Looking beyond innovation to boost Canada’s productivity
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Looking beyond innovation to boost Canada’s productivity
Over the past decade, policy-makers have tried to find ways to revive Canada’s sluggish productivity growth, but have had little success. Primarily, they have looked to improve the country’s innovation performance as a way to boost productivity. Since 2006, government has invested more than $11 billion in new resources to support discovery-driven and applied research, knowledge and skills development, research infrastructure and innovative activities in the private sector.

However, generous public incentives for innovation and research and development (R&D) have had little effect on Canada’s productivity performance. Recent productivity growth has not matched past successes and is weak compared to that of many other OECD countries, particularly the United States. There are many factors that impact productivity, so Canada might be wise to consider looking beyond innovation. These factors include the size and export orientation of firms; their investment in intangible capital, their sectors and regional affiliations, and forms of ownership. Based on research by Canadian and international scholars, our analysis reveals the following:

- **A firm’s propensity to increase its productivity depends on its size.**
  Labour productivity of large businesses is roughly twice as high as that of small and medium-sized businesses. However, in Canada, small and medium-sized enterprises (SMEs) account for about 98 per cent of all business establishments and 55 per cent of all employment. The fact that the share of SMEs, as a component of the Canadian economy, did not diminish during the last decade may suggest that small businesses lack incentives or face barriers to grow.
• **A firm’s productivity improves when it enters export markets or a global value chain.** Production efficiency improves through acquisition of new knowledge from international counterparts and diffusion of technology channelled through imports. However, only about three per cent of all Canadian businesses engage in export activities, and only about two per cent of companies located in Canada have business activity offshore.

• **Intangible capital makes a significant contribution to labour productivity growth.** Intangible capital accounted for about 60 per cent of the average annual labour productivity growth in the Canadian business sector from 2000 to 2008. The impact of such intangible assets as organizational capital, human capital and brand equity on labour productivity was as important as that of innovative property that included R&D and general know-how. Although Canada’s business investments in intangible capital are quite large, their growth has declined by about one half relative to previous decades after the bursting of the tech bubble of the early 2000s.

• **Canada’s slow productivity growth is not equally distributed across industries and sectors of the economy.** Two goods-producing industries—mining and oil and gas extraction, and manufacturing—experienced the largest decline in labour productivity growth from 2000 to 2010. The mining and oil and gas extraction sector alone accounted for some 55 per cent of the decline in growth. Moreover, the average level of labour productivity of the unincorporated sector is significantly lower than that for corporations. Given such disparities, the approach to addressing Canada’s productivity challenge needs to be tailored, paying particular attention to specific sectors that generate greater negative impact on the overall productivity performance.

Governments have taken many steps to encourage improvements in Canada’s productivity growth and sustainable longer-term economic growth, including core framework measures and more targeted, innovation-oriented measures. However, CPA Canada’s view is that governments should also consider incentives to help firms grow into larger companies, adopt more efficient economies of scale, become trade-ready and invest in intangible capital.
Policy-makers have tried to revive Canada’s sluggish productivity growth, but have had little success over the last decade. Primarily, governments have looked to improve the country’s innovation performance as a way to boost productivity. It may be more effective for government to go back to basics and take a fresh look at the wider range of factors that affect productivity.

There are essentially two ways to promote growth in gross domestic product (GDP) per capita, which is widely used as a measure of living standards and economic wellbeing. The first is to increase the level of inputs such as labour and capital used in production; the second is to improve the overall efficiency of how these inputs are used (i.e., increase productivity). Raising the level of labour and capital devoted to production does not increase income earned per unit of input. However, productivity growth does generate more output and income per unit of input, even within the existing level of resources. As such, productivity growth is critical for long-term economic growth and improved living standards.

