

# The future of productivity

An eight-step game plan for Canada



# Contents

Introduction .....	1
The productivity gap.....	4
What’s undermining our productivity? .....	10
Eight actions for a stronger Canada.....	31
Educate: ensure our education system fosters entrepreneurship and innovation at all levels .....	33
Populate: re-tool the immigration system to attract and fully utilize skilled immigrants .....	34
Innovate: improve the effectiveness of R&D.....	35
Incubate: bolster the pool of risk capital .....	36
Co-locate: create a national clustering strategy.....	38
Update: invest in machinery and equipment .....	40
Accommodate: encourage the flow of foreign direct investment.....	41
Facilitate: reduce trade barriers and pursue new markets .....	43
The courage to lead .....	44
About the authors .....	46
Endnotes .....	48
Publications.....	50

## Introduction

Canada's relative economic stability since the 2008 recession has been a point of pride for our government and Canadians in general. Yet we continue to lag many other nations in terms of productivity, one of the most important drivers of prosperity.



### The problem with Canada's productivity

To uncover new evidence about the source of Canada's productivity challenge and specific measures to correct it, Deloitte undertook a comprehensive year-long study, surveying 902 North American business leaders and conducting a deep examination of more than 25 drivers of productivity – everything from our national brand to military spending.

One frequently cited contributor to Canada's productivity challenge is the more risk-averse attitudes of Canadian business leaders compared to their American peers. The new survey revealed that Canadian and American executives actually self-report levels of risk tolerance which are very similar. It also found that Canadian business leaders are more optimistic than their American counterparts about the current state of the economy, as well as its prospects for the coming years. Logically, one would expect that this optimism, combined with similar risk tolerance levels, would translate to a greater – or at least equal – propensity for investment among Canadian business leaders.

Surprisingly, this does not appear to be the case. Despite optimism about the economy and the future, coupled with favourable macro-economic conditions in Canada, Canadian business leaders are not planning to invest in the types of activities that are required to improve productivity, such as research and development. While Canadians may label themselves as equally risk tolerant to Americans, when it comes to putting their money where their attitude is, they hesitate. This "action gap" is a distinct difference that sheds light on the Canadian productivity conundrum.

Deloitte believes that there are **six key issues** that are having a significant impact on productivity:

- Business leader **risk aversion**
- Inefficient and insufficient **support for innovation**
- Lack of **risk capital** for start-up companies
- **Chronic under-investment** in machinery and equipment
- **Sheltering** of the Canadian economy
- Increasing competition for **human capital**

## The game plan

To materially impact productivity, actions must be taken not only by governments at all levels, but also by business and academia. Each has an important role to play in improving Canadian productivity in the near term, and to create the conditions for continued productivity growth in the future. To this end, Deloitte has developed an **eight-part action plan**:

**Educate:** ensure our education system fosters entrepreneurship and innovation at all levels

**Populate:** re-tool the immigration system so it attracts and fully utilizes skilled immigrants

**Innovate:** improve the effectiveness of R&D (Research & Development)

**Incubate:** bolster the pool of risk capital for start-ups

**Co-locate:** create a national clustering strategy

**Update:** invest in machinery and equipment

**Accommodate:** ease the flow of foreign direct investment

**Facilitate:** reduce trade barriers and pursue new markets

Significant demographic shifts currently underway will radically redefine the Canadian economic landscape. As aging baby boomers retire and life expectancies continue to climb, the responsibility for driving steady improvements in living standards will fall on a progressively smaller subset of the population. Continued economic growth will only be sustained through ongoing, persistent improvements in the productivity of our workforce. Canada's strength through the recession has created a finite window during which our productivity trajectory can be reset. To overlook this opportunity is to threaten the long-term prosperity of our nation.

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# The productivity gap

Canadians have long enjoyed a high standard of living and strong economic performance relative to most countries. Our country ranks eighth on the United Nations Human Development Index<sup>1</sup> and eleventh on the Conference Board of Canada's 2009 Economic Report Card rankings.<sup>2</sup> (Figure 1)

Our stable performance throughout the global financial crisis and subsequent recession has prompted many other countries to examine the underlying factors contributing to Canada's performance.

In the past, Canada's competitive advantages have traditionally insulated our economy and protected our standard of living. (Figure 2) However, in recent years, we have seen these competitive advantages erode.

Figure 1 Canada's global economic rankings

Human development index rankings, 2010	
Rank	Country
1	Norway
2	Australia
3	New Zealand
4	United States
5	Ireland
6	Liechtenstein
7	Netherlands
8	Canada
9	Sweden
10	Germany
11	Japan
12	Korea (Republic of)
13	Switzerland
14	France
15	Israel

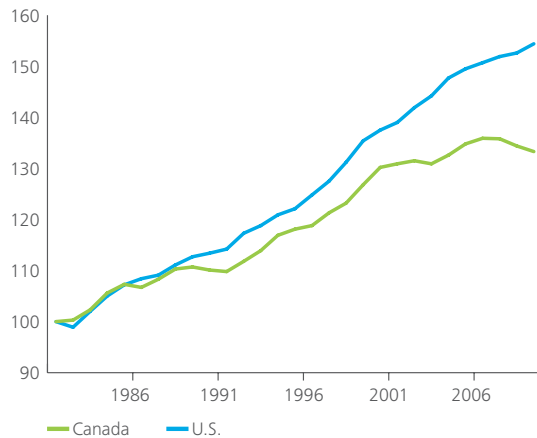
Economy report card rankings, 2009	
Rank	Country
1	Norway
2	Switzerland
3	Netherlands
4	Austria
5	Denmark
6	Australia
7	Sweden
8	United States
9	France
10	United Kingdom
11	Canada
12	Belgium
13	Germany
14	Japan
15	Finland



Figure 2 Canada’s decreasing competitive advantages

	In the past...	Today...
Demographics	Canada’s labour force was growing as a percentage of the population; hours worked per employee was on the rise	An aging population is increasing the proportion of retirees and reducing hours worked
Canadian dollar	A low Canadian dollar created a price advantage, reducing other competitive pressures	A falling U.S. dollar is eroding Canada’s price advantage
Access to U.S. markets	The signing of NAFTA in 1992 gave Canada unrivaled access to U.S. markets	Canada’s share of U.S. imports is declining while the importance of non-U.S. markets is growing
Global marketplace	The global marketplace was dominated by mature economies with similar labour costs	The emergence of developing economies has heightened global competition and increased availability of lower-cost substitutes
Commodity extraction	Strong demand for commodities drove growth in Canadian resource extraction and depleted the most accessible reserves	Resource companies are now forced to explore less productive reserves such as the oil sands

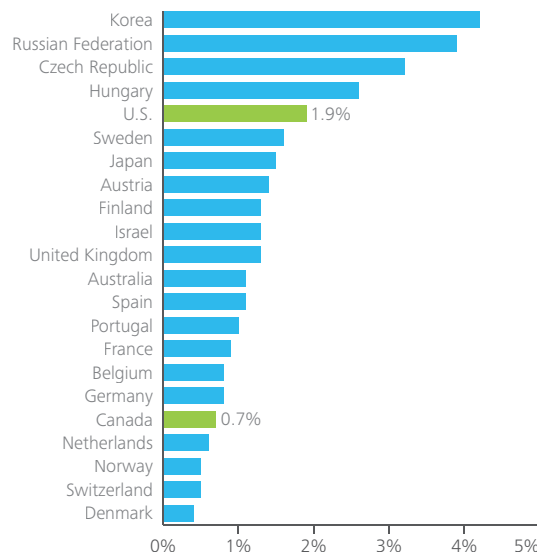
**Figure 3 Canada and U.S. GDP per worker, indexed to 1981**



The erosion of these advantages is increasingly exposing Canada’s high standard of living to a problem that has been growing unchecked for almost thirty years. In the early 1980s, the productivity of the Canadian economy (defined as GDP per worker) was comparable to that of the United States. As growth in U.S. productivity outstripped Canada’s in the ensuing decade, a gap opened between the two countries. This gap was sustained throughout the 90s and has grown rapidly over the last decade. From 2007 to 2009, U.S. productivity continued to grow at a healthy rate, while Canadian productivity declined in each year by an average of 0.9%, leaving Canadian output per worker at only 86% of American output per worker.<sup>3</sup> (Figure 3)

Canada’s poor productivity performance is not limited to comparisons with the United States. From 2001-2009, our annualized productivity growth of 0.7% was in the bottom quartile of the OECD, far below traditional comparators like Australia (1.1%), as well as other small economies like Israel (1.3%) (Figure 4)<sup>4</sup> and Austria (1.4%).

**Figure 4 Labour productivity growth, 2001-2009**



### Defining productivity

A nation’s productivity is determined by the amount of output, measured by GDP, which the average worker in that country creates in an hour. Improving productivity does not mean working longer hours for lower pay. In order to generate a high output per worker per hour, economies must employ a significant proportion of their population in jobs whose outputs are not commoditized, and can command a premium. As a result, highly productive modern economies tend to be characterized by skilled employees with the capacity to innovate. These employees are paid higher wages and have better working conditions than the average workers in less productive economies.

Accordingly, saying that U.S. productivity is higher than Canadian productivity means the average American worker needs to work fewer hours than the average Canadian worker to create the same value, as measured by GDP. In dollar terms, the average Australian generates \$2 more per hour than the average Canadian; the average American generates \$13 more, and the average Norwegian generates \$29 more.<sup>5</sup>

GDP per capita is, in the opinion of most economists, the single most important factor in determining a country's overall standard of living. This measure comprises three factors: the employment rate of the country; the number of hours worked by the average employed resident of the country, and the productivity of the work done by those employed citizens. (Figure 5) Of these three factors productivity is by far the most important, with growth in GDP per worker contributing 78% of total growth in GDP per capita between 1976 and 2009.<sup>6</sup>

Figure 5 Factors influencing standard of living

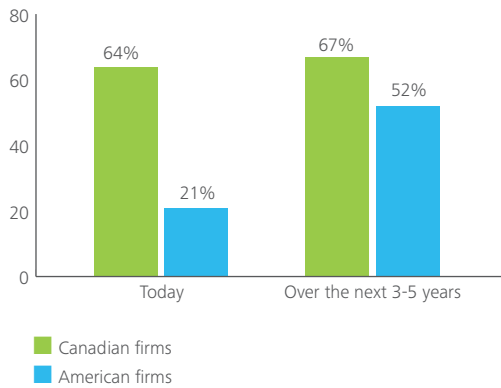


Canada's employment rate and average hours worked have shown solid performance over the past decade. The unemployment rate has hovered between 6% and 8%, considered by many to be near full employment, while hours worked, despite a slight decline in recent years, remains well within the range of OECD comparator averages.<sup>7</sup>

### The impact of changing demographics

Both employment rate and average hours worked will come under intense pressure from the demographic shift of the coming decades. As baby boomers leave the workforce, the proportion of the population 65+ relative to those 20 – 64 (the old age dependency ratio) is forecast to grow rapidly from 23% today to 31% in 2021, reaching 47% by 2050.<sup>8</sup> At the same time, older individuals deferring retirement are expected to demand more flexible schedules and fewer hours, driving down the average hours worked per employee.<sup>9</sup> Given the unavoidable prospect of a falling employment ratio and declining hours worked, Canada must determine a way to drive higher productivity growth or face the spectre of a declining standard of living.

