than other forms of capital, M&E differentials only account for about 4% of the U.S. Canada labour productivity gap[42]. Also, differences in ICT investment are only found to account for a marginal difference in labour productivity growth. These findings contrast those cited earlier from



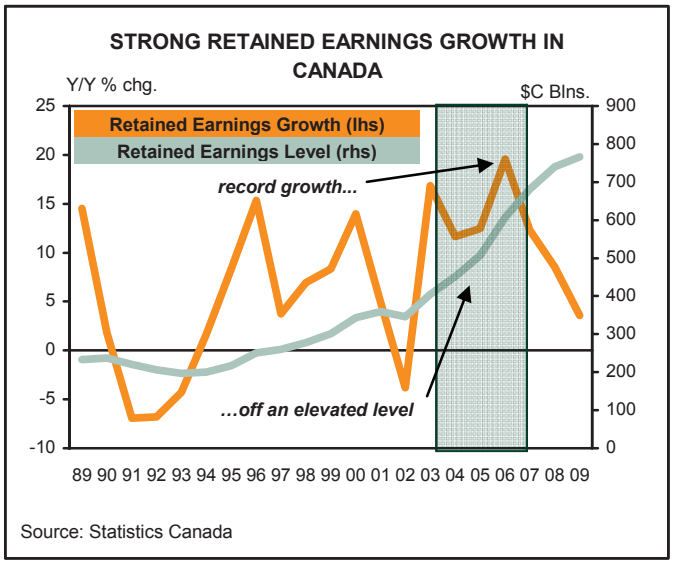
Bell Canada. The results can be reconciled by assuming that ICT and M&E generate significantly higher -- indeed seemingly improbable[43] -- returns than other types of investment through, for instance, spillover effects.

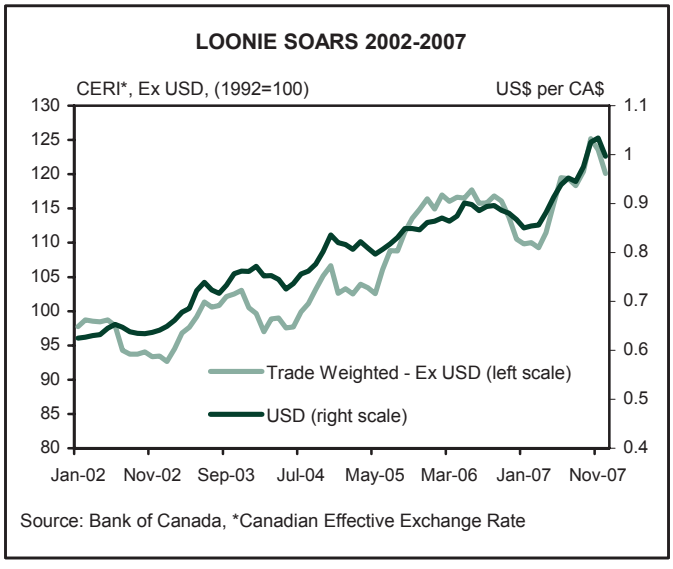
Regardless of the capital deepening effect, there are a couple of reasons that these low levels of business investment reflect poorly on Canadian businesses. First, overall investment in Canada is not as weak as the M&E and ICT figures suggest. This implies that broadly, Canadian firms may not be investing in the right kinds of capital. Second, between 2002 and 2007 businesses largely ignored an unprecedented opportunity to invest in crucial M&E.

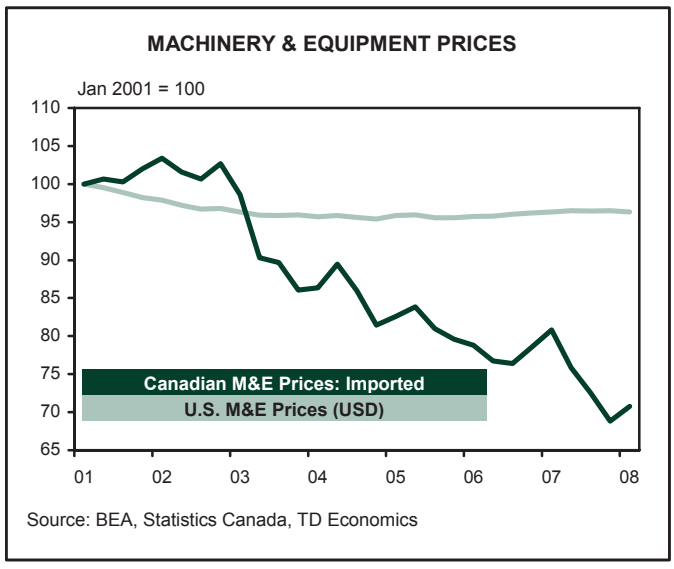
Earlier we saw that MFP was the major force constraining Canada's productivity, not capital deepening. Thus, it seems strange that M&E and ICT investment have been so depressed in Canada relative to the United States. Two Industry Canada working papers shed some light on this apparent contradiction. In the first paper[44], the authors find that the composition of capital investment is significant in explaining MFP growth. Then, in the next paper[45], the authors found that while Canada's capital intensity – non-residential capital stock per worker – was 89% of United States in 2004, M&E & ICT capital intensity were just 56% and 45% of the U.S. level. This suggests that Canadian firms are investing enough in capital to make aggregate capital deepening appear healthy, but the composition of these investments does not include sufficient M&E and ICT.

