

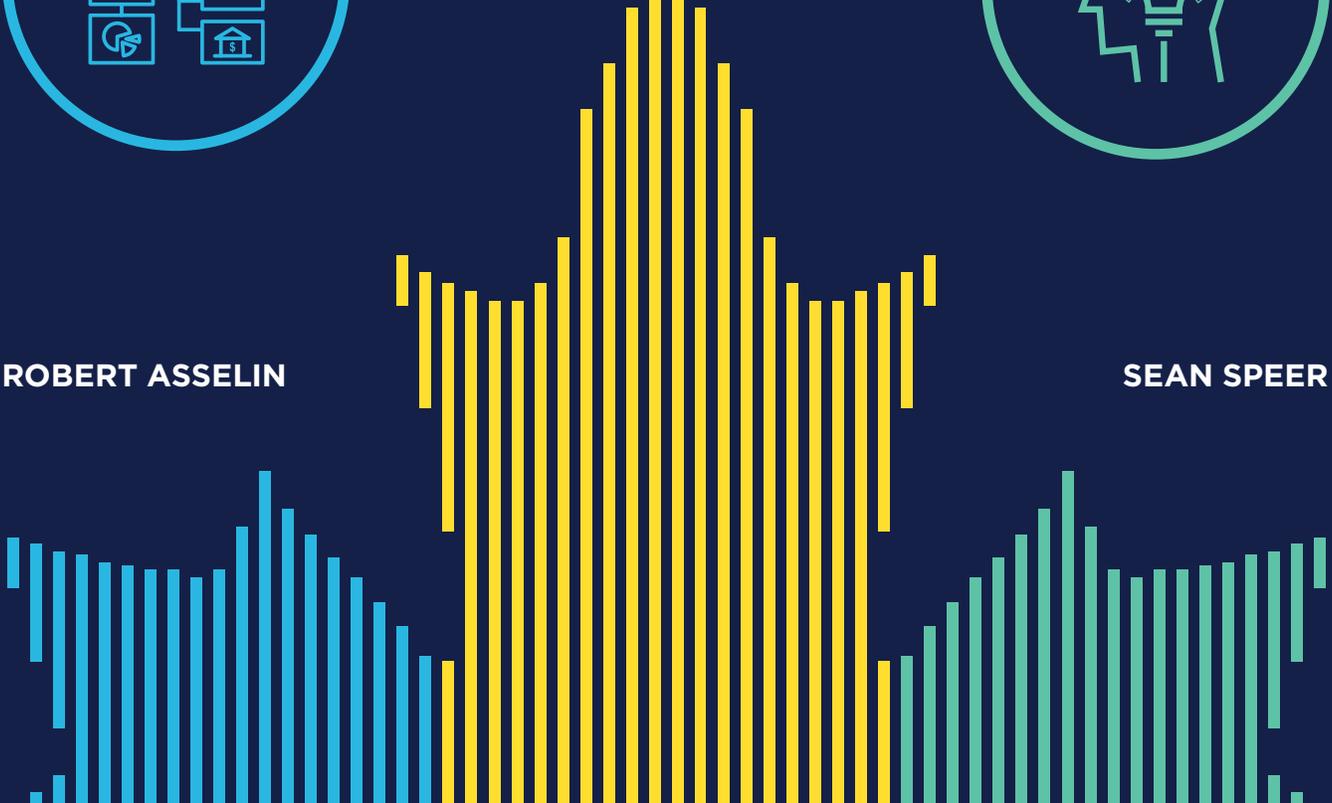
# A NEW NORTH STAR

CANADIAN COMPETITIVENESS  
IN AN INTANGIBLES ECONOMY



ROBERT ASSELIN

SEAN SPEER





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FOREWORD BY **EDWARD GREENSPON**

# THE NEW FRONTIERS OF COMPETITIVENESS

As Robert Asselin and Sean Speer point out in this report, competitiveness resides at no fixed address and never stops to rest. It is a dynamic process and so Canada's ability to create goods and services the world wants and get them to market at attractive prices must be continuously re-evaluated against changing circumstances and the shifting capabilities of other nations intent on eating our lunch.

Asking how competitive we are in relation to China would have been ridiculous 40 years ago. But China first learned to feed itself, then became the factory to the world, and now sets world-leading standards when it comes to such 21st century technologies as solar power and artificial intelligence. Conversely, at the beginning of the 20th century, it made sense for Canada to measure its competitiveness against Argentina, an immigrant and agrarian nation like ours that exported similar goods to the world and enjoyed comparable prosperity. Over

the succeeding hundred years, Canada's more enlightened politics and policies (and proximity to the United States) allowed our standard of living to leap far ahead.