Figure 6 Survey respondents who indicated a favourable view of the economy



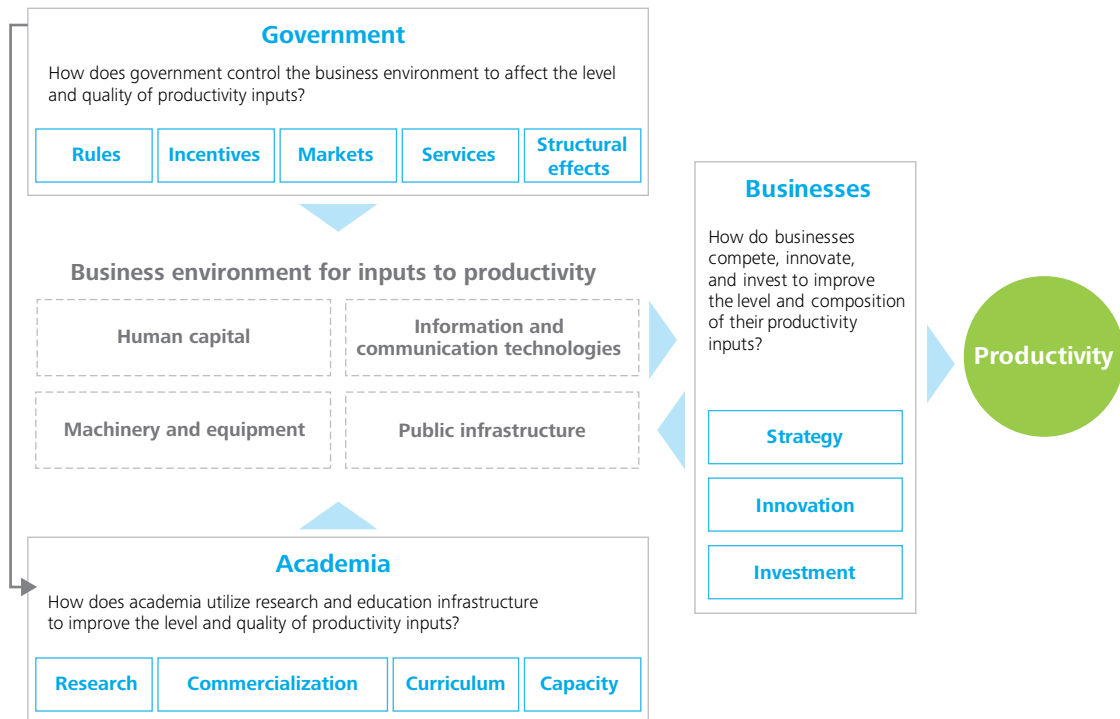
### A finite window of opportunity

In Deloitte's survey of Canadian and American business leaders, we determined that Canadians are far more optimistic about the current and future state of their nation's economy than their peers in the United States are about their own economy over the next five years.<sup>10</sup> (Figure 6) This disjoint represents a unique and likely finite window of opportunity for Canada to make significant productivity advancements. To foster accelerated growth and close the increasing gap between Canadian productivity and that of other advanced economies, Deloitte believes three key stakeholder groups must be engaged. (Figure 7)

- Government at all levels must consider how the decisions they make impact the overall business environment and the choices of individual businesses.
- Academic institutions must consider how they can use the research and education infrastructure at their disposal to support the most efficient possible combination of resources in the economy.
- Canadian businesses must consider how best to invest in their ability to compete and innovate in the global economy.

These groups must work together deliberately and collaboratively to tackle the most serious issues driving poor Canadian productivity.

Figure 7 Key actors influencing productivity



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# What's undermining our productivity?

Deloitte's analysis of the factors impacting Canadian productivity includes detailed research of secondary sources; interviews with stakeholders in the start-up community on both sides of the border; and a survey of executive attitudes. The latter was conducted using an interview-style questionnaire with 902 Canadian and American executives responsible for charting their firms' strategic decisions.

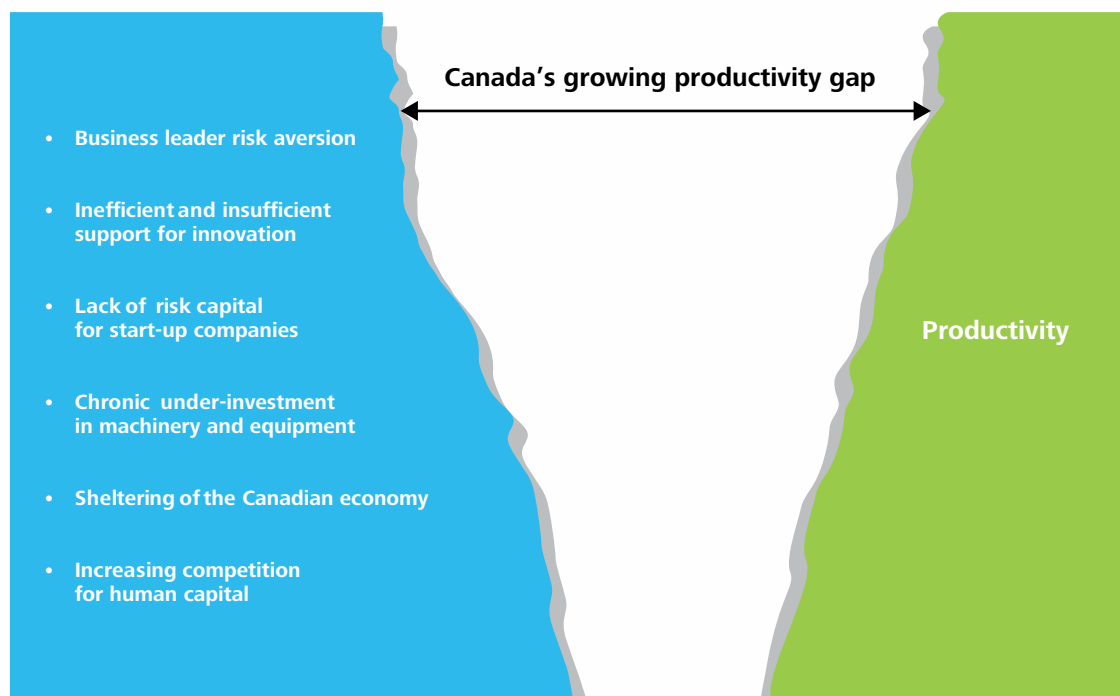




From this comprehensive study, we identified six key issues driving Canada's weak productivity performance: (Figure 8)

- Business leader risk aversion
- Inefficient and insufficient support for innovation
- Lack of risk capital for start-up companies
- Chronic under-investment in machinery and equipment
- Sheltering of the Canadian economy
- Increasing competition for human capital

Figure 8 Six key issues driving Canada's productivity gap



### Business leader risk aversion

Operating a business in a free market requires even the most cautious manager in the most stable sector to make risky decisions. To successfully navigate the relationship between risk and reward, business leaders must have the willingness and ability to appropriately position their companies along this continuum.

Over time, firms able to undertake risk intelligently will generate higher returns and better productivity than their more risk-averse competitors. They will make investments in research and development that allow them to launch new and innovative products. They will develop new and improved production techniques, implement international best practices, and integrate state-of-the-art machinery and IT. They will attempt to expand their geographic reach, market share, and client base to achieve economies of scale and scope.

Along the way, R&D will sometimes fail to yield a groundbreaking discovery, new machinery will prove unsuitable, or expansions will fall short. However, if firms measure their risks, manage their exposure, and learn from their shortfalls, they will ultimately grow larger, more efficient and more innovative than those competitors who have worked to minimize risk at every turn.

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Canada has long been regarded a risk-averse nation. Recently, Canadians – and the world – have developed a newfound appreciation for the institutional prudence of our banking system and regulatory regime. However, our reputation for caution applies to our firms as well as to our government and regulatory institutions. It is common to hear that large Canadian businesses are hesitant to expand into international markets, and that owners of mid-sized Canadian companies are satisfied with the status quo. Although plenty of anecdotes exist to support and contradict these statements, there has been little substantive evidence either way – until now.

### Canadian versus American risk aversion

In 2011, Deloitte engaged a leading national polling firm to conduct interviews with 450 Canadian and 452 American executives representing small, medium and large firms across a broad array of industries. Our survey of the attitudes of these senior executives focused specifically on their willingness to assume business risks associated with growth and innovation.

On the surface, our findings on risk tolerance were consistent with the responses reported in a 2003 study by the Institute for Competitiveness and Prosperity.<sup>11</sup> When asked to evaluate themselves along a risk-reward continuum, Canadian business leaders' responses distributed almost identically to that of Americans. In other words, individual Canadian executives view themselves as being *no more or less willing* to take on intelligent risks than their counterparts south of the border.<sup>12</sup> (Figure 9)

Our analysis then contrasted individuals' reported risk tolerances with the level of risk tolerance implied by the *actual decisions that they reported making* and the decision-making heuristics used to inform those decisions. This analysis is reflected in the Deloitte Executive Risk Behaviour Index. (Figure 10) This index evaluates the risk tolerance of firms based on a number of criteria including investments in R&D, investments in commercialization of innovation, and risk evaluation practices.

When examined at this level, we see that self-perception is not always the strongest gauge of reality. Despite self-reporting similar risk tolerances to Canadians and being more pessimistic in their outlook on the economy, American respondents were shown to be, on average, a full 13% more tolerant of risk than Canadians. This gap widens to 18% when adjusted for the more negative current economic state and future outlook of American respondents.<sup>13</sup>

Figure 9 Self-reported risk tolerance of surveyed executives

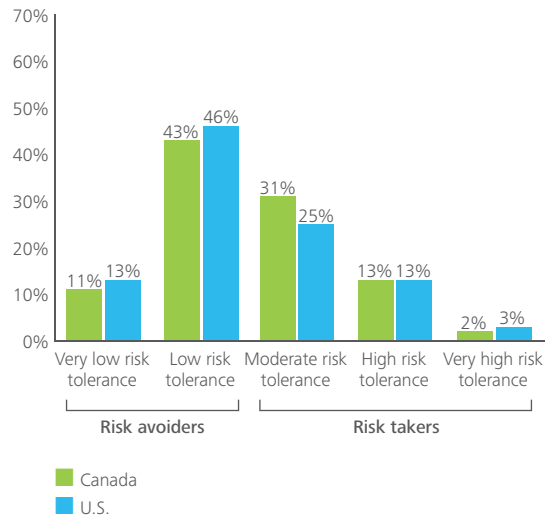
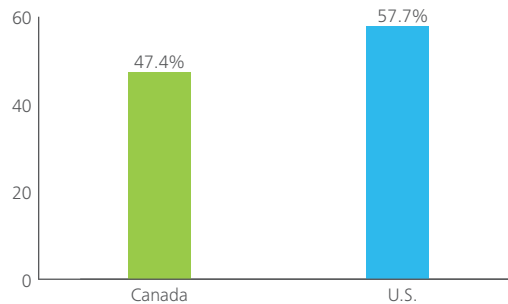
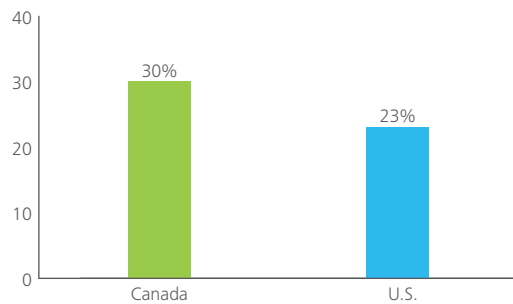