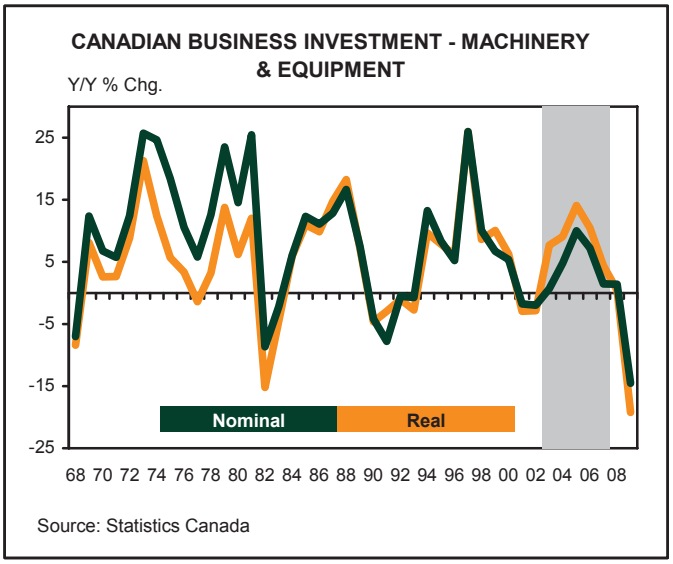
Some have suggested that poor public policy has contributed to the low levels of M&E and ICT investment. Yet this argument does not hold water when one examines recent policy changes and the economic environment between 2002 and 2007. While high taxes on capital have undoubtedly discouraged investment, these taxes have become increasingly favourable towards business investment since 1997. Since 2005, Canadian tax rates on capital investment have been only marginally higher than those in the United States, yet investments per worker in M&E and ICT remained well below U.S. levels. Granted, capital is not taxed evenly across industries, but relatively high rates for communications investment have been slowly clawed back since 1997 and manufacturing – a key user of M&E – has historically received preferential treatment.

If policy were the primary reason for sluggish investment, then Canadian companies should have responded more aggressively to the favourable capital investment opportunities during 2002-07. From 2002-07, the Canadian dollar appreciated by nearly forty percent, which drastically improved the purchasing power of imported capital investments for Canadian businesses. Capital taxes and









corporate income taxes fell. Meanwhile, corporate balance sheets improved at one of the fastest paces on record, as retained earning growth averaged an annualized rate of 15% between 2003 and 2007. Finally, the USD price of machinery and equipment fell by nearly 6%. One would have thought M&E investment should have soared during this period, but nominal M&E investment only grew by 5% per annum within Canada. Questions still exist surrounding this period and further research needs to identify what role intangible investments may have played in increasing retained earnings.

The R&D Gap

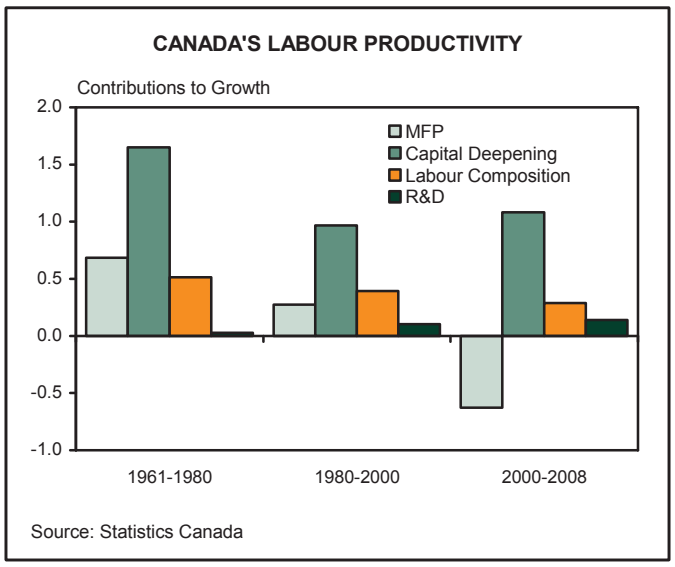
Canadian firms engage in low levels of business expenditure on research and development (BERD) relative to other OECD countries. Since the 1980s BERD intensity – BERD as a percentage of GDP – has been anywhere from 0.7 to 0.3% lower in Canada than the OECD average[46]. While Canada experienced a narrowing of this gap throughout the 1990s, since 2001 a considerably gap in BERD has re-emerged. What exactly low BERD says about Canadian culture is not clear, but it raises enough questions to warrant discussion. In the final analysis, we find that low BERD is not the source of Canada's low productivity growth, but it is likely emblematic of Canada's broader innovation challenges.

Studies have found that BERD is highly correlated with measures of innovation[47] in an economy and plays a crucial role stimulating and developing new products and ideas. Still, interpreting Canada's weak BERD is not straight forward. Standard definitions of R&D understate the amount of innovative investment undertaken by Canadian businesses. Further, after correcting for the role of R&D, there is no evidence that it has contributed to slow MFP growth. Yet beyond these considerations, questions remain about why BERD levels remain so poor despite a host of subsidies designed to encourage it.

The BERD statistics that cast Canada's performance in a poor light define R&D in a way that does not account for a number of innovative activities. For instance, Baldwin points out[48] that payment for technologies through license agreements, payment for patents and applied development work are not considered R&D expenditures by the OECD. This is not meant to discredit these statistics as definitional lines must be drawn to make measurement tractable but, the standard definition understates the investments made by Canadian firms.

R&D accounts for less than half of the innovative investments undertaken by Canadian manufacturing firms, so while BERD constitutes an important part of the innovation process it does not tell the whole story. Further, Canadian firms import a significant share of R&D from foreign countries, which is not captured in BERD statistics. Naturally, businesses should not be criticized for importing their R&D services for the same reasons we don't fault firms for importing a large share of M&E. In 1999 BERD intensity was 1.98% in the U.S. and 1.06% in Canada. Yet payments to purchase foreign R&D in the U.S. were 0.01% of GDP compared to 0.16% in Canada[49].