Productivity has a direct impact on living standards and economic wellbeing, and it infuses many other aspects of the economy. For instance, labour productivity is closely linked to labour compensation over time, and it influences unit labour costs, which factor into firms’ international price competitiveness. Capital and labour productivity may also have a direct effect on employment, profitability, tax revenues and consumption. The increase in productive efficiency may have an impact on a firm’s stakeholders—on the workforce,

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1 Productivity is typically defined as output per unit of input. Three measures are most commonly used to assess productivity: (i) labour productivity, (ii) capital productivity, and (iii) multifactor productivity. Labour productivity is measured as GDP per hour worked. Capital productivity is measured as GDP per unit of productive services that capital delivers in production. Multifactor productivity is measured as GDP per unit of a combined bundle of labour and capital.
through improved work conditions and compensation package; on shareholders, through increased profits and dividend distributions; on customers, through lower prices; and on governments, through increased tax revenues.

Canada’s productivity performance has been poor over recent decades. Canada’s current performance does not match its past successes; the growth rate of labour productivity has been very low and the level of multifactor productivity has declined over the past 15 years. Canada’s productivity record is weak compared to many other OECD countries and the productivity gap with the United States—Canada’s key trading partner, but also one of its main competitors—is large and widening. Moreover, Canada’s poor productivity performance is caused by structural rather than cyclical factors.

Canadians have enjoyed relatively high incomes in the past several years, despite low productivity growth. The trading value of output has played an important role in that. The rise in commodity prices improved Canada’s terms of trade (i.e., the relationship between export prices relative to import prices), boosting income growth. However, such help can no longer be counted on as real commodity prices may not reach levels enjoyed in the past decade. The Parliamentary Budget Officer estimates that the deterioration of Canada’s terms of trade due to the decline in oil prices will reduce real gross domestic income by 2.6 per cent annually on average over 2015 to 2019. The aging of the population is also expected to hurt Canada’s economic wellbeing because availability and quality of labour will shrink. As such, productivity has becoming more crucial than ever to Canada’s economic growth.

Given the scope and importance of Canada’s productivity challenge, it is important to explore ways of improving Canada’s productivity performance not only through innovation and technological improvements, but through other factors. Relying on research by Canadian and international scholars, this paper highlights a number of such factors. To provide better context for the need to diversify productivity-enhancing support, the paper begins by highlighting shortcomings of the current, narrowly focused public policy relating to productivity.

2 Parliamentary Budget Officer (2015), Pre-budget Outlook.
At the aggregate level, multifactor productivity has been identified as the main culprit in the declining rate of Canada’s productivity growth.\(^3\) Quite often, multifactor productivity is interpreted as investments in innovation and technological change, whereas long-term growth of multifactor productivity is believed to mirror the contribution of business innovation to labour productivity growth. As such, it has been suggested that Canada’s weak productivity growth is driven primarily by weaknesses in business innovation.\(^4\)

Consequently, the federal government’s policy response has largely focused on enhancing Canada’s innovation-related activities, with science, technology and innovation being a top priority. Since 2006, government has invested more than $11 billion in new resources to support discovery-driven and applied research, knowledge and skills development, research infrastructure and innovative activities in the private sector.\(^5\) The Science and Technology Strategy, launched in 2007, sought to make Canada more productive and competitive by positioning researchers at the leading edge of knowledge creation and by aiming to develop, attract and retain a highly skilled workforce. The 2014 Science and Technology Strategy continued to build on the key principles of the 2007 strategy. Prior to 2007, Canada’s efforts to improve productivity performance were likewise focused on addressing Canada’s R&D and innovation gaps; examples include the creation of the Canada Foundation for Innovation (CFI) and increased investment in the federal granting agencies. The Scientific Research and Experimental Development (SR&ED) tax credit

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program has been the key channel of government’s support to R&D for many years. This program is widely viewed as one of the most generous programs of its kind among OECD countries.

Despite the generous public incentives for innovation and R&D, the effect on Canada’s productivity performance has been minimal.

Canada’s labour productivity growth has persistently weakened since the mid-1980s, from our annual average growth rate of 1.6 per cent from 1980 to 2000 to 0.8 per cent from 2000 to 2010. In turn, growth in multifactor productivity has been negative since 2002. The trend did not change much in the early 2010s. Internationally, Canada ranked 19th among 33 OECD countries in terms of annualized growth in labour productivity between 2007 and 2012, and was among only a few OECD countries that relied on labour input rather than on capital services and multifactor productivity to propel their GDP growth between 1995 and 2011. Even more worrisome is the fact that economic cyclical cannot explain Canada’s poor productivity performance. Growth in trend labour productivity—an indicator that is isolated from cyclical factors and reflects only the structural component of changes in productivity—dropped by more than one half from 1997 to 2001 and has remained at a lower level ever since. Growth in Canada’s trend multifactor productivity has also declined over that period.