Figure 10 The Deloitte Executive Risk Behaviour Index calculated from survey responses



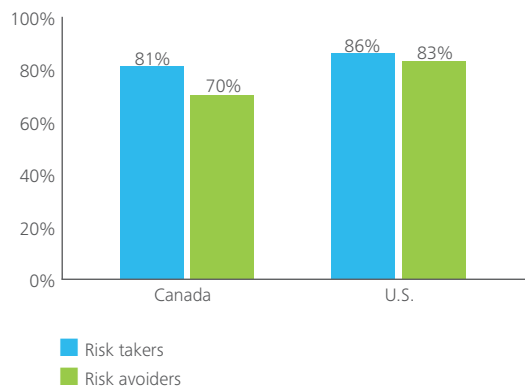
**Figure 11 Likelihood of increasing R&D spend based on government grants**



**Risk aversion impact on participation in R&D**

The Deloitte survey also revealed two specific insights into how Canadian and American executives differ in their willingness to pursue risks. The first demonstrates the divergent roles governments play with regard to decision-making about investment in innovation. As illustrated in **Figure 11**, Canadian firms indicated that they would be more likely than American firms to adjust their R&D spending in response to government support for R&D (e.g., tax credits, research grants). Alternatively, American firms would be directionally more likely than Canadian firms to adjust their R&D spending in response to circumstances such as expansion in the availability of risk capital or an improvement in the protections offered to innovations by intellectual property rights. This suggests a greater reliance by Canadian firms on government support in order to motivate investments in R&D.

**Figure 12 Survey respondent participation in R&D activities**



The second insight reveals that self-reported risk tolerance plays a role in the real-life decisions of the respondents. As mentioned earlier, no significant difference was observed in the number of Canadian or American respondents who reported a high risk tolerance (risk takers) or a low risk tolerance (risk avoiders). However, when examined further, significant differences in the behaviour of these two groups in Canada and the United States became evident.

A telling example of this dichotomy can be observed in the significantly lower participation of Canadian firms in R&D. (**Figure 12**) When we isolate the responses of risk takers, we see a small difference between R&D participation rates of Canadian and Americans (81% vs. 86%). However, isolating the responses of risk avoiders in the two countries reveals a sizable difference (70% vs. 83%), which accounts for the majority of Canadian underperformance on R&D participation.

A similar pattern was observed across a number of questions in the survey. On questions ranging from commercialization of innovation to risk evaluation metrics and dependence on government, the behaviour of Canadian risk avoiders differed consistently from their risk-taking counterparts, a difference which was significantly weaker or simply not present in the U.S. data.

Regardless of their reported risk tolerance, it appears that American firms tend to evaluate and accept risks fairly homogeneously – particularly when contrasted with the sharp divide that exists between Canadian risk takers who either match or slightly trail the U.S. average, and risk avoiders who lag American firms by a significant margin across many indicators.

### **Inefficient and insufficient support for innovation**

Innovation is widely recognized as one of the most important contributors to persistent and sustained productivity growth. It's about more than simply invention; it is the creation and commercialization of new products and services, and the development of new processes – including new methods of distribution and pioneering marketing techniques. A wide number of processes can lead to innovation, but R&D is among the most important.

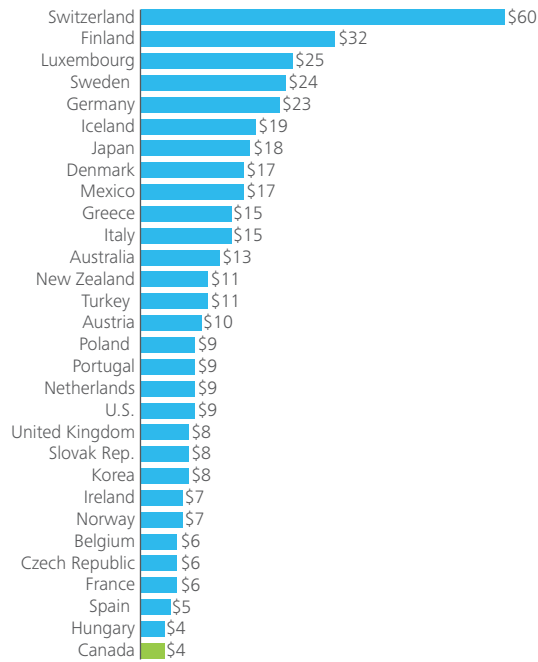
Profitable R&D innovations yield benefits for their creators, and also produce “spillover” advantages such as new knowledge or the establishment of a new market. These spillovers can be freely used by anyone, including direct competitors.<sup>14</sup> A recent example is Apple's successful launch of the iPad, which created and opened a new tablet market for competitors like Samsung and RIM.

Spillovers also introduce a conundrum: since firms are unable to capture all of the profits associated with their R&D, they may choose to conduct it at a lower level than would be necessary to deliver the greatest amount of innovation to society at large. To offset this, many governments offer incentives to entice firms to increase their levels of R&D.<sup>15</sup>

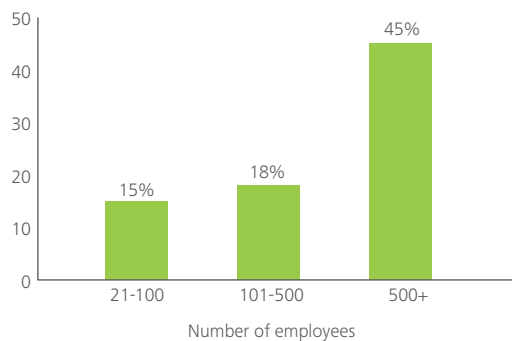
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**Innovation is widely recognized as one of the most important contributors to persistent and sustained productivity growth.**

**Figure 13 Private sector R&D induced per dollar of government support**



**Figure 14 Percent of innovating firms claiming tax credits (2003 data)**



**Canada’s R&D incentives**

These government incentives typically take the form of direct support via government grants or indirect support via tax credits. Over the past two decades, Canada has made significant investments into the SR&ED (Scientific Research & Experimental Development) program which offers tax credits to firms that conduct R&D. At 0.24% of GDP, Canada offers one of the highest levels of support for R&D in the OECD, second only to Korea at 0.34%.<sup>16</sup> Notably, we are the only country tracked by the OECD where more than 90% of government support for R&D is delivered in the form of tax credits.<sup>17</sup>

Despite Canada’s generous incentives program, the level of R&D conducted by the private sector remains well below the OECD average. In fact, as illustrated in **Figure 13**, Canada currently yields the lowest business expenditure in R&D per dollar of government support.<sup>18</sup> An exception to this is Quebec, which has a higher R&D to GDP ratio than the rest of Canada.<sup>19</sup>

Insights into the causes of this may be taken from data gathered in 2001 on the propensity of firms involved in innovation to collect tax credits. While firms with over 500 employees were very likely to do so (45%), those with less than one hundred employees were not (15%).<sup>20</sup> (**Figure 14**) Over the past decade, the Canadian Revenue Agency has made a concerted effort to increase SR&ED filings among small firms, which is believed by many to have significantly improved these figures. However, our survey suggests that many small firms are still deterred by real or perceived complexities of the SR&ED application process. Small Canadian firms indicated they were much more likely to increase R&D in response to reduced application complexity than their mid-sized counterparts.

Challenges also exist with the direct-support mechanisms that exist in Canada, such as IRAP (Industrial Research Assistance Program). While this program is largely well regarded (IRAP has been evaluated twice since its creation, in both cases receiving strong reviews)<sup>21</sup> certain limitations exist. For example, uncertainty around its annual level of funding, and an inability to carry funds over year-to-year, may limit the ability of IRAP’s administrators to manage their portfolio of investments strategically.<sup>22</sup> A side effect of these limitations is that IRAP grant funds are typically awarded by the end of the first quarter, thus making grants unavailable until the following year.<sup>23</sup> Finally, the program offers smaller grants to recipient firms than comparable U.S. granting agencies<sup>24</sup> (Figure 15), limiting the potential impact.

**Figure 15 Maximum available government-backed financing for early stage research funding on a per-company basis from sample programs (\$ thousands)**

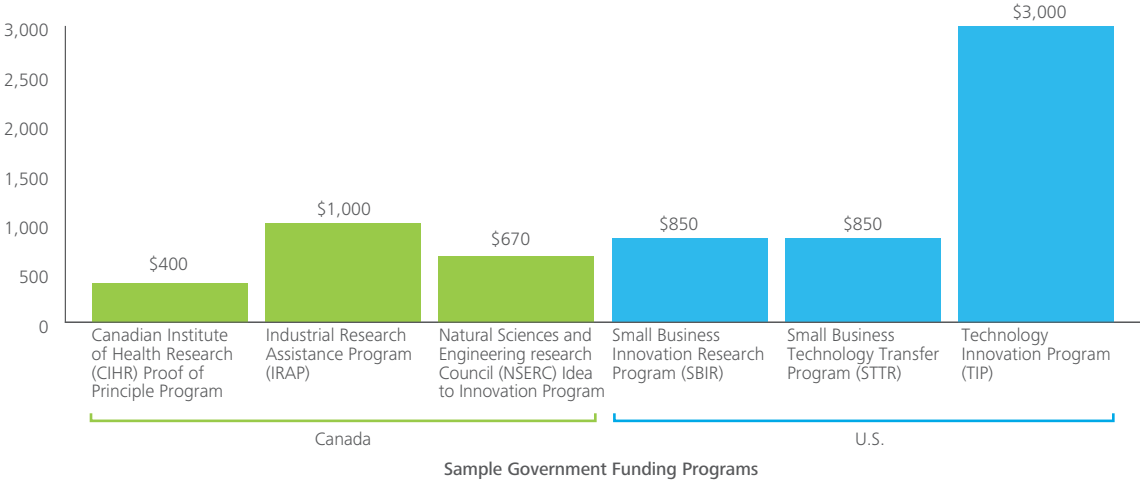
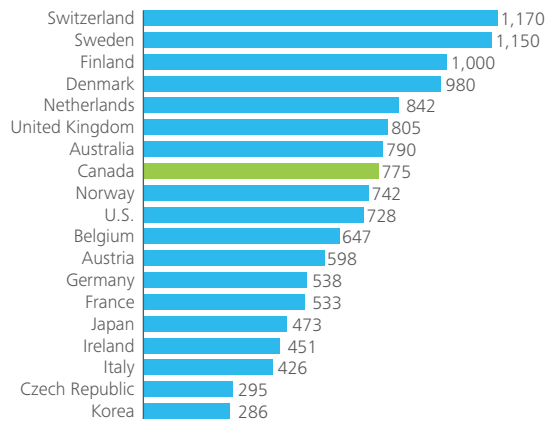


Figure 16 Science and engineering academic publications per million people, 2003



**Strong research, poor commercialization**

The poor performance of Canadian private sector R&D spending is particularly troubling when taken in the context of the excellent work being done at Canadian universities in the areas of science and technology. Higher-education spending on research and development in Canada, as a percentage of GDP, is among the highest in the developed world.<sup>25</sup> This contributes to Canada consistently generating more science and engineering publications per capita than many other OECD nations.<sup>26</sup>

(Figure 16)

Canada’s poor performance in international patenting intensity rankings<sup>27</sup> despite our strong publication credentials suggests that our leading-edge academic discoveries are not reaching the point of commercialization, thus limiting their impact on productivity.