If we extend this analysis by taking a more liberal view of what constitutes an expenditure on innovation and include intellectual payments abroad, Baldwin[50] finds that Canadian spending on 'knowledge' capacity may have been close to 90% – as a share of GDP – as the U.S. in 1999. This hardly suggests a lack of spending on innovation. Still, despite



The SR&ED Tax Credit

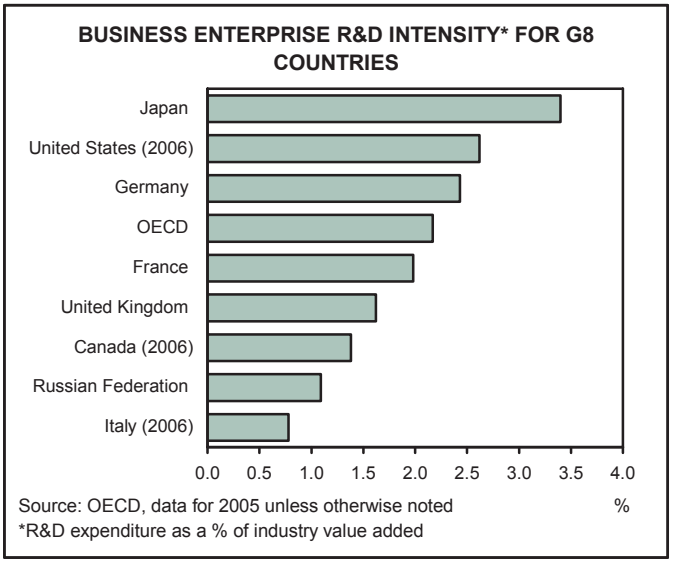
Since the 1980s, Canada has offered an investment tax credit to encourage business R&D spending through the Scientific Research and Experimental Development (SR&ED) program. A 2007 study conducted by Parsons & Phillips[51] suggests that for every dollar of foregone tax revenue, the SR&ED tax credit generates $1.11 of total social benefit. Critics point out that the program offers a larger and more flexible tax credit for small businesses, discouraging small firms from growing and reducing some potentially constructive contributions from larger firms. In addition, since the tax credit is non-refundable for larger firms, the program does not encourage continued R&D spending during an economic downturn, which is crucial to maintaining international competitiveness once the business cycle turns.

evidence that Canada spends more on innovation than R&D metrics suggest, measurement challenges limit our understanding of total firm investment into intangible assets.

If BERD was a partial source of Canada's innovative challenges, then after controlling for its effect, one would expect MFP to improve. The chart on the previous page suggests otherwise. Statistics Canada has found that R&D has contributed positively to Canada's productivity growth. As such, it is difficult to pin low MFP growth on a lack of R&D.

So why raise the issue of R&D if it does not reflect a firm's investment into innovation and it has not lowered productivity? Because, low BERD may be a symptom of weak innovation, and we are, after all, suggesting that Canadian business culture could be the disease.

The CCA illustrate[52] that a meaningful relationship exists between the World Economic Forum's Innovation Index and BERD intensity. Naturally, the causation is not obvious, and experts on the subject readily acknowledge that the link between R&D and innovation is not well understood and necessitates further study. So rather than look at weak BERD as a source of Canada's productivity problems, it may reflect a more general aversion to business innovation.



Given that the link between innovation and R&D is not well understood, robustly supporting this theory is impossible. Still, enough peculiar trends exist to raise suspicions.

Remaining cognizant of the shortcoming of standard R&D measures, Canadian businesses have failed to respond to a host of subsidies and incentives encouraging BERD. For instance, federal government initiatives during the late 1990s significantly increased Canada's higher education expenditure on R&D (HERD). In many ways, HERD should complement BERD by focusing on theoretical research, giving businesses the opportunity to focus on development challenges. Yet Canadian firms have not managed to forge the powerful ties with public research institutes that propel R&D in the United States. In the 2002 report Canada's Innovation Strategy[53] it is noted that "[A]lthough U.S. universities perform about 14 times as much research as their Canadian counterparts, they receive 49 times as much licensing income – a key indicator of the value of innovation." Another example is a 2009 World Economic Forum[54] survey which finds that Canada ranks eleventh globally in terms the quality of its scientific research institutions and ranks ninth globally in university-industry collaboration. In contrast, the U.S. ranks second in quality and first in collaboration.

In addition, there is the Scientific Research and Experimental Development (SR&ED) tax credit. This program has given Canada one of the most favourable tax regimes in the developed world in which to undertake BERD. Yet firms do not have BERD rates anywhere near the levels of other countries. This raises further questions about Canadian R&D. If foreign countries have a comparative advantage in conducting R&D then trade theory would suggest Canada should import these services, and we have seen that this is the case. Further, multinationals generally do not conduct much R&D within Canada – there are important exceptions – which might be partially because they achieve better results elsewhere.

Ultimately, the BERD story sends a mixed message. While Canadian firms appear to engage in a healthy – albeit somewhat unknown – amount of spending on innovation, the

lack of ties between businesses and universities combined with the unresponsiveness of firms to significant BERD subsidies raises concerns that a deeper innovation malaise is at play.

Multifactor is the most distressing singlefactor

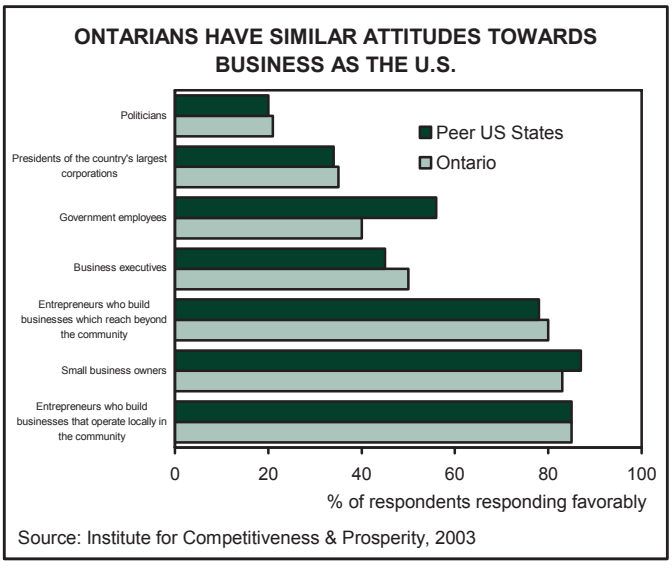
The final piece of evidence suggesting Canadian business attitudes are at least partly responsible for the country's weak productivity growth is the abysmal growth in Canada's MFP. As mentioned before, MFP is calculated as the residual component of labour productivity growth not explained through capital deepening and labour composition. In principle, MFP represents the intangible component of productivity driven by organizational structures that make better use of capital and labour. To steal an example from the Canadian Council of Academies expert panel report[55], consider a fast food restaurant drive-through. The additional capital and labour necessary to facilitate a drive-through is less than the value added from additional sales, and this residual is recorded as MFP. Recent declines and historically benign growth in MFP across Canada suggests that Canadian businesses have not been effective at improving organizational structure. Further, it indicates that businesses have been reluctant to adopt the improvements made in foreign countries. It is necessary to stress that MFP is not a perfect measure of these intangible components, as it is tainted by measurement errors and omissions. Yet, if one assumes that over time these errors balance out, then Canada's MFP performance offers compelling evidence that Canadian firms are failing to find innovative new ways to utilize existing capital and labour.