One reason for the continuous dismal productivity performance may lie in the fact that multifactor productivity extends far beyond innovation—the key focus of policy nudging. Multifactor productivity captures economies of scale, adjustment costs, pure efficiency change, variations in capacity utilization, skills composition, the impact of investment in intangible assets and measurement errors.

Analysts distinguish three components of multifactor productivity: average returns to scale, resource allocative efficiency and a technological residual. Only the latter can be viewed as a benefit of innovation, and it is in turn a function of such factors as public infrastructure; knowledge transmission from academics and other firms; management and organization; workforce human

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7 Organisation for Economic Co-operation and Development (2013), OECD Compendium of Productivity Indicators 2013, Figure 1.4 and Figure 1.6., ranking assessment is made by CPA Canada.
9 Shaw, D. J. (2009), Productivity: Its Increasing Influence over Canadians’ Standard of Living and Quality of Life, Library of Parliament, PRB 03-15E.
capital; and a firm’s R&D.\textsuperscript{10} Moreover, some parts of technological change, such as improvement in the design and quality of new capital, are already embodied in physical capital, particularly in that related to information and communication technologies.\textsuperscript{11} As such, interpreting multifactor productivity largely as innovation and technological change may not be fully suitable; instead, attention should be paid to all three components—firm growth, resource mobility and innovation.

Moreover, multifactor productivity is largely an analytical concept, unlike labour and capital productivity that can be measured at the firm and economy levels. Growth in multifactor productivity is measured as a residual growth—part of GDP growth that cannot be explained by growth in labour or capital input. As such, there are a number of methodological and statistical aggregation challenges involved in multifactor productivity and any analytical conclusions it may generate. Those include the choice of competitive model affecting the weights assigned to each factor of production, and the determination of the value of the capital stock and its rate of depreciation in order to properly calculate capital services charges.\textsuperscript{12}

Previous research provides another reason for looking beyond innovation to address the productivity challenge. A number of studies have concluded that the impact of innovation on Canada’s productivity growth is rather weak. A study that aggregated manufacturing across 12 OECD countries found that the role of innovation in Canada’s productivity growth was smaller than in other countries.\textsuperscript{13} This may relate to findings of another study that innovative Canadian firms do not derive a high proportion of their sales from the product of their innovation activities.\textsuperscript{14} Another study showed that the total effect of R&D on multifactor productivity is somewhat weaker in Canada than the average in other OECD countries because the technology transfer or absorptive capacity component plays a less important role in Canada, which has a shorter-than-average distance to the technological frontier—the current state of the global technological knowledge.\textsuperscript{15}

\begin{thebibliography}{9}
\item Organisation for Economic Co-operation and Development (2012), \textit{OECD Economic Surveys: Canada}.
\item Organisation for Economic Co-operation and Development (2013), \textit{OECD Compendium of Productivity Indicators 2013}.
\item Shaw, D. J. (2009), \textit{Productivity: Its Increasing Influence over Canadians’ Standard of Living and Quality of Life}, Library of Parliament, PRB 03-1SE.
\end{thebibliography}
Moreover, not every type of innovation propels productivity. While process innovation—change in how products and services are produced and delivered—is found to boost a firm’s productivity and likelihood of remaining in the market, product innovation—creation of new goods and services—is found to have only a minor effect on a firm’s productivity growth and a negative effect on a firm’s survival rate. While the importance of R&D to business and economic growth is not in dispute, it is worth mentioning that R&D spending mainly increases the likelihood of product innovation; in turn, the relationship of R&D to process innovation, which is highly relevant to productivity improvement, is much weaker.