**Lack of risk capital for start-up companies**

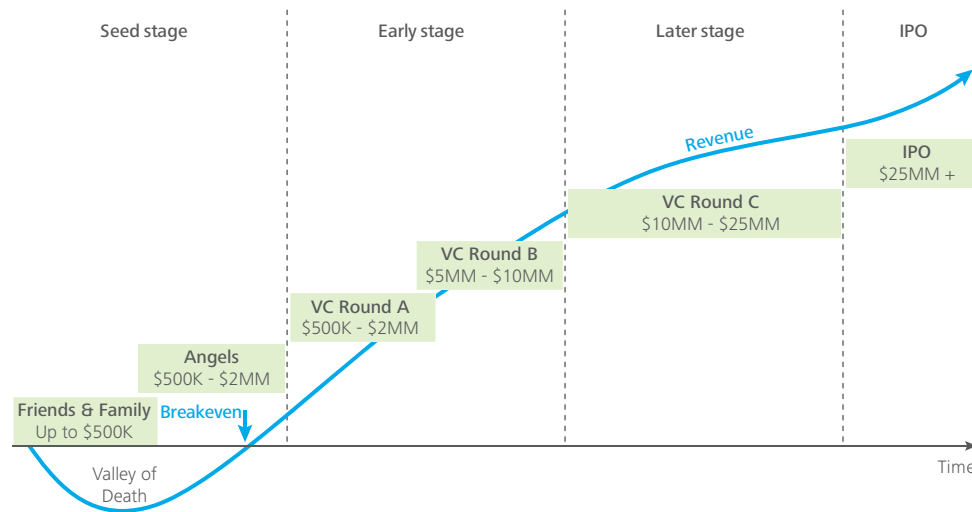
Small innovative start-up firms have the potential to be disproportionate drivers of productivity. These firms tend to invest heavily in R&D, and, as a class, have been one of the most important sources of new employment creation. A study by Industry Canada showed that companies in their first or second year represented less than 20 percent of the total firm but more than 50 percent of net new employment creation over the period of 1999 to 2003.<sup>28</sup>

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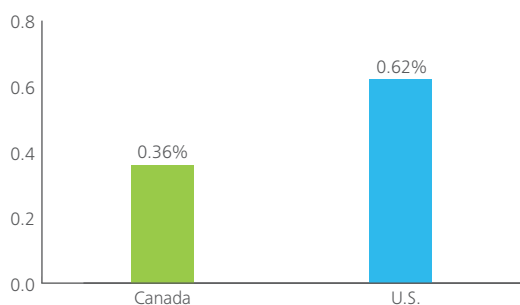
As they are associated with a high risk of failure, these start-ups are typically unable to access traditional capital markets. Instead, they must interact with a large number of specialized investors who make staged investments over the lifecycle of a firm. These investors closely monitor their investments, often offering business advice before ultimately deciding whether or not to provide further financial support. (Figure 17)

Figure 17 Illustrative start-up financing lifecycle



Many indications point to a dearth of capital and skilled individuals providing start-up financing in Canada. As a result, firms with promising ideas for driving new business growth and associated improvements in productivity may not be able to secure financing. Interviews conducted by Deloitte with members of the start-up community suggest that Canadian entrepreneurs may be leaving Canada for jurisdictions where risk capital is more readily available. Those who do locate in Canada find that financing is insufficient to help them reach the point of self-sustaining profitability.<sup>29</sup> Either way, we believe that Canada is losing out on the enormous potential productivity gains that exist in the minds of our most innovative citizens.

Figure 18 Angel investors as a percentage of total population



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#### Friends, family and angel investments: well below U.S. levels

The first step in funding a start-up is typically the collection of small denomination investments from family, friends and co-workers. Canadians appear less likely to make these types of investments than Americans, with 2.84%<sup>30</sup> of the population investing funds in a start-up venture compared to 4.3%,<sup>31</sup> a statistic likely driven by lower risk tolerance in Canada.

Where friend-and-family investments are insufficient to meet the financing needs of a new venture, angel investors become involved. Angel investors typically seek to make investments of between \$500,000 and \$2 million in seed-stage companies that exhibit high-growth prospects. Existing estimates collected by the National Angel Capital Organization suggest that in Canada, angel capital is the largest source of start-up financing after friends and family, providing almost double the level of financing deployed by venture capitalists to a much greater number of firms.<sup>32</sup>

While historically a diverse and disparate community, Canadian angels are increasingly collaborating to form clubs and organizations.<sup>33</sup> These groups are facilitating increased sophistication as they learn from one another, and increased co-investment with fellow angels and other providers of start-up capital such as venture capitalists (VCs).

Angels are informal investors, and therefore are not registered or specifically tracked by government or statistical agencies, making it difficult to obtain reliable data on their numbers or performance. However, global entrepreneurship monitor reports from 2002 and 2003 show that angel investors constitute only 0.36% of the Canadian population,<sup>34</sup> almost half the proportion of the American population (0.62%).<sup>35</sup> (Figure 18)

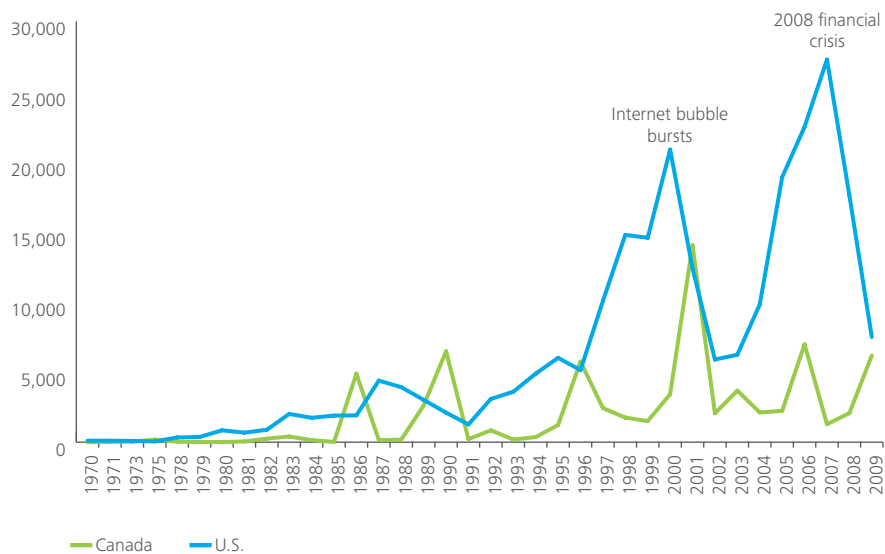
### An underdeveloped VC sector

Further rounds of financing are typically provided by VCs, investment funds seeking young companies with a track record of success and the potential for significant growth. The VC sector has long been recognized as underdeveloped in Canada.

Adjusted for the size of the economy, the availability of venture capital in Canada has consistently lagged that of the United States, sometimes by more than twentyfold.<sup>36</sup>

(Figure 19) Interviews conducted by Deloitte with members of the start-up community suggest that this deficiency is partially driven by the strongly pro-cyclical relationship of venture capital returns to business cycles, particularly since 2001.

Figure 19 Venture capital funding in Canada and the United States  
(Venture capital funds raised per \$1 million of GDP)



In the United States, the world's most successful VC market, venture capital has been an established asset class for many decades, generating many successive years of positive returns despite some disappointing performance periods. In Canada, the first significant VC investments were made in the years immediately preceding the burst of the internet bubble. As a result, investors had no history of positive returns against which to weigh the exceptionally poor performance of most funds. Not surprisingly, many investors, including the overwhelming majority of institutional and private independent investors, chose to leave the asset class, and have not shown much interest in returning to it.<sup>37</sup>

The challenges faced by venture capitalists were further exacerbated by the mass departure of VC fund managers following this crash. These departures are troubling given the strong evidence that operating a successful venture capital fund has a steep learning curve, and that fund managers typically improve through the course of managing their first fund. Evidence taken from a study of U.S. VCs suggests that the ability of fund managers to make successful investments is strongly related to their level of experience.<sup>38</sup>

Plagued by their historical underperformance as an asset class, Canadian venture capital funds have been forced to turn to alternative sources of capital;<sup>39</sup> unfortunately, these frequently come with strings attached. Several fund managers interviewed reflected on the double-edged sword of accepting investments from the federal and provincial governments. Accepting these funds was often necessary for them to reach their target size or to attract private funds, but limited the geographic scope of their investments and often imposed other restrictions such as job creation targets. These conditions limit the ability of funds that accept government investment to pursue the most profitable opportunities for their investors, making them less competitive as a firm and as an asset class.<sup>40</sup>

Similar restrictions are commonly placed on Labour Sponsored Venture Capital Corporations (LSVCCs), a government sponsored, tax-incented vehicle for retail investment in venture capital unique to Canada. These vehicles, which accounted for a significant proportion of total available capital in the early half of the last decade, are typically given dual mandates. They are asked to make competitive returns on their investments, but often face restrictions on the geographic locations of their investments, are given the objective of driving regional employment growth, or are mandated to encourage principles such as employee ownership and worker education. In some provinces LSVCCs also face an assortment of design factors that limit their ability to deliver a competitive return including high management fees and significant agency costs. These design factors, combined with their dual mandate and extensive investment restrictions, appear to contribute to the underperformance of many LSVCCs when compared to private Canadian venture capitalists.<sup>41</sup>

### Chronic under-investment in machinery and equipment (M&E)

Since the industrial revolution, one of the most direct ways to improve productivity has been to augment individual efforts with capital stock in the form of machinery and equipment (M&E). By increasing the number or quality of the machines and tools that workers have at their disposal, firms can produce more during an hour of employee effort, while using raw materials more efficiently and reducing defect rates.<sup>42</sup>

Canadian firms have historically under-invested in M&E relative to their U.S. peers. In 1995, the level of M&E stock per Canadian worker was 62% of that in the United States; by 2009 the number had dropped to 49%.<sup>43</sup> (Figure 20) This results in Canadian workers having fewer mechanical aids at their disposal to make their jobs easier and more efficient.