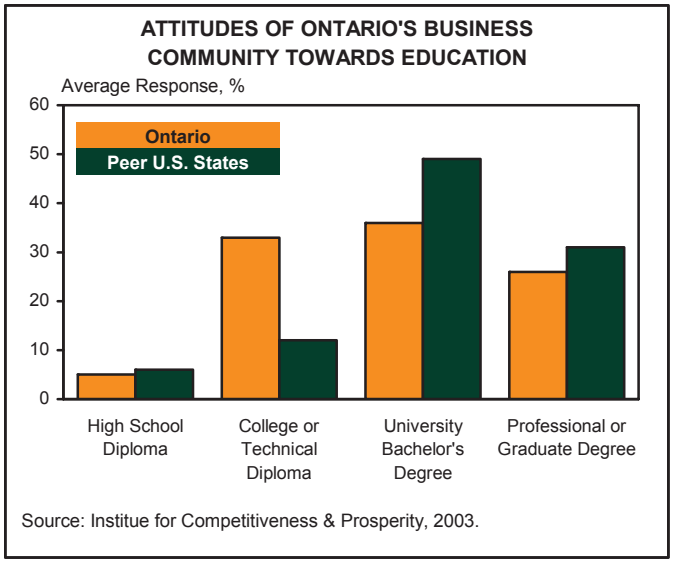
Where are all the managers?

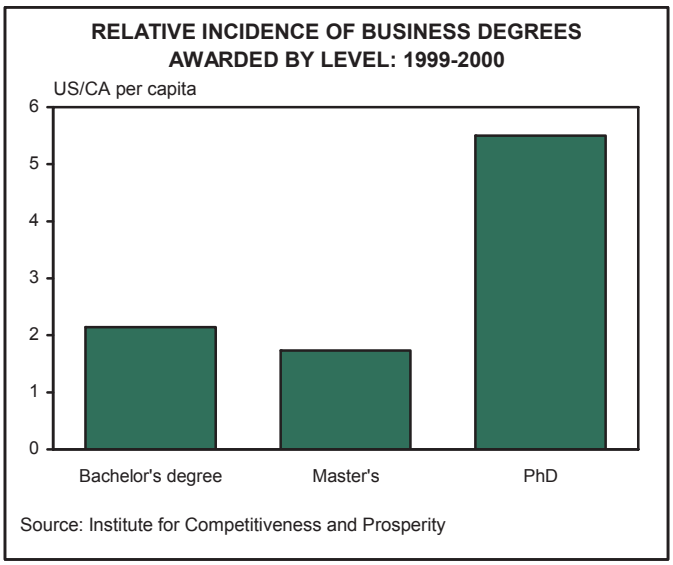
Evidence shows that Canadian firms have under-invested in key capital goods, not kept pace with other countries in BERD, and failed to improve multifactor productivity. While these trends raise serious questions, they do not necessarily prove that Canadian businesses lack an 'innovative' culture – indeed other explanations could exist. In a 2003 study[56] "Striking Similarities: Attitudes and Ontario's Prosperity Gap," the Institute for Competiveness and Prosperity (ICP) attempted to determine whether there were substantial differences between the business culture of Ontario and certain states in the U.S. This study was conducted using extensive surveys of individuals and business leaders across Ontario and comparable American states. The results found that Ontarians do in fact have similar attitudes as Americans towards business ownership, risk, competition and the willingness to take action to improve the quality of one's life.

Where the ICP study found important differences between the two countries was in attitudes towards post-secondary education and immigration. In particular, the surveys suggest that members of America's business community were more likely to recommend higher levels of education than members of Canada's business community and that more Americans had a negative view towards immigration than Canadians.

After conducting a more detailed examination, the ICP found that Canada's business leaders do in fact have less managerial training that those in the United States. For instance, between 2005 and 2007, 35% of managers in Canada had obtained a Bachelor's degree or greater, whereas the corresponding number for the U.S. was 53%[57]. While there is likely considerable merit to the observation that a lack







of management skills impedes Canadian competitiveness, several questions remain. First, while Canadian universities may have less capacity and space to train business students than the U.S.; this does not explain why Canadian business leaders were less likely to recommend higher levels of education. Second, the original survey that shows Ontarians with similar business attitudes to Americans may just indicate that Canadians can 'talk the talk' but when it comes down to it they don't 'walk the walk'.

Another possible conclusion from these surveys is that it may not be the attitudes or culture of Canadians that stifle innovation, rather the 'context' in which businesses operate. For instance, if high returns on equity can be achieved in the banking sector with a strategy that does not focus on innovation, then managers may have an incentive to maintain the status quo. Yet if the same manger were in charge of a bank in the U.S. he or she may approach their business differentially.

The Straight Goods On Business Culture

Ultimately, considerable circumstantial evidence suggests that Canadian businesses may generally be less innovative than businesses in foreign countries, especially the U.S. This statement is not meant to paint all Canadian businesses with a single brush. As we saw earlier in the report, there are a number of industries that exhibit very high levels of productivity. As well, Canada champions a number of world class firms that demonstrate tremendous innovation. Yet in aggregate it is hard to deny there is a problem.