As a result, Canadians have superior housing, health care and higher education (Canada ranks second best in the OECD; Argentina is third worst). A nation's competitive standing should never be discounted as esoteric or elite. It has real meaning for real people — justifying its demand for constant attention.



That's true in normal times, and even more so in today's abnormal times. A series of rapid and far-reaching changes to global, national and regional economies, driven largely by technology but also by demographics and geopolitics, are forcing us to rethink core assumptions as to what makes a nation competitive. Newly emerging factors of economic success are barely recognized, never mind discussed. But they could make a tremendous difference to the welfare of the nation and its citizens.

Many observers argue the changes underway are the most sweeping since the Industrial Revolution of the 1800s, which ushered in a feverish period of migration from farm to city and transformation from craft economy to capitalism. The social impacts were massive. Wages stagnated for a couple of decades even as productivity soared and reformists ultimately introduced historic educational and social reforms while trying to stave off a radical response. Eventually, society adjusted and economies grew, but not without heartbreaking losses of liberty and livelihoods.

Among the Public Policy Forum's five major areas of concentration are the economic and social determinants of growth, policy-making in an age of disruption, and the future of work. We believe as a fundamental principle that faster growing economies have a better chance of delivering prosperity, security and social cohesion to citizens than slower-growing ones. But if significant percentages of the population are excluded from this progress, it eats away at the necessary political consensus at the heart of successful democracies.



## A series of rapid and far-reaching changes to global, national and regional economies — driven largely by technology but also by demographics and geo-politics — are forcing us to rethink core assumptions about what makes a nation competitive or not.

Growth without sustainability is no longer ecologically feasible; sustainability without growth is unlikely to be politically feasible.

The unenviable task of figuring out new ways forward falls to public policy thinkers and practitioners. Wanting to understand how these new challenges and potential solutions impact Canada's economic dynamism and political cohesion, Robert and Sean set out to consider both the ongoing classic factors of Canadian competitiveness (deficits and debt, interest rates, taxation, foreign investment, etc.) and the newer drivers (data, intellectual property, design, brands, etc.) associated with what some have begun to label the intangibles economy.

What is an intangibles economy? It is one that favours intellectual property over physical assets. A research facility for the autonomous vehicle becomes a more valuable asset than an assembly plant for cars in this patents-over-plants world. It is also an economy of more pronounced winners and losers, income inequalities being just one manifestation. To the victors go tremendous spoils since the advantages conferred by IP and data tend to a) create dominant market positions and b) feature near-zero marginal costs for each additional customer. As Silicon Valley investor Peter Thiel has observed, expanding from one to two yoga studios involves the cost of new space and more instructors whereas Facebook, Google or Netflix can add new customers with no additional burden. Robert and Sean provide some

startling figures about the values financial markets place on intangibles versus tangibles.

In looking to understand the components of a contemporary competitiveness agenda, we purposely reached for a pair of writers with attachments to one or another of Canada's historic governing parties. Robert has worked in an economic advisory capacity to a Liberal government; Sean to a Conservative government. As they state, multi-partisanship is essential since any competitiveness strategy worth its salt must be grounded in a long-term perspective and therefore has to persist through several economic and political cycles.

Despite the hyper-partisanship of our era and the depths of disruption, the authors are ultimately optimistic about the possibilities. They note that within a half-dozen years of the divisive 1988 free trade election, a consensus in favour of such free trade agreements had developed among the major political parties. The Mulroney, Chrétien, Martin, Harper and Trudeau governments all pursued complementary goals.

In Part Two of this report, Robert and Sean have divided their analysis into three main sections. The first deals with the classic drivers of competitiveness, the ones that spring from the early economic thinkers and have picked up ideas along the way from the likes of John Maynard Keynes and Milton Friedman. This is the stuff of the competitiveness discussion as we've known it. Getting these fundamentals right remains absolutely necessary.

Yet it is their second section, competitive policies crafted with the intangibles economy in mind, where the most challenging actions lie, for the very reason that everything is new and some of it may test nostrums with which we have grown comfortable. It is starting to be argued in some quarters that we need to look at matters such as free trade, foreign investment, competition and employment policies through the lens of the technological age. Do