While the policy mix continues to heavily emphasize support for innovation, a number of other factors play an important role in determining the productivity of a firm and, consequently, Canada’s overall productivity level. Those factors include the size of the firm and its export orientation; investment in intangible capital; turnover of firms and market entry and exit conditions; a firm’s sector and regional affiliation; and form of ownership. The paragraphs that follow discuss the relationship of some of these factors to productivity in more detail.

4.1 Firm size

A firm’s propensity to increase its productivity depends on its size: smaller firms are believed to face greater challenges in improving their productivity. For instance, research by Statistics Canada found that labour productivity measured by nominal GDP per hour worked was more than twice as high ($72 vs. $35) among large businesses with more than 500 employees compared to small businesses that employed fewer than 100 people in 2008. The labour productivity of medium-sized businesses (those that employ between 100 and 500 people) also lagged noticeably, at only 58 per cent of the productivity level of larger companies that year. The gap between large businesses relative to small and medium-sized businesses changed very little during the post-2000 period.\(^\text{18}\) The productivity advantage of larger firms was greatest in manufacturing, where firms with 100 or more employees were 80 per cent more productive compared to small businesses, and in such industries as transportation and storage; arts and recreation; wholesale trade; construction; and mining, oil, and gas.\(^\text{19}\)

Labour productivity differences related to firm size arise primarily due to variations in the scale of production, the skills possessed by owners, variations in prices of capital relative to labour that lead to differences in the amount of capital available per worker, and differences in managerial efficiency. Moreover, firm size also influences the type of technological


knowledge firms can generate and acquire. Large firms typically have a higher risk tolerance, stronger relationships with suppliers, and access to a strong scientific base, and they are more likely to introduce technological changes that lead to a shift in their production function. In turn, small firms rely primarily on external knowledge that leads to more intensive use of production factors.\textsuperscript{20}

Analysis by the Bank of Canada points out compositional factors in the relationship between a firm’s size and its productivity. Specifically, such factors as the level of concentration of large firms in the industry, life-cycle effects that reflect lower productivity of entrant firms, and the form of a firm’s corporate ownership were found to explain 27 per cent of the productivity gap between large and small firms at the aggregate level.\textsuperscript{21} However, the study shows that even after accounting for compositional effects, a firm’s size continues to play a significant role in its level of labour productivity. For instance, the prevalence of large companies in the U.S. economy accounted for 20 per cent of the Canada-U.S. labour productivity gap in 1997.\textsuperscript{22} A simulation analysis used in another study found that decreasing the relative importance of small firms in the Canadian economy and increasing their relative productivity compared to large firms could lead to closing the gap in productivity levels between Canada and the United States in 2002.\textsuperscript{23}

While large firms use resources more efficiently, the Canadian economy is largely composed of small and medium-sized enterprises (SMEs). At the end of 2014, SMEs accounted for some 1.22 million business entities, or 98 per cent of all business establishments with employees located in Canada.\textsuperscript{24} Likewise, SMEs contribute significantly to the Canadian labour force: about 8.4 million Canadians were employed by SMEs in 2014, accounting for 55 per cent of all employed in Canada.\textsuperscript{25} Although the share of large firms in total employment had been slowly but steadily increasing over the early and mid 2000s, the trend was reversed after the 2009 recession. At the end of 2014, the proportion of all Canadian workers employed by large firms was a mere one percentage point higher compared to the proportion registered in 2001.

\textsuperscript{20} Antonelli, C. (2015), \textit{Firms’ Size and Direct Technological Change}, Small Business Economics.
\textsuperscript{24} Industry Canada (2011). \textit{Key Small Business Statistics}.
\textsuperscript{25} Based on CANSIM Table 281-0042; CPA Canada calculations. The numbers presented exclude the following industries: agriculture, fishing and trapping, private household services, religious organizations and military personnel of defence services.
when large firms accounted for 43.9 per cent of all employed in Canada. The proportion of those employed by medium-sized businesses declined over the same period, albeit only insignificantly. The lack of gains in the share of medium-sized and large firms in the composition of the Canadian economy underscores the increase in challenges faced by small business to grow, and the missed opportunity to improve Canada’s productivity performance through growth in firm size.