Assuming culture does in fact play a role in the country's sluggish productivity, the question then becomes why business culture in Canada would be materially different than in other countries. Some possible explanations lie in the composition of Canadian industry and the country's economic history.

To start, Canada's economy has always been highly dependent on exporting natural resources. Settlement within Canada was driven by Europe's interest in the country's abundant sources of cod, fur and lumber. Still today, Canada's economy remains highly reliant on the export of numerous commodities including oil, uranium, lumber and potash. As a result, it has been suggested that the pivotal role of commodity exports in Canada's economy has influenced the country's business sector to assume an upstream position along the global supply chain. As a largely upstream producer, Canadian businesses do not deal extensively with the end-users of the products and goods they produce. However, there is evidence to suggest that companies and economies who do deal extensively with end-users are involved in high value added production and face steeper pressures to innovate.

Another factor worth considering is the possibility that early protectionist policies which promoted the development of large and inefficient businesses, impacted the development of Canadian business attitudes. The British North America Act of July 1st 1867 was followed by John A. Macdonald's National Policy on the economy in 1879. The policy was geared towards promoting a strong manufacturing base within Canada and involved placing high tariffs on important manufactured goods from the United States. While there may not be a direct link between this policy and today's productivity woes, the policy set a precedent for the development of large monopolistic firms who were protected from foreign and domestic competition. This historical reality may have encouraged a business culture that was not conducive to promoting innovation, and now that firms are being faced with increased competition from abroad, Canadian businesses lack the innovative know how to react.

Back to basics: New hope in black box research

While it seems possible that Canadian businesses are not doing all they can to maximize productivity, economists must carry forward with their investigation. Simply identifying that firms must become more innovative is not an adequate solution. Economists should also be the first to admit that they lack a clear understanding of the forces that drive productivity growth. Indeed, key obstacles could still be hindering the adoption of best practices. Further, clearly identifying the areas in which businesses are failing to innovate would help develop a more comprehensive framework for addressing productivity. We now turn our attention towards some of the research which has started

peering into the inner workings of the productivity 'black-box'. Recently, the volume of research into the black-box has grown, and this report does not pretend to survey the entire volume of available literature. Rather, our intent is to highlight the diversity of research paths necessary to make serious inroads towards untangling the 'black-box'.

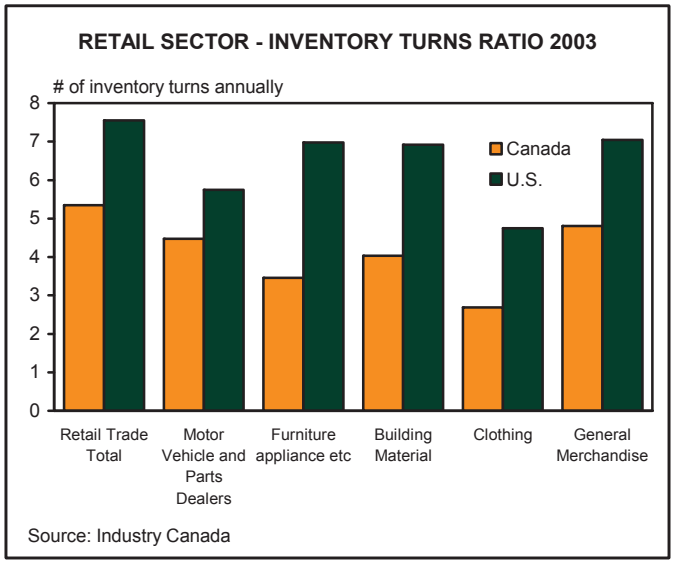
Earlier in this report, we mentioned the tendency of policy minded economists to focus on productivity from an aggregate perspective over the past twenty years. Such an approach has been necessary to make broad recommendations that can be applied across the country. Still, during this period, a small but steady stream of micro level research has also been carried out that has provided crucial insights that have proved to be very important in clarifying the macro picture. For instance, the identification by John Baldwin of large productivity differentials between large and small firms in Canada. Or the ICP's discovery that Canadian managers have generally lower educational outcomes. These breakthroughs form the cornerstone of our belief that important answers to the productivity puzzle lie within the circuitry of the 'black-box'.

Prying open the box…

Encouragingly, more and more micro-level productivity research is starting to emerge. Several useful studies have recently explored firm level data comparing the retail sector in Canada and the United States. These explorations into a service sector industry are not unprecedented, but historically the majority of firm level research has focused on the manufacturing industry. Further, Statistics Canada has started to closely examine the role of intangible investment in national accounting. While not 'micro' in approach per se, these forms of investment are an enormous blind spot for economists and will provide a foundational infrastructure for deeper micro-level 'black-box' analysis.

In 2006, an Industry Canada paper "Logistics and Supply Chain Management Key Performance Indicators Analysis" explored some key performance indicators in supply chain management for the United States and Canada[58]. Global chains of production have been instrumental in facilitating worldwide productivity performance, by allowing firms to focus on efficiently conducting a specialized task. After analyzing the performance of Canadian firms – somewhat unsurprisingly – Canadian businesses were found to lag the ability of U.S. firms to manage inventories in the raw manufacturing goods, wholesale and retail sectors. Other interesting results derived from this study include the better performance of firms classified as 'high-technology adopters', and higher total logistics costs in Canada relative to the United States. At the end of this study, Industry Canada provides a "Proposed Action Plan" for firms that are interested in improving their performance across the key performance indicators outlined in the paper. While it remains a question why firms are not adopting best practices within their supply management chains, Industry Canada could possibly play an important future consulting role in facilitating the adoption of these practices across certain industries.