One increasingly important dimension of M&E is information and communication technology (ICT), which includes computers, software, and communications hardware. Evidence shows that the use of ICT through the value chain contributes to improved firm performance by facilitating the more effective combination of labour and capital.<sup>44</sup> There is further evidence that ICT can help to reduce transaction costs and support the development of innovative new products, services and processes.<sup>45</sup> Canadian investment in ICT is only 49% of that in the United States, with investment in the communications technology subcomponent of ICT at 34% of U.S. levels.<sup>46</sup> (Figure 21)

Figure 20 Canadian M&E capital stock per worker in the business sector as % of the United States

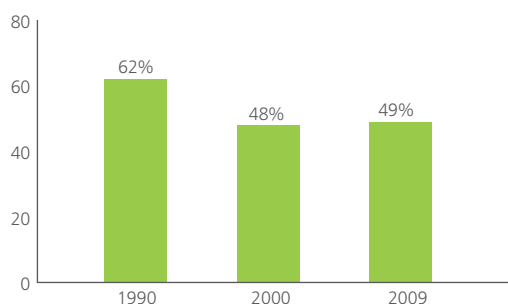
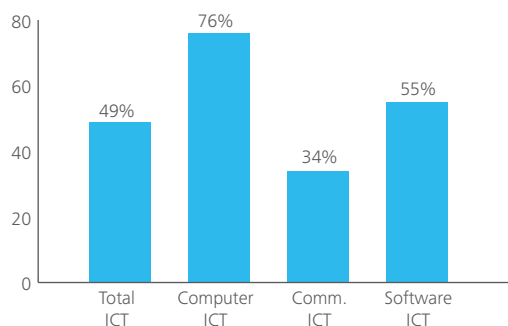
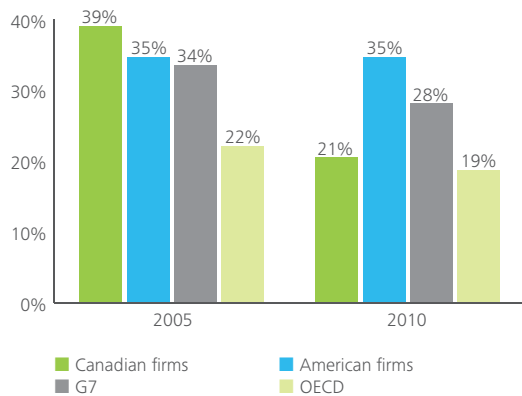


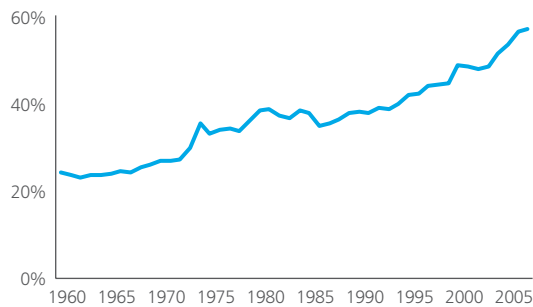
Figure 21 2009 Canadian ICT stock per worker in the business sector as % of the United States



**Figure 22 Marginal effective tax rates on capital investments**



**Figure 23 Global trade as a percentage of global GDP**



Historically, there have been a number of justifications for Canadian firms under-investing in M&E. A significant portion of the machinery and equipment required by Canadian firms is priced in U.S. dollars. The weaker Canadian dollar had created a strong disincentive to make cross-border purchases, forcing existing equipment to last for as long as possible – even at the cost of efficiency. Furthermore, Canadian tax policy has, until fairly recently, discouraged capital investments. As of 2005, Canada’s marginal effective tax rate on capital, at 39%, was higher than that of the U.S. at 35%, and almost double the OECD’s average of 22%.<sup>47</sup> (Figure 22) Finally, the hourly cost of labour in Canada has traditionally lagged that of the United States, reducing competitive pressures to use investments in M&E to make cost saving reductions in headcount.<sup>48</sup>

**A dramatic shift in the real cost of M&E**

Over the past five years the real cost of machinery and equipment investment for Canadian businesses has shifted dramatically. At the time of publication of this paper, the Canadian dollar exceeded that of the U.S. and the Canadian marginal tax rate on capital at 21% was the lowest in the G7, hovering just above the OECD average of 19%.<sup>49</sup>

Canada’s lower labour costs are likely unsustainable, which will increase the competitive imperative for Canadian businesses to invest in M&E in coming years. The growing proportion of retirees in the population is expected to place upward pressure on labour costs, eroding the competitive advantage that Canada has historically had in this area. Deloitte believes that if Canadian businesses are not prepared to address this challenge by effectively integrating smaller labour forces with advanced machinery and equipment, they will find themselves at a significant disadvantage to many less labour-dependant competitors.<sup>50</sup>

There are indications that Canadian firms are responding to these changes and beginning to increase their investments in M&E. The most current data from the Centre for the Study of Living Standards on the stock of

Canadian M&E remains largely unchanged relative to the U.S. over the last few years.<sup>51</sup> However, the 2011 first quarter balance of opinion on investment in M&E (which measures the net of firms planning to increase investment and firms planning to decrease investment) remained strong at 24%, but down from a recent high of 36% in the third quarter of 2011.<sup>52</sup> While this index provides a directional indication of Canadian firms' future investments in M&E, it does not reveal the size of planned investments. Very significant and sustained spending will be required if firms are to close the M&E gap between Canada and the United States.

### Sheltering of the Canadian economy

The question of Canadian productivity does not begin and end at our borders; we are a single country in an increasingly globalized system of trade and capital exchange. Over the last fifty years, there have been transformative changes to the level and variety of inflows and outflows in which advanced economies participate.

Fueled by falling tariff barriers and the expansion of bilateral and multi-lateral agreements, trade as a percent of world GDP has climbed from 36% in 1960 to over 57% in 2007.<sup>53</sup> This trend has wildly expanded the level of choice available to consumers – illustrated, at a basic level, by the availability of fresh Chilean strawberries during harsh Canadian winters and the ubiquity of maple syrup in Japan.

Trade has also improved the productivity of nations who have opened their borders. Firms are now able to access new machinery and equipment from global markets at costs significantly below domestic production prices, facilitating the transfer of new technology and innovations across borders. At the same time, trade flows have allowed successful firms to achieve improved productivity through increased scale or highly focused specialization. In doing so, they have subjected their now-global competitors to increased competition, forcing inefficient industries that were once protected by tariffs to re-double efforts to maximize productivity and spur innovation.<sup>54</sup>

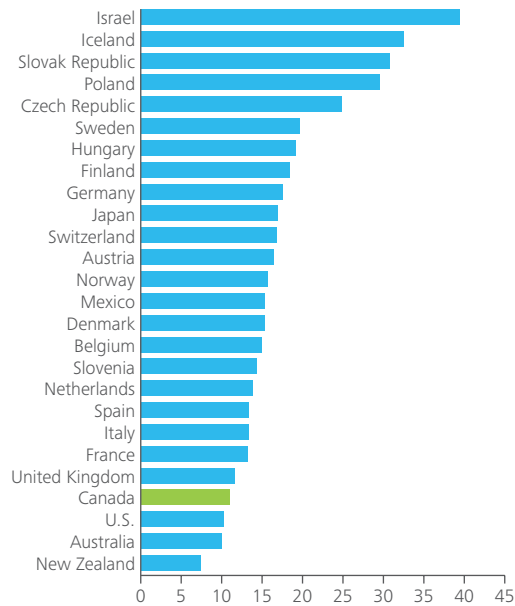
Many firms have not been content to simply produce products within their borders for shipment aboard. Toyota has factories located around the world to serve local markets more efficiently. More recently, professional services firms have begun establishing offshore back office and processing facilities in foreign jurisdictions. Organizations like Intel have chosen to locate their design and production facilities across a variety of countries.

Through the establishment of new facilities and the acquisition of existing domestic players, growth in the stock of foreign direct investment by a country brings with it new technologies and management ideas, in turn increasing competition and productivity within that industry.

### Stalled trade agreements and interprovincial restrictions

Canada made major steps in opening itself up to trade in 1994 with the implementation of NAFTA, providing Canada with preferred access to the world's largest market and our largest trading partner. 68% of Canadian trade is now covered by free trade agreements,<sup>55</sup> making it much easier for Canadian firms to do business as both buyers and sellers with these nations. However, since the implementation of NAFTA, Canada has made limited progress in expanding its trading relations to other nations, with only nine free trade agreements signed<sup>56</sup> compared to 17 by the U.S.<sup>57</sup>

Figure 24 **Average annual growth rate in stock of inward FDI, 1994-2009**



Protectionist policies at both the federal and provincial levels that continue to insulate certain industries from foreign competition are limiting Canada’s ability to finalize new agreements. Due to these policies and lobbying efforts by organizations wishing to limit Canada’s exposure to foreign competition, many Canadian trade negotiations have stalled or become deadlocked. While there are nine free trade agreements that have been signed since NAFTA, twelve are currently under negotiation, many with no end in sight. For example, negotiations with the European Union have been complicated by Canadian protection of provincial procurement markets in certain industries (e.g., green energy), while Canada’s admission into the Trans-Pacific Partnership has all but been refused on the grounds of our protectionist policies towards agriculture producers – namely dairy, egg, and chicken.<sup>58</sup>

While the disruption of global trade with Canada is of great concern, equal attention must be given to trade within our borders. Interprovincial barriers to the free movement of goods serve to subdivide the already small Canadian market, and can limit the ability of our firms to develop the scale necessary to compete in the global marketplace. Furthermore, as illustrated in the example above, protection of provincial procurement markets and differing provincial product regulations can create additional hurdles for signing new free trade agreements.

**Real and perceived barriers to foreign direct investment**

Canada faces problems in the realm of foreign direct investment. Over the past twenty years, our share of global inward foreign direct investment shrank from 5.4% in 1990 to approximately 3% today.<sup>59</sup> In isolation this is not surprising, as rapid growth among developing economies has driven growth in their share of global inward FDI from 25% to 30%.<sup>60</sup> However, viewed relative to the other advanced economies of the OECD, Canada’s average growth in FDI stock from 1994 to 2009 is in the bottom quartile at 11%.<sup>61</sup> (Figure 24)

In Deloitte’s view, poor FDI performance does not reflect a negative shift in the intrinsic or relative value of foreign investment in Canada. In fact, the sound performance of our economy and ongoing boom in commodity prices should serve to make many Canadian properties more desirable. Rather, we believe that the challenges are the real and perceived barriers to investment in Canada.

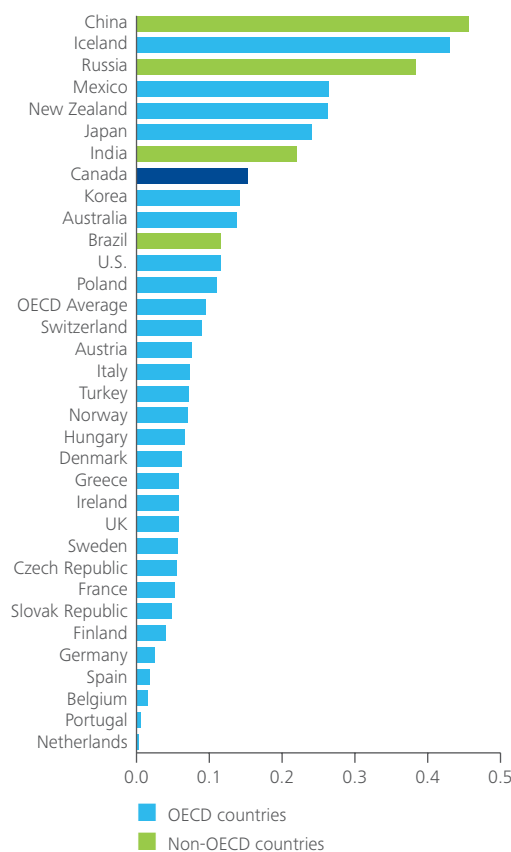
Our country’s reviewing procedure for foreign investment, foreign ownership restrictions within numerous sectors, and board composition requirements give Canada one of the highest FDI Regulatory Restrictiveness scores in the OECD.<sup>62</sup> (Figure 25) This negative halo has been reinforced by the recent high-profile attempt by BHP Billiton to acquire PotashCorp, which brought increased attention to the limited transparency of the regulatory regimes that govern the review of foreign direct investment into Canada.