Canada is among the countries with the fewest barriers to entrepreneurship in the OECD. However, small firms seem to be discouraged from growing once they are formed, offsetting the benefits of low entry barriers. Lack of a sufficiently aggressive and entrepreneurial spirit is sometimes cited as a key reason. However, other crucial elements that may help small firms grow include identifying niche markets, strategic use of business alliances and developing competence in obtaining funding and seeking business advice. These elements should be looked at when policies to enhance productivity growth are developed.

4.2 Export orientation and participation in global value chains

A firm’s productivity improves after it enters export markets. Research has consistently found that there is a relationship between exporting and productivity and that exporters are generally more productive than non-exporters. Exporters tend to be more capital intensive, more innovative and more efficient than their domestically oriented counterparts.

The difference in productivity performance between exporters and non-exporters partly stems from the self-selection process that leads the most productive firms to enter export markets. A firm’s productivity in such instances is a mere proxy for a range of characteristics that distinguish small firms from large firms, and less successful firms from more successful ones.

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26 Based on CANSIM Table 281-0042; CPA Canada calculations. The numbers presented exclude the following industries: agriculture, fishing and trapping, private household services, religious organizations and military personnel of defence services.
However, there is evidence that becoming an exporter also improves a firm’s productivity performance after entering export markets. Production efficiency improves as firms learn from international counterparts. The subsequent sales growth allows firms to profit from economies of scale, and increased competition forces firms to behave more efficiently.\(^{30}\) For instance, Canadian manufacturing firms that entered export markets from 1990 to 1996 experienced on average a 5.2 percentage point higher increase in labour productivity growth than domestically oriented firms. This finding largely remains true even when firm-specific characteristics are taken into account.\(^{31}\) More recent research into Spanish manufacturing firms shows similar results: annual average gains in productivity were around 3 per cent for at least four years for firms that increased their export-to-sales ratio.\(^{32}\)

Productivity gains occur not only among the new entrants to export markets, but also among firms that are already engaged in exporting activities and may be altering their export intensity. For instance, current exporters accounted for almost three quarters of productivity growth in manufacturing in the 1990s, although such firms accounted for less than 50 per cent of manufacturing employment over that period.\(^{33}\)

A firm’s productivity may also be enhanced both immediately and over time by becoming part of a global value chain. Global value chains are international supply chains that fragment activities involved in producing a good or a service. A firm involved in a global value chain typically imports intermediates to produce goods that are then exported. The analysis of Canadian manufacturer by Statistics Canada shows that firms that enter a global value chain from 2002 to 2006 become more productive. During their first year in a global value chain, firms experienced 5 per cent more productivity growth than did those that did not engage in a global value chain. The difference in productivity widened to 9 per cent over a four-year period.\(^{34}\)

Participation in global value chains also affects a country’s multifactor productivity. A substantial portion of multifactor productivity growth originates from productivity gains in the production of intermediate inputs in foreign countries. For instance, between 1995 and 2000, about 0.19 percentage points

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32 Manjon, Miguel et al. (2013). *Reconsidering Learning by Exporting*, Rev World Econ 149:5-22


of the 0.86-percentage-point annual growth in multifactor productivity in Canada came from productivity growth in the United States, which is one of Canada’s main sources of intermediate inputs. Moreover, firms adopt ideas and technologies that they learn from their international connections and this allows innovation to significantly contribute to national productivity.

Reflecting the structure of the overall economy, Canada’s exporters are mostly SMEs. In 2009, 86.2 per cent of Canadian exporters were small businesses while medium-sized enterprises accounted for another 10.7 per cent of all exporters. Although these percentages may seem impressive, less than 3 per cent of all SMEs engage in export activities. Similarly, Canadian firms do not seem to be very active in global value chains. Trade policy research in 2011 found that only 1.9 per cent of companies located in Canada offshored a business activity from 2007 to 2009. As may be expected, the activity varied by firm size: 10.9 per cent of large firms offshored some activities over the mentioned period while only 2.4 per cent of medium and 1.2 per cent of small firms did so.