A recent ICP working paper "Management Matters in Retail"[59] showcases another example of the useful ideas – and challenges – that can be garnered from industry and firm level analysis. It is well documented that wages and productivity levels in Canada's retail sector significantly lag the U.S.[60] Yet, in the ICP paper, Canadian retail management practices were not found to differ in a significant way from the United States. But a noticeable difference does exist between the management levels of Canadian owned

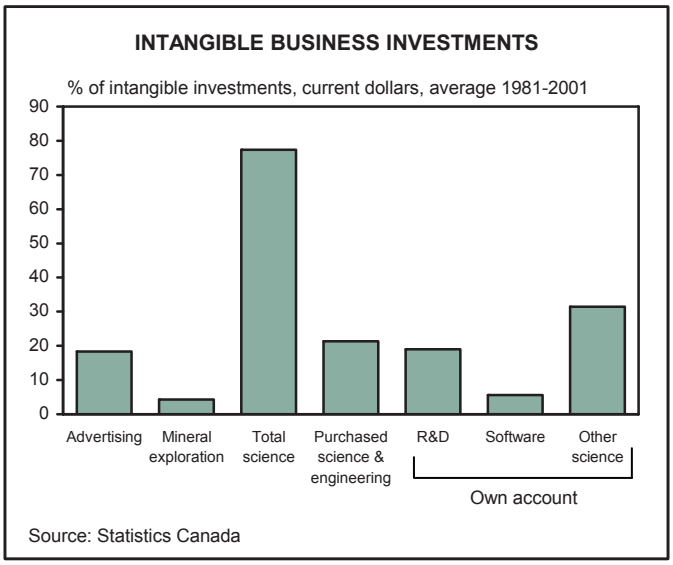


retailers and U.S. owned multinational retailers operating in Canada. This hints that Canadian managers have no problem adopting the techniques developed by American firms, but that they are unable to innovate and develop new techniques when developing domestic brands. These findings prompt some interesting questions. How do Canadian retailers manage to stay in business if they are competing against better managed and more productive foreign firms? Could it be that these multinationals are not competing as hard in Canada as the U.S., supporting the context and environment thesis? And what do the practices of Canada's domestic owed retailers say about the lack of multinational retailers originating from Canada?

In search of other explanations for the Canada U.S. retail gap, the report suggests that answers could lie in the management of marketing and merchandising goods. While these factors may play a pivotal role in explaining productivity differences within Canada's retail sector, our understanding of investments into 'intangible' assets – which includes spending on marketing – has until recently been very limited a point we will return to briefly.

The Economics Analysis Division at Statistics Canada has produced a hefty volume of research on firm dynamics in Canada. These studies offer a useful glimpse into the effects of market competition as firms enter and exit an industry and square off against each other vying for market share. One recent study[61] compares and contrasts the firm dynamics at work in Canada's manufacturing and retail sectors. Two aspects of this study are particularly interesting. First, it compares dynamics across a goods and service industry. By extension, this helps develop insight into firm dynamics which are common across industries and which are specific to a type of industry.

Naturally, similarities are found. Firm turnover – the process of firms entering and exiting an industry – is an important part of productivity growth in both sectors. Also, entrants are found to be as productive as existing firms and the survival rates of new firms closely mirrored each other. Yet, there is no shortage of differences between these industries. The most interesting contrast is the behaviour of new firms after inception. As new manufacturing firms grow, they produce more goods by employing additional inputs – labour and capital – and improving productivity. However, retail firms are found to grow only by employing more inputs, and productivity fails to improve after inception. As a consequence, aggregate productivity growth in the retail sector is highly dependent on firm turnover as firms with low productivity exit and new productive firms enter.



The reader can now surely appreciate the enormity of the black-box project. While these studies present some interesting results, they also open the floor to numerous future studies that explore the common threads and unique forces that drive firm dynamics across all industries and between domestic and foreign firms.

… & untangling the wires

New research by Statistics Canada may help lay out the foundation necessary to delve into the productivity black-box by allowing economists to explore the role of intangible investment. The paper[62] "Investment in Intangible Assets in Canada: R&D, Innovation, Brand, and Mining, Oil and Gas Expenditures" found that in 2001, investment in intangible assets was nearly double the investment made in more conventional machinery and equipment. Contributing to these 'intangible' investments are advertising expenditures, scientific expenditures and mineral exploration. Overall, only 14% of these 'intangible' investments were in R&D. Meanwhile, a slightly higher 16% of intangible investment was made in purchased scientific and engineering services – which is linked to the adoption of so called 'best practice' techniques. While not fully integrated into the system of National Accounts, nor adequately available from an international perspective, the development of a statistical base which treats spending on scientific research, advertising and marketing, and human skill development would be invaluable to identifying specific investment shortcomings across nearly all industries.

These studies only touch the surface of what can be learned by working through the circuitry of the productivity 'black-box' and continued research is needed. Naturally, key results in research often emerge from unpredictable sources,

so any 'black-box' research agenda should be left open and flexible to explore a variety of factors. Still, researchers must remain mindful that the results of their work will be most useful if it can be reintegrated into a macro oriented framework.

An Integrated Approach

Canada's anemic productivity growth is arguably the country's most pressing economic challenge. Demographics and foreign competition necessitate an immediate and sustained improvement to Canadian innovation. If not, standards of living will simply fail to keep pace with the rest of the world. Without renewed and vibrant productivity growth, Canada's revered system of public health care will not be sustainable. Future governments will be forced to make huge cuts to non-health spending programs or substantially raise taxes just to maintain the quality of care Canadians have grown accustomed to. These realities dictate that Canada's top economic and business researchers must renew their efforts to offer guidance and solutions to this paramount quandary. Such a renewal will involve expanding the approach to research. Getting to the heart of the concern requires a redoubling of efforts to understand productivity from a micro perspective. Meanwhile, the research agenda must be scaled up to exploit powerful opportunities for collaboration and usher in new points of view.