Under the current structure of the Investment Canada Act (ICA), major foreign direct investment is explicitly required to meet the hurdle of being a net benefit to Canada. However, while the high-level components of this test are known, they are not well understood by investors. Specifically, the weighting of each component and the full list of criteria used to measure the impact of a potential transaction are not publically disclosed.

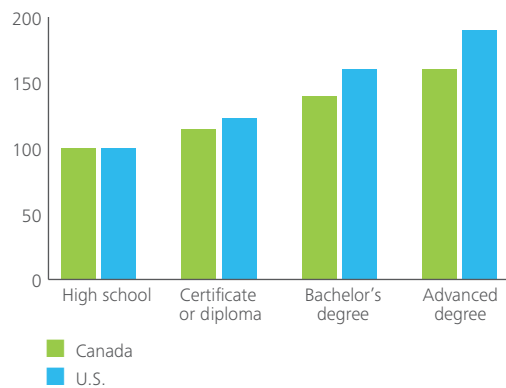
To make an investment in Canada, a foreign company must first identify a target, perform due diligence on that target, secure financing and negotiate the details of the purchase – all before seeking approval under the ICA. This is a costly and time-consuming process that represents a significant sunk cost for the prospective investor. Failure to complete a high-profile transaction can damage the brand of both the target and the prospective acquirer.

If firms are not able to analyze early in the acquisition process whether a prospective investment is likely to be approved, they may choose to forego making an investment in Canada in favour of a nation with a clearer FDI regime. Deloitte suggests that the limited transparency of the current review standard has a cooling effect on FDI inflows, discouraging desirable investments from entering the review process.

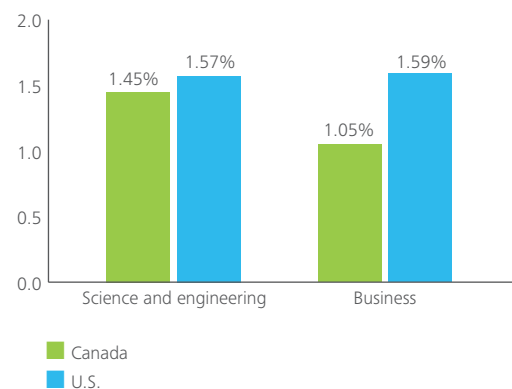
Figure 25 OECD FDI regulatory restrictiveness score, 2010



**Figure 26 Return on investment for higher education**  
Index of hourly wages (high school = 100)



**Figure 27 Subject of degrees awarded per 1,000 population\***



### Increasing competition for human capital

At its core, productivity is a fundamentally human measure, a metric of the value that the average employed individual creates in each hour of work. New machinery and equipment can support the growth of productivity, but only if the individuals operating that machinery have the necessary training and experience to use it effectively. Increased spending on R&D can spur innovation, but only if engineers and scientists can conduct the research and skilled managers can help bring the firm's innovations to market.

Countries have two basic levers to improve the overall quality of their human capital and ensure an effective matching of skills to business needs. They can build the capabilities of people within their borders through education, and facilitate the immigration of skilled workers from other countries.

Canada's education system is rightly viewed as a source of strength and national pride. Canada boasts very low high school dropout rates and strong participation in post-secondary education.<sup>63</sup> Comparing ourselves to our closest neighbour and biggest competitor for talent, however, we see disparities in incentives for pursuing more advanced education. At every level above a high school education, Canadians can expect a poorer return on their investment in terms of future earnings than a comparably-educated American. With each level of educational advancement, this gap becomes larger.<sup>64</sup> (Figure 26) This low return on investment in education is driven, in part, by other factors contributing to lower productivity (e.g., low levels of M&E, limited innovation). Nonetheless, it reduces an individual's incentive to pursue further studies.

Given these poor incentives, it is not surprising that Canadian managers tend to be less educated than their U.S. peers, or that Canadian universities award fewer degrees per capita than the U.S. in science, engineering, and business<sup>65</sup> – areas critical to the establishment of a successful innovation system. (Figure 27)

### The future of immigration

Canada has historically relied on its immigration system to fill skill gaps in the labour market. Our country's ethnically diverse makeup and commitment to multiculturalism has allowed us to integrate new immigrants far more effectively than many developed European and Asian nations. This capability has given Canada a strategic advantage in the form of a large pool of highly-skilled potential migrants interested in becoming Canadians.

However, declining immigration growth rates<sup>66</sup> (Figure 28) and shifting global demographics prompt questions about the suitability of our current approach to immigration. Advanced economies and many developing ones will need to identify new sources of high-productivity human capital to deal with aging populations. At the same time, the rapid growth and new opportunities within major developing nations like India and China will make the prospect of immigration to Canada less desirable for citizens of these countries.

In response to these pressures, Deloitte believes that the dominant paradigm of immigration will shift from a gatekeeper model focused on developing criteria to choose from a large pool of desirable applicants, to global competition for the talent needed to maintain favourable demographics and productivity growth.

Canada faces a number of challenges in making its immigration experience as appealing as possible to highly-skilled prospective immigrants. People entering Canada are much more likely than their Canadian-born peers to accept a job for which they are overqualified,<sup>67</sup> and a much smaller percentage of immigrants actually work in their trained occupation if that field is regulated.<sup>68</sup> (Figure 29) As a result of this mismatch between skills and employment, university-educated Canadian immigrants tend to earn much less than their Canadian-born peers.<sup>69</sup>

Figure 28 Immigration population annual growth rate by period

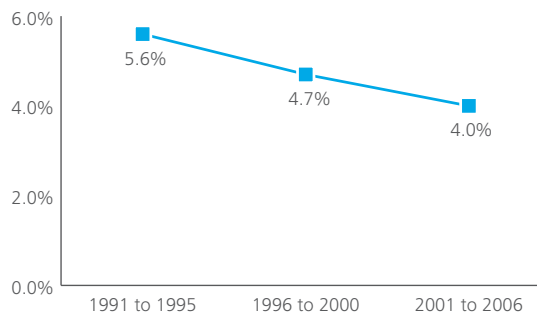


Figure 29 Percentage of overqualified and percentage working in trained occupation in regulated field

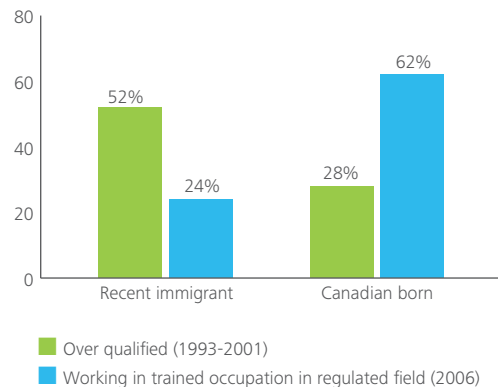
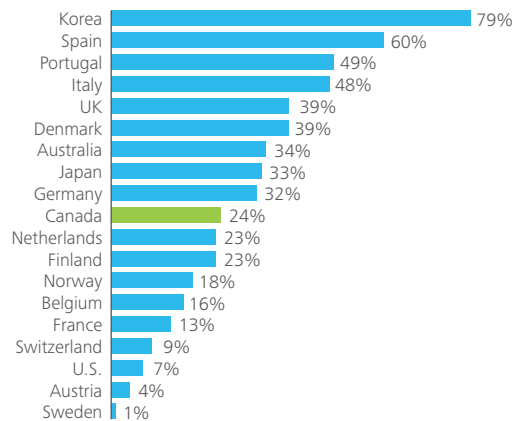


Figure 30 Economic class immigrants as a percent of total immigrant inflow, 2007/2008 average



### The plight of skilled immigrants

Driving this discrepancy are the many barriers immigrants face to gain recognition for their trade or professional credentials. Many regulatory bodies and professional/ trade associations do not recognize the standards of other countries, or even, in some cases, of other provinces.

As a result, individuals who may have practiced as a doctor, engineer, mason, plumber or electrician – whose immigration may have been approved on the basis of a strong demand for these skills in Canada – may find themselves unable to practice in their fields and forced to take a job for which they are overqualified.

We believe that the inability to match skills with market needs is a serious impediment to driving the most productivity growth from Canada's immigration process. Over time, it threatens to limit our attractiveness to potential immigrants possessing the skills we require.

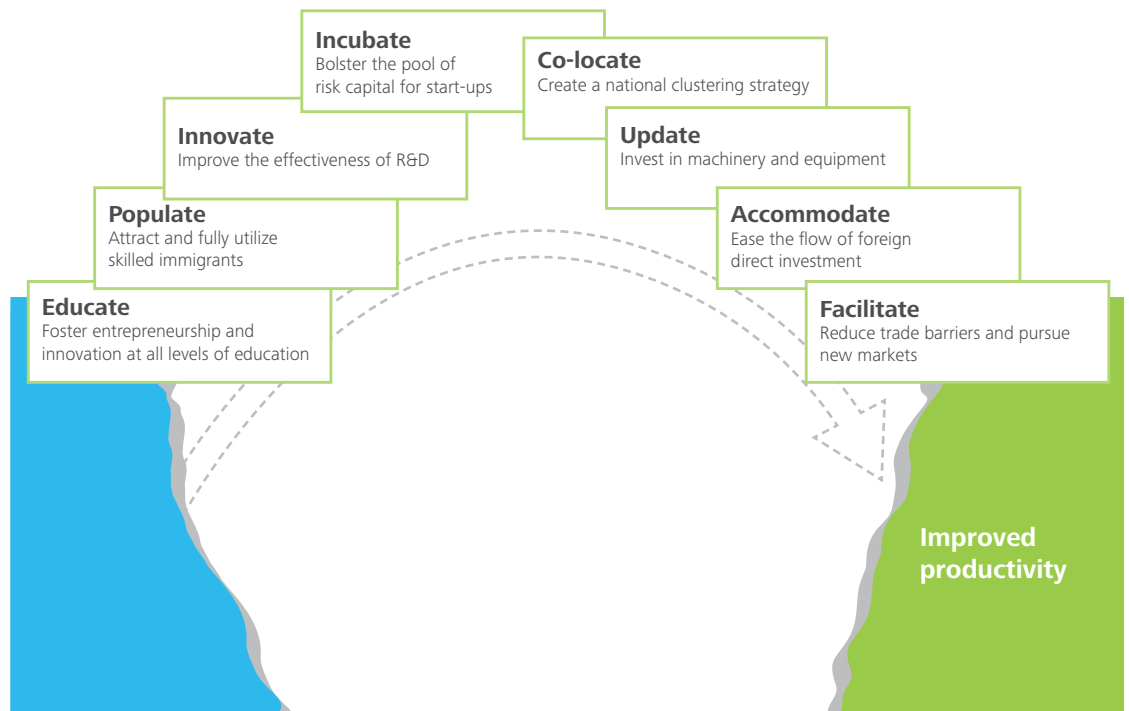
The Canadian immigration system is not exclusively focused on attracting people with high-demand skills. In fact, only 24% of immigrants admitted from 2007-2008 were approved on the basis of their education, skills and experience.<sup>70</sup> (Figure 30) The remainder of immigrants are typically sponsored family members or those accepted for other humanitarian reasons. The fact that these immigrants are not admitted to Canada on the basis of their skills is not a detriment to the system. Indeed, if we wish to bring into the country immigrants who will integrate successfully and identify themselves as Canadians, making their families part of that process is essential. However, it does underscore the importance of taking full advantage of the skill sets of those individuals admitted on the basis of their ability to contribute to the Canadian economy.