Boosting export-readiness of Canadian firms and their engagement in global value chains may help improve Canada’s productivity performance. The fragmentation of the production process within a global value chain provides an opportunity for firms, particularly SMEs, to specialize and capitalize on their unique skills and to grow. Such gradual integration into global trade may also help firms become more export-ready. For instance, 72 per cent of those entering global value chains were importers before they engaged in export activities.

The differentiation in trade between high- and low-wage countries is important when it comes to productivity growth. Research shows that global value chain participants that imported intermediates from and exported products to high-wage countries enjoyed greater productivity improvements compared to firms that engaged in international sourcing with low-wage trading partners. This is consistent with the learning-by-exporting theory as imports provide a channel of technology diffusion. Firms learn more by dealing with buyers and sellers

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from countries with technological and managerial sophistication.\textsuperscript{40} The importance of high-wage trading partners for improving productivity growth may be an important element to keep in mind, particularly as Canada’s public policy efforts are shifting to encouraging trade with emerging markets.

Research suggests that trade liberalization has increased the benefits associated with a firm’s learning process.\textsuperscript{41} It is commendable that the federal government has embarked on an ambitious trade and investment liberalization agenda and has made that a cornerstone of its economic policy. We urge government to continue to negotiate trade agreements that eliminate barriers to the movement of goods, services, capital and labour, and that reduce the cost of conducting international business. Focusing attention on identifying and promoting factors that would increase export-readiness of Canadian firms may not only expand Canada’s participation in global trade, but also help it overcome the productivity challenge.

4.3 Investments in intangible capital

Intangible capital makes a significant contribution to Canada’s labour productivity growth.

Intangible capital consists of investments that do not take on the physical characteristics of machinery and equipment or buildings; however, such investments may yield long-lasting benefits. Software and R&D are the most recognized intangible investments, but such investments also include purchased science services, own-account scientific services, exploration expenses in the resource sector, and advertising expenditures. The variety of forms of intangible capital are often grouped into three components: (i) economic competencies that consist of investments in human capital, such as management and training investments, brand equity, organizational capital and management consulting services; (ii) innovative property, including R&D and knowledge embedded in patents, licences, and general know-how; and (iii) computerized information that reflects the knowledge embedded in computer software and computerized databases.\textsuperscript{42}

\textsuperscript{40} Baldwin, J. and Yan, B. (2014), \textit{Global Value Chains and the Productivity of Canadian Manufacturing Firms}, Statistics Canada, Catalogue no. 11F0027M, No. 090.
Intangible capital accounted for about 40 per cent of the total capital deepening effects—the key component of labour productivity—from 2000 to 2008. Economic competencies and innovative property each contributed roughly 0.2 percentage points to the 0.8 per cent average annual labour productivity growth in the Canadian business sector from 2000 to 2008. In turn, investment in computerized information contributed 0.1 percentage points to annual labour productivity growth.43

International experience confirms Canadian findings on the relationship between investment in intangible capital and labour productivity. European Union firms showed a positive and significant relationship between intangible capital investment and labour productivity growth: about 50 per cent of labour productivity growth from 1998 to 2005 was explained by investments in intangible capital. Similar to the situation in Canada, economic competencies, rather than innovative property, were the main reason for the positive relationship between intangible capital and labour productivity growth in the European countries.44

The analysis done by Statistics Canada shows that business investment in intangible capital in Canada are fairly large; in 2008, these investments stood at about 66 per cent of tangible investment in the business sector. Total investment in intangibles has grown more rapidly than total investment in tangibles over time: from 1976 to 2008, real investment in intangible assets increased by an average rate of 6.4 per cent per year in the Canadian business sector, while investment in tangible assets increased by 4.1 per cent per year on average. However, the increase in intangible investments declined after the bursting of the tech bubble of the early 2000s. The growth rate of real investment in intangible assets from 2000 to 2008 was 3.2 per cent per year compared to 7.4 per cent per year from 1976 to 2000 period.45

Reviving growth in investment in intangible capital may support Canada’s efforts to improve its productivity performance. Possible policy options for that may include strengthening the patents system and the market for ideas, promoting the role of organization alliances and public-private linkages in raising the scope and efficiency of investment in intangible assets. Moreover,

it might not be enough to focus attention intensively on R&D and innovation to improve productivity because that would overlook important intangible asset components such as organizational capital, human capital and brand equity.