Answers to the productivity puzzle lie buried in the dynamics of industries and the behaviour of firms and workers. Many leading researchers have made large strides investigating these topics, but more work needs to be done. Statistics Canada has spearheaded efforts to understand the manufacturing dynamics of Canada and the United States. Yet much could be learned from forces driving change in other industries. The ICP's recent investigation into the management capabilities of retail managers in Canada and the United States could also be expanded across more industries. Perhaps common themes will start to emerge. These industry level studies should be narrowed further still, right down to the firm level. For instance, companies with operations in Canada and the United States could be studied. Is the productivity of these firms consistent on each side of the border? If not, what factors seem to impacting these different outcomes?

Expanding the scope of the productivity research agenda will require detailed data and a new set of skills. Luckily, most of these ingredients exist, but considerable collaboration is needed to bring them together. For instance, Statistics Canada has considerable firm level data. Unfortunately, much of the data cannot be made publicly available because the level of detail would allow analysts to identify the specific firms included in the surveys. A solution to this impasse must be found so that external researchers can collaborate with Statistics Canada to make complete use of this rich data source.

As researchers delve deep into the nuances of Canadian firm behaviour, the skills and expertise of economists must be complemented by other researchers using other approaches. The knowledge of management experts and business consultants could be very useful to the degree they can build upon their typical firm and industry focus to aggregate their findings to a level to shed light on the overall productivity malaise in Canada. Roger Martin has done some pioneering work in this regard. Professors across Canada's leading business schools could bring their talents more directly to bear on the productivity conundrum. As well, a number of large consulting companies with international perspectives and workforces operate in Canada. These firms are well positioned to leverage their understanding of local businesses off their knowledge of industry best practices. An enormous question remains why Canadian firms have not adopted global best practices. Management consultants should be able to identify best practices from other countries and set out how Canadian companies can adopt them.

Canada has an extensive base of research expertise to use as a foundation for future studies into productivity. There is an impressive set of knowledge within Canada's public sector. As we have seen, Statistics Canada, Industry Canada, the Department of Finance and the Bank of Canada have all made major contributions to our understanding. Meaningful work also continues to be done through universities. We have cited much of the work of Roger Martin and the Institute for Competitiveness and Prosperity. Meanwhile, McGill has started a Program for International Competitiveness, which is founded on many of the key principles discussed throughout this report. Further, independent groups such as the Centre for the Study of Living Standards continue to press the debate forward. To most effectively utilize this infrastructure, the results, knowledge and expertise of these bodies must be amalgamated and then infused with extensive research into the micro workings of Canadian businesses. Wide ranging collaboration, combined with a growing understanding of micro behavioural issues, will facilitate a deeper acumen of the forces constraining Canada's productivity. This renewed awareness will allow the development of a new integrated policy framework that ensures Canada regains a spot among the world's leaders in

innovation and productivity.

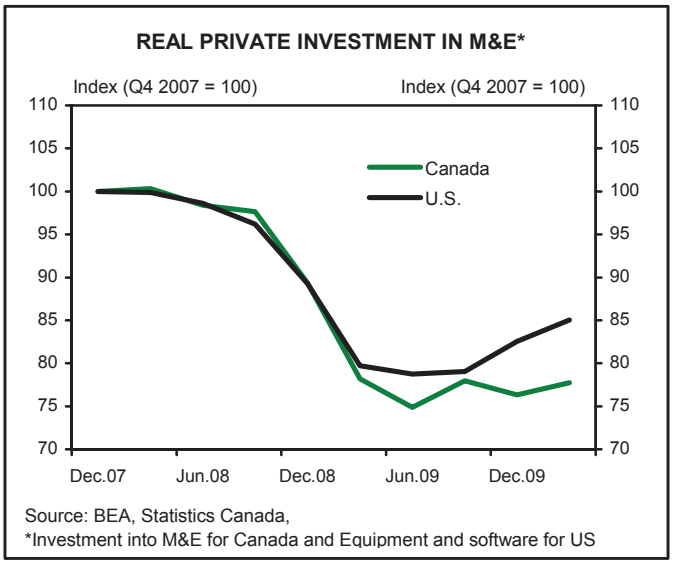
Concluding Thoughts

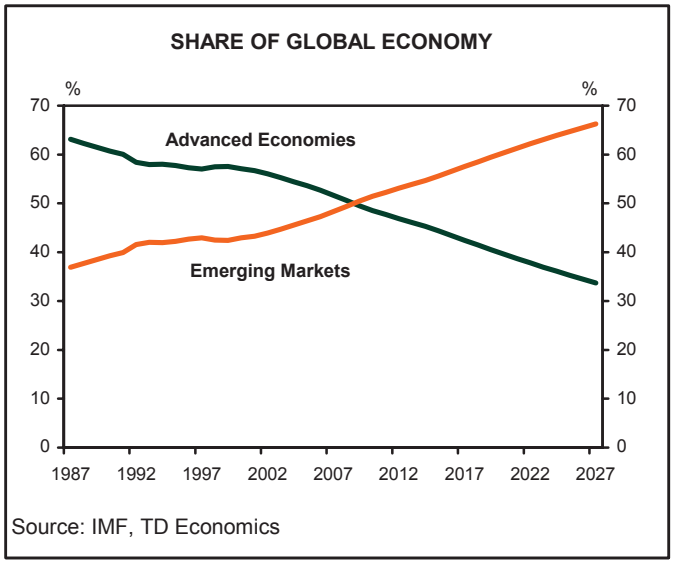
As Canada's economy recovers from the 2009 global recession, a host of new deep-seated structural challenges is emerging. Most apparent is a powerful transformation where 'developing world' economies are morphing into increasingly lean and competitive global forces. To demonstrate the speed with which this transformation is occurring, consider that in 1987, emerging economies represented one-third of the global economic output – measured on a purchasing power basis. By 2009, these same emerging economies now produce half of global output. In just sixteen more years, what is now regarded as the developing world will make up two-thirds of global output.