# Eight actions for a stronger Canada

To address the serious issues undermining Canadian productivity and capitalize on the current favourable market conditions, Deloitte has developed a set of eight actions for near-term implementation.

These recommendations will have a lasting impact on the Canadian economy. They are focused on developing highly-skilled pools of human capital to create an environment where innovative ideas are developed and commercialized; where products, services and capital flow freely across borders; and where all these activities are supported by leading-edge tools and infrastructure.

Although each of these eight actions seeks to address multiple issues limiting Canadian productivity, focusing on one or a few will provide only an incremental improvement in productivity. If implemented as an integrated whole, these actions will create a self-reinforcing system where each will enable the success of the others and drive a transformational shift in Canadian productivity over the coming decade and beyond.



# Educate

## Ensure our education system fosters entrepreneurship and innovation at all levels

A focus on education is an essential element of any strategy for improving Canada's future, as it ensures we are developing the skills and capabilities necessary to drive a highly productive knowledge economy. Additionally, a strategic emphasis on education will foster a shift in Canadian attitudes and behaviours over the long term. Education can be used to help close the talent gaps experienced by Canadian firms, while allowing us to support a more entrepreneurially-minded culture more willing to accept measured risk.

The shaping of Canadian attitudes towards innovation, risk and the value of learning itself begins in our primary and secondary (K-12) education system. It is essential that the system provide students with a well-rounded curriculum, a strong understanding of available opportunities, and a greater appreciation of the importance of further education.

To deliver this goal, Canada must redouble its commitment to increasing students' interest and depth in skill sets that form the basis of an innovative economy, particularly in mathematics and engineering where international students continue to show more interest than Canadian students.<sup>71</sup>

Deloitte recommends the development of new content that equips the next generation with an awareness of entrepreneurial opportunities and seeds the skills to intelligently measure and manage risk. It is not enough to present this content during annual job fairs or have it highlighted by the occasional guest speaker. To impact the way young Canadians think about risk and the range of career options available to them, the study of entrepreneurship must be seamlessly integrated into many areas of the curriculum.

We recommend that post-secondary institutions evolve their approach to educating students. Today, many faculties and departments are siloed entities within their universities. Collaboration between faculties and interdisciplinary educational programs is typically handled on a case-by-case basis, and often requires great effort to implement. Universities and other post-secondary institutions must be more flexible regarding interdisciplinary learning, and create specific structures to encourage students to combine their specializations with business and managerial studies. An excellent example is the McGill University program where engineering students can obtain a minor in entrepreneurship from the business faculty.<sup>72</sup> Initiatives like this will develop engineers, scientists, artists, musicians and others with an improved understanding of the business context of their specialization, an enhanced ability to build entrepreneurial activities around their innovative ideas, and the ability to manage businesses in their fields of specialization.

The objectives of both the K-12 educational system and post-secondary institutions can be supported by utilizing alumni and members of the private sector to enrich the student experience. For example, the University of Michigan is striving to expose every second year student – whether studying Art History or Biology – to a presentation from an alumnus of that specialization who has become an entrepreneur.<sup>73</sup> Through their mentorship and interaction, members of the business community can provide a practical illustration of how a particular specialization can be leveraged across many career paths – and may provide the inspiration for students to pursue entrepreneurial opportunities.

# Populate

## Re-tool the immigration system to attract and fully utilize skilled immigrants

In order to attract, retain, and fully utilize skilled immigrant talent, Deloitte believes that several key dimensions of the immigration system must be recalibrated. For economic class immigrants, the system should centre on the human capital needs of the economy as a whole. Screening criteria should be geared to identifying potential immigrants with the greatest potential to fill skill gaps in the Canadian economy. Processing these applications should be expedited to ensure that these deficits are filled as quickly as possible.

Since 2007, Citizenship and Immigration Canada's application backlog has fallen from its high of over 928,000 applications; however, in 2009 a backlog of over 800,000 applications remained, leading to long processing times.<sup>74</sup> Steps must be taken to clear this backlog and facilitate the identification and acceleration of those applications with the strongest potential to contribute to the Canadian economy.

Deloitte recommends that the Canadian government work with professional associations and licensing bodies to identify more effective mechanisms for determining when foreign credentials do and do not meet their high standards. If the skills typically held by immigrants for a particular trade or profession are only a partial match to the requirements of the certification body, training programs and apprenticeship models should be developed to help complement their existing skills in a way that brings them into line with Canadian standards.

In cases where professions and trades are self-regulating, certification bodies may see barriers to credential recognition as a way of preserving the scarcity of their skills and protecting the earning potential of their members. Accordingly, we encourage governments to ensure that professional associations are acting in the best interests of the Canadian economy, and allow labour market needs to be addressed.

Provincial governments have a role to play in supporting the standardization of trade and professional certifications across provinces and in developing nation-wide qualification recognition programs such as the Red Seal<sup>75</sup> program. In addition to providing increased labour mobility for all Canadians, these programs will greatly simplify the process of evaluating and recognizing foreign credentials.

Once the simplicity and transparency of the foreign credential recognition process is improved, we believe the Canadian government should consider implementing an application-processing procedure similar to the "employer driven" model used in Australia. There, candidates must apply to, and have their credentials recognized by, the relevant regulatory body for their occupation before they are able to qualify as an economic class immigrant.<sup>76</sup> The application of this model should, as it has in Australia, help economic class immigrants use their credentials to quickly secure positions in their chosen field of work, gain managerial positions and earn high salaries, all of which will support the growth of Canadian productivity.

# Innovate

## Improve the effectiveness of R&D

Government funding for pure research through universities is among the highest in the OECD, generating groundbreaking science and engineering advances. For this new knowledge to be transformed into innovation, Deloitte believes that universities, businesses and governments must foster increased communication and collaboration.

Universities need to ensure that discoveries with commercial potential have intellectual property protection that preserves their value and maintains an incentive for investments in follow-on research and product/service development. By fostering constructive dialogue between businesses of all size and academics in related fields, universities will be able to identify areas where their existing or future work can extend beyond the realm of pure research. At the same time, businesses will have the opportunity to access the most promising innovations being developed within universities.

Deloitte recommends that governments align R&D incentive programs with the life-cycle stages of innovation development. While the current focus on tax support for R&D provides excellent incentives to invest in research for larger firms, further simplifying the SR&ED program and expanding direct funding at the earlier stage may provide more comprehensive support for young firms.<sup>77</sup> Direct funding programs should allow for the strategic management of their portfolio of projects by providing a longer-term annual commitment to funding, and permitting funds to be carried over.

To maximize the effectiveness of the SR&ED regime at incenting R&D spending, the government should consider introducing refundable investment tax credits (ITCs) for all businesses. Currently, only qualifying Canadian-controlled private corporations with income below a specified limit may receive a full refundable credit; large companies only receive benefit in years with taxes payable. As many operate in cyclical industries with periods of losses, non-refundability makes planning difficult. Full refundability would also solve the adverse U.S. tax consequences faced by U.S. firms with Canadian operations. While their Canadian tax burden is reduced, the U.S. tax burden increases when SR&ED funds are repatriated, limiting the effectiveness of the credit.

Quebec, which offers a refundable tax incentive program in addition to the available federal incentives, is ranked highly on the OECD's regional assessment of R&D spending to GDP, suggesting the effectiveness of a refundable tax credit.

Governments should also streamline the access to government funds and services for start-ups and small businesses, allowing them to devote more time and resources to managing their business than to navigating government programs.

Finally, businesses need to build internal consensus around the importance of R&D, and a sense of urgency for bringing new products and services to market. This means ensuring a commitment to ongoing investments at each stage in the innovation life-cycle.

# Incubate

## Bolster the pool of risk capital

In order to support the growth of a large self-sustaining pool of risk capital capable of serving each step of the start-up lifecycle, Deloitte recommends two specific initiatives.

First, to stimulate the expansion of capital investment at the seed and early stage and promote the ongoing organization of the angel financing space, we suggest the establishment of angel tax credits at both the provincial and the federal level.

In 2003, the province of British Columbia revised its Small Business and Venture Capital Act in order to offer an equity tax credit for investment in B.C. seed stage firms involved in a broad range of economic activities (excluding in the natural resources sector).<sup>78</sup> The response to this program has been positive. A study by the provincial government suggests that the Angel Tax Credit has increased the total amount of angel investment in the province by 50-70%.<sup>79</sup> An October 2010 review of the tax credit suggested that for every dollar tax credit funding spent by the B.C. government, an average of \$1.98 in new tax revenue was created through the stimulative effects of increased angel investment and new job creation by start-ups. Given the overwhelming success of B.C.'s experiment, we encourage provincial and federal governments to collaborate with angel organizations and start-ups in studying the program and developing tax credit structures of their own.

Deloitte's second recommendation to bolster the availability of capital is for governments to collaborate with leading experts and members of the start-up community to identify mechanisms that can support the establishment of a profitable and self-sustaining body or community able to meet the early-stage financing needs of high-quality, innovative Canadian start-ups.

In this regard, the shortcomings of underperforming LSVCCs should be examined. The structure of many LSVCCs permitted fund managers to charge high management fees with little personal exposure to fund performance, limiting their incentives to maximize returns.<sup>80</sup> Further, clauses designed to stimulate the rapid dissemination of Ontario's LSVCC funds into the economy may have forced fund managers to forgo identification of the best investments to avoid penalties for not having fully invested their fund quickly enough.<sup>81</sup> Finally, some academics have argued that creating a separate class of government-sponsored funds that competed directly with pre-existing venture capitalists for returns distorted the market for venture capital, pushing down returns and driving large private funds out of the market.<sup>82</sup>



We recommend that any mechanism to support the Canadian early-stage financing sector recognize these basic principles:

- The sole focus should be on supporting the development of a healthy early-stage financing sector. Previous attempts to achieve a dual mandate by imposing conditions designed to, for example, stimulate the local economy, have only served to diminish early-stage returns and make them a less competitive asset class – fostering an even greater dependence on government support.
- Fragmenting the early-stage financing space introduces damaging market distortion, so the mechanism should avoid creating a separate class of “government-sponsored” early-stage funds that compete directly with private funds.
- Given the long horizon for the development of skilled managers, the mechanism should encourage the ongoing development of Canada’s existing pool of early-stage capital management talent while encouraging the entry of former entrepreneurs with specialized knowledge into this space.

One mechanism that may be well aligned with these principles is the development of a government-managed “fund of funds” tasked with making investments into, or co-investments with, new and existing Canadian venture capital funds. This fund of funds could be structured as or within a crown corporation or agency with a clear objective of maximizing returns, similar to the Canadian Pension Plan Investment Board. Capital for this fund could come from the coffers of federal/provincial governments, or through retail investments accepted by the fund and incented by a federal/provincial tax credit.



# Co-locate

## Create a national clustering strategy

In recent years, the development of clusters (referred to as “business clusters,” “innovation clusters,” or “industry clusters”) has gained prominence in the quest for driving innovation and productivity. Clusters are characterized as groups of geographically-concentrated firms with extensive interlinkages. While Silicon Valley and the Boston life sciences clusters are the most cited examples, clustering need not be limited to the high tech sectors. Detroit’s automotive industry, New York’s financial sector, and Northern Italy’s shoe producers are also excellent examples.