4.4 Sector considerations

It is important to bear in mind that the slowdown in productivity growth in recent decades was not equally distributed across industries and sectors of the economy. Statistics Canada studies point out that two goods-producing industries—mining and oil and gas extraction, and manufacturing—experienced the largest decline in labour productivity growth from 2000 to 2010. Labour productivity growth in the mining and oil and gas extraction industry fell from an average 2 per cent increase per year from 1980 to 2000 to an average 3.2 per cent per year decline from 2000 to 2010. In manufacturing, labour productivity growth declined from 3 per cent per year to 0.9 per cent per year between those two periods. In fact, the mining and oil and gas extraction sector alone accounted for some 55 per cent of the decline in aggregate labour productivity growth in the total business sector. In contrast, a number of industries, primarily service industries, experienced a strong labour productivity growth from 2000 to 2010. The decline in multifactor productivity growth followed fairly closely the trends in labour productivity growth.46

Industry differences in productivity growth may relate to the intensity with which sectors use capital and skilled labour in their production, the absorption capacity of external knowledge and the scope for product and process innovation, the degree of product standardization, the scope of economies of scale, and the exposure to international competition.

The performance of another sector in Canada—self-employed, unincorporated businesses—also has had a significant impact on the erosion of Canada’s labour productivity performance. The unincorporated sector constitutes an important part of Canada’s economy: in 2005, there were more than 1.5 million self-employed people who were unincorporated, and they generated $93.2 billion, or 9.4 per cent of GDP. However, the average level of labour productivity of unincorporated enterprises is significantly lower than it is for corporations ($23.20 vs. $43.40 per hour respectively in 2005).47 The lower productivity

of the unincorporated sector accounted for almost the entire productivity gap between Canada and the United States in 1998. From 1998 to 2005, the productivity of the corporate sector in Canada had fallen relative to that of the corporate sector in the United States; by 2005, the unincorporated sector accounted for approximately 42 per cent of the Canada-United States productivity gap.\textsuperscript{48} The gap in productivity could reflect a failure to grow unincorporated firms that are often at the first stage in their life cycles.

Given the large disparities in the productivity trends across industries and sectors, it may be best to address Canada's productivity challenge using a more tailored approach, paying particular attention to specific industries that generate greater negative impact on Canada's overall productivity performance. It may be crucial for the federal government to work collaboratively with provincial governments to improve productivity because there are substantial regional productivity differences. For instance, from 2000 to 2010, Ontario accounted for more than 60 per cent of the decline in Canada's aggregate labour productivity and multifactor productivity growth.\textsuperscript{49}


We acknowledge that governments have taken many steps to encourage improvements in Canada’s productivity growth and sustainable longer-term economic growth. Canada benefits from a sound macro-economic policy environment, including sound fiscal and monetary policy. Corporate tax competitiveness has improved markedly over the past decade and is now among the strongest in developed countries. Canada has also actively pursued trade openness by negotiating bilateral and multilateral trade agreements, and improving investment climate through eliminating tariffs on imports of machinery and equipment.

Canada’s ability to innovate is crucial for its competitiveness, economic prosperity and long-term growth. However, supplementing the core measures that foster productivity growth with incentives that help firms grow, adopt more efficient economies of scale, become trade-ready and invest in intangible capital may also help Canada improve its dismal productivity record.

Fostering strong business drive and entrepreneurial spirit may likewise be crucial. Business drive is the one element that does not transcend to the aggregate level of productivity measurement but is a crucial determinant of a firm’s organizational behaviour. Business drive is intuitively incorporated in the actions of the executive and the management team, and is diffused into a firm’s strategic decisions about acquiring and engaging key productivity factors—physical and human capital. Encouraging the culture of business growth may propel firms’ growth and investment ambitions domestically and internationally.
24. Manjon, Miguel et al. (2013). Reconsidering Learning by Exporting, Rev World Econ 149:5-22