In the beginning, Canada's experience with globalization involved firms competing against manufacturing centres that derived a comparative advantage from utilizing low labour input costs. For the most part, this did not challenge the producers of higher value goods, and only resulted in a modest dislocation of firms unable to compete. Over time, the situation has evolved, and the competitive pressures applied by these 'low-cost' centres have grown. Consider the concerns raised by the media and politicians over high value jobs being lost to IT firms in India, or by increasingly productive Korean manufactures. The reality is that these developing countries are starting to compete in the production of high value goods. As such, a new era of global competition is emerging, and Canadian firms should expect to begin facing comparable levels of competition from Asia and Latin America as the United States.

In the wake of the 'Great Recession', early evidence suggests that many U.S. firms are making the difficult adjustments required to deal with increased competition from abroad. After declining sharply during the recession, private U.S. investment in equipment and software rebounded strongly in Q4 2009 and Q1 2010 – demonstrating a renewed willingness to make critical capital investments. In contrast, while Canada's economy has posted blockbuster growth in Q4 2009 and Q1 2010, investment in machinery and equipment has not shown much strength. Further, in the midst of a massive credit contraction and immense uncertainty, U.S. firms still managed to boost business sector productivity by nearly 4% throughout 2009. Meanwhile Canada's business sector productivity grew by a meager 0.1% in 2009. Part of America's strong productivity performance during the recession has been a result of enormous jobs losses, and recent 4% growth rates are far from sustainable. In the short-run, Canadians may be happy to trade such a large productivity boost for stability in the labour market, but over the long-run these trends are not mutually exclusive and incomes will fall slowly but steadily relative to other countries if productivity fails to grow.

Surging growth in the developing world is a positive force. Throughout the 1990s and continuing into the new millennium, policies in emerging economies have become more market oriented. These market forces are providing new incentives for businesses, households and governments to undertake investments in huge productivity enhancing capital projects. As a result, millions of people are being lifted out of poverty as productivity raises wages and generates new wealth. In China, output per employee rose by an average of 9% a year between 2000 and 2009. Across a host of emerging markets, output per worker grew by 7% on average between 2000 and 2005.





Rather than fighting these forces which are responsible for improving billions of lives, Canadians must respond to increasing competition by improving productivity. While the potential for positive outcomes across the globe are huge, the stakes for Canada are high. Fierce competition will wipe out Canadian producers who are not sufficiently productive and efficient. To keep pace, the sectors open to increased global competition are going to have to experience a sharp increase in productivity – likely somewhere in the range of 5% per year – to maintain a spot among global leaders. Alternatively, choosing not to embrace this new era of global competition will lead to a devastatingly fast decline in Canada's relative spot in the world and our ways will sink toward those in the emerging economies.

So based on what we know, how can Canada most effectively address these impending challenges and secure a future with tomorrow's global leaders?

The Government of Canada must continue to maintain and develop a supportive policy environment. These policies will not always have public support in the short-run, but continual steps must be taken to allow the powerful effects of competition to propagate through Canadian businesses. In recent years Canada's governments have done a good job, but the task remains unfinished.

Canada's economic future depends on developing and maintaining one of the most skilled workforces in the world. This area remains a competitive advantage for Canada, but that advantage should be enhanced and the weak economic integration of immigrants must be improved.

Canadian businesses must invest in new and better capital equipment. As technology improves, the opportunity to provide Canada's skilled labour force with sophisticated capital equipment grows. Indeed, without state of the art capital, businesses cannot fully exploit the skills of its employees.

Firms and businesses must be innovative and find new ways of doing things better. Good policy can only align the incentives for innovation. Canada's business leaders must provide the spark that drives new thinking and productivity. As we have seen in this report, improvements in a rough measure of business innovation – MFP has been sorely lacking over the past thirty years. And a meaningful improvement to Canada's MFP would make a world of difference in improving the standard of living within Canada.

Finally, economists and other researchers must strive to fill the gaps in their understanding of the forces driving productivity. The answers to many of these questions surrounding Canada's productivity woes are awaiting discovery, but an aggressive and substantial research effort will be necessary to uncover them.

Annex: Gross Domestic Product Vs. Net National Income

Gross domestic product is only one of eight ways to measure output or income in an economy. While GDP is a good measure for studying a country's productivity performance, there are better ways to gauge the standard of living. Chris Ross and Alexander Murray have recently argued[63] that net national income (NNI) is the best metric for evaluating the growth of living standards in an economy. Net output adjusts for the replacement needed to maintain the stock of capital, while gross output does not. As such, net output more accurately reflects what is available for consumption than gross output. Domestic measures what an economy produces, whereas national incorporates incomes paid and earned aboard. Incomes adjusted for the international payment or collection of profits and interest are more relevant to living standards because it reflects what is available for consumption. Finally, the difference in product and income reflects how the value of a countries production has changed. For example, since the price of the goods exported by Canada rose by more than the goods imported during 2000 – 2008, Canadian incomes increased by more than the volume of additional production would suggest. This is known as a change in the terms of trade, which is relevant to living standards, yet is not reflected in the product measure.

The differences in growth rates between these measures can vary considerably. Between 2000 and 2008, Canada's NNI grew by 3.25% compared to 1.94% in the U.S. To contrast, US GDP grew by 2.15% and Canada's by 2.31% . Two forces drove the differential in NNI as the share of Canadian output paid to foreigners declined and Canada's terms of trade improved relative to the U.S. – driven primarily by rising commodity prices. Of these factors, changing terms of trade were much more important to boosting NNI than the declining share of Canadian output paid abroad. Thus, while 'living standards' as measured by NNI grew much faster in Canada than the U.S., the reason was largely due to the impact of rising commodity prices. This effect must be considered in context because changes to terms of trade cannot be expected to contribute to improved living standards consistently over time – in fact they could potentially reverse – and the recent boosts to income may breed a sense of complacency as people fail to fully acknowledge and the consequences of long-run effects of anemic productivity growth. Ultimately, Canadians cannot expect improved terms of trade to improve their living standards over the next 100 years. Instead over the long run the only way to improve living standards is improved productivity.

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