There is significant quantitative evidence showing that firms grouping in a specific region exhibit higher productivity than their counterparts who operate in more dispersed regions. This results from:

- **Improving efficiency:** Physical proximity makes coordination and transactions between firms simpler and allows for faster diffusion of best practices. Proximity to rivals may also allow firms to more easily conduct and respond to performance benchmarking and to pursue strategic differentiation. Finally, the clustering of firms facilitates the formation and development of inputs such as specialized professional services firms, research/training institutions, pools of specialized human capital, supplier clusters, and public goods.<sup>83</sup>

- **Innovation:** Michael Porter argues that clusters support a faster pace of innovation by increasing the likelihood that firms within the cluster will perceive unmet needs and combine services/technologies to innovate.<sup>84</sup> Clusters support this activity by facilitating more frequent interactions and exchanges of knowledge among individuals within related firms through buyer-supplier relationships, joint ventures, and research consortia.<sup>85</sup>
- **New business formation:** Clusters form an ideal environment for the development of start-ups and spin-off companies. They draw highly-skilled innovators and complimentary firms such as specialized angels, venture capitalists, lawyers, accountants and marketers prepared to serve the unique needs of these new enterprises.<sup>86</sup>

World-class clusters bring together talented human capital, cutting-edge technology and high rates of innovation to create conditions that allow a small geographic region to have a disproportionately large impact on the productivity of an entire nation.

Despite the many benefits that clusters create, their progress must be measured in decades rather in years. Southern Australia’s now famous wine cluster took almost seventy years to achieve international success.<sup>87</sup> With this in mind, governments around the world are working to develop strategies to effectively accelerate the growth of existing clusters and the incubation of new clusters. In Canada, the National Research Council (NRC) has been actively involved in supporting the development of clusters for over two decades, focusing on science and technology.

During the late 1980s, the NRC made significant investments in establishing two new government research laboratories and updating three existing laboratories to serve as anchors for the development of bio-tech clusters.<sup>88</sup> The mixed results of these efforts provide useful learning. The Biotechnology Research Institute in Montreal and the Plant Biotechnology Institute in Saskatoon attracted a significant number of biotech firms to their regions, and now sit at the heart of established clusters. However, those institutes established in Ottawa, Winnipeg and Halifax had minimal success in attracting new firms to the area, particularly compared to the rapid development of biotech clusters in Toronto and Vancouver where no Federal clustering programs exist.<sup>89</sup> The Ottawa/Winnipeg/Halifax efforts did not emerge as successful clusters because top-down government actions were not sufficient to support the emergence of a healthy, self-sustaining cluster.<sup>90</sup> Businesses within an area, local universities, and all levels of government – including municipal – must collaborate for clusters to take root.<sup>91</sup>

Deloitte believes that a national clustering strategy is necessary to capture the significant productivity gains driven by clustering. However, this strategy is best directed at a regional level, not as a top-down initiative driven by the federal or provincial governments. Local businesses, municipal governments and nearby universities have the strongest grasp of local strengths (e.g., concentrations of particular types of human capital; natural resources; institutions; existing firms) that can provide the foundation of a new cluster. These actors should be encouraged to collaborate in cluster management associations to develop strategies that combine their region's advantages in ways that can support emergence of new clusters.

Having developed a local clustering strategy, the federal and provincial governments should collaborate with regional cluster management associations to reinforce the regions' advantages and help create conditions that will support the implementation of the strategy. One of the most important enablers is to invest in infrastructure that helps to attract large anchor firms and delivers spillover benefits to smaller firms in similar industries wishing to co-locate. Although developing clusters may require large upfront government investments, the resulting more "complete" community will be less dependent on ongoing government support.

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Clusters allow a small geographic region to have a disproportionately large impact on the productivity of an entire nation.

# Update

## Invest in machinery and equipment

Investment in machinery and equipment is one of the most rapidly deployable mechanisms for sustainable productivity improvements. The acquisition and integration of more and better-quality M&E by Canadian businesses will quickly help employees produce more per hour, reduce quality control deviations, and facilitate process improvements that improve energy efficiency and raw material usage.

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**Investment in machinery and equipment is one of the most rapidly deployable mechanisms for sustainable productivity improvements.**

Today, conditions for investment in machinery and equipment are extremely favourable for Canadian businesses. Executives in Canada exhibit strongly positive outlooks on the current and future state of our own economy; international financial market volatility has returned to normal levels; and consumer demand in the United States is showing signs of recovery.<sup>92</sup> U.S. price levels remain depressed by the recent recession and the Canadian dollar is above parity with the U.S. dollar, making investments in M&E more affordable. Finally, the Canadian federal and provincial governments have maintained their commitment to low marginal tax rates on capital investments, giving Canadian businesses the lowest such rate in the G7.

However the convergence of these favourable conditions could dissipate at any time. Price levels in the United States are expected to rise over the next year and the value of the Canadian dollar, which is heavily influenced by the price of oil, could change significantly based on unexpected shifts in international commodity markets.

Deloitte's recommendation in this regard is directed at the enterprise level. Compared to many of the actions advanced in this paper that will take significant time and effort to implement, the path to increasing Canada's stock of machinery and equipment is straightforward. The decision to invest in M&E resides within individual organizations, is controlled by a relatively small group of stakeholders, and can easily be tailored to a firm's unique needs.

# Accommodate

## Encourage the flow of foreign direct investment

To counteract the growing perception that Canada is closed to major foreign direct investments and ensure that international investment continues unabated, Deloitte has three specific recommendations.

First, we advise that the net benefit test be made more transparent, with more information provided on the metrics used to measure each component and on their relative weightings. Firms considering investing in Canada will be better able to perform reliable internal assessments on the likelihood that their transaction will be approved and understand if any conditions will be placed on an approved transaction.

Second, we suggest that the term “strategic industries” be better explained. Over the past year, this term has been increasingly present in the lexicons of many federal and provincial figures in Canadian politics. Perhaps spurred by these comments, the term has gained wider usage in popular discourse and media reports. However, with the exception of cultural industries which are clearly defined within the ICA and whose protections are specified, there is no mention of strategic industries – nor a definition of what constitutes a strategic industry.

If the government wishes to create additional requirements for foreign acquisitions in certain sectors on the basis of their importance, as part of defining strategic industries, our suggestion is to introduce greater transparency into the nature of these requirements. If acquisitions in certain sectors are to be subject to more rigorous review processes, clarity should exist regarding the industries, companies, and intellectual properties to be designated strategic under the ICA, and to what additional rigours transactions will be subject. In clearly identifying acquisition targets that are “off the table,” Canada will avoid the reputational damage of rejecting high-profile takeover bids, and foreign investors will avoid the cost and potential brand damage of these rejections.



Our third recommendation in the area of FDI is that the ministries responsible for any protected sectors be tasked with conducting periodic reviews of foreign ownership restrictions to identify opportunities for the removal or update of restrictions that limit competitive pressures. In addition to the limitations imposed by the ICA, regulation and legislation exists to explicitly protect a number of business sectors from foreign ownership, most notably: air transportation, telecommunications, broadcasting, uranium mining and financial services. While protections for each of these sectors were developed with the goal of ensuring Canada's economic stability, physical security and cultural distinctiveness, some have resulted in other challenges. For example, Canadian cellular phone penetration rates are the lowest in the OECD,<sup>93</sup> indicating that the Government of Canada may need to take action in an effort to increase the level of competition in the market.

Each of these explicitly protected sectors has been significantly impacted by sweeping technological changes and increasingly globalized markets. With the exception of financial services, under the Bank Act, none has undergone a regular or comprehensive public review.<sup>94</sup> Because industries insulated from the possibility of takeover become less competitive over time, we believe that the government should reduce foreign ownership restrictions wherever possible, and that any ongoing protection of specific sectors maintain strong competitive pressures and/or some possibility of acquisition to ensure that our most important sectors continue to be a source of strategic advantage.

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**Our third recommendation in the area of FDI is that the ministries responsible for any protected sectors be tasked with conducting periodic reviews of foreign ownership to identify opportunities for the removal or update of restrictions that limit competitive pressures.**

# Facilitate

## Reduce trade barriers and pursue new markets

The past twenty years have provided a compelling argument for the benefits of trade to Canadian firms. Today, a business in Canada can access leading-edge capital and high-quality inputs at very competitive prices from an array of world-wide suppliers. Canadian firms have access to the global marketplace, enabling them to build economies of scale or develop the specialization to compete more effectively in new markets.

Nowhere has the value of free and unrestricted trade been more evident than in our relationship with our largest trading partner, the United States. The establishment of NAFTA gave Canadian firms direct access to the world's largest market while offering our consumers a dizzying range of choice in the form of imported goods.

More recently, rapid growth of economies like China and India means that new foreign competitors are battling for market share in sectors once thought to be the domain of advanced economies. The new prosperity of these economies has also engendered a fledgling middle class with disposable income and a hunger for imports.

It is crucial that Canadian businesses reframe their point of reference beyond North America and consider themselves competitors in the global economy. In doing so, they will become more competitive in defending market share in their home markets, while effectively challenging incumbents in new and emerging markets.

To support this broader focus, Deloitte recommends that the Canadian government foster conditions that allow our businesses to compete more easily and fairly around the world. New trade agreements with emerging economies should be created, and the backlog of pending trade agreements finalized. Policies to protect specific sectors of our economy should be routinely reviewed, and their benefits weighed against the harm they have on Canadian businesses and consumers in the form of lost revenues and higher prices for imports.

In our focus to overcome international trade barriers, it is important not to overlook those barriers to trade that exist within our own country. In addition to creating roadblocks to the finalization of certain trade agreements, interprovincial trade barriers limit the size of markets available domestically. They constrain high-productivity firms in one province from exerting competitive pressures on low-productivity competitors in another, and hinder the development of firms of competitive scale. If Canada wishes to benefit fully from the opportunities offered by the growth of unrestricted international trade and give its firms the best chance of succeeding in global markets, it is essential that provincial governments formulate a strategy for increasing interprovincial competition in protected sectors and for expanding interprovincial trade.



# The courage



# to lead

must come from within the highest levels  
of business, government and academia

A finite window of opportunity is presented by today's promising economic conditions. To capitalize on this window of opportunity, business leaders must fundamentally re-examine their attitudes towards taking intelligent risks to ensure their future competitiveness. Leaders from across government, business and academia must recognize their important role in preserving our standard of living. To allow Canada to reset its productivity trajectory, we have laid out a comprehensive game plan – one with recommendations for people, ideas, supporting infrastructure and access to markets that will allow Canadian businesses and individuals to flourish.

As a long-term participant in, advisor to, and observer of Canadian business, the public sector and academia, Deloitte Canada is passionately concerned with the future of our country. We have a unique perspective on the trends and international practices that can combine to solve Canada's productivity problem at the national, enterprise and individual levels.

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## Acknowledgements

The Deloitte “Future of Productivity” team is indebted to Blaine Woodcock and Jesse McWaters, who co-authored this paper with the research support of David Hutchinson, Douglas Guan and Matt Jaksic. We would also like to thank the many interviewees who took the time to speak to us and share their insights on Canada’s productivity challenge.

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This perspective, like *The Future of Tax*, is part of the Deloitte Future of Canada series.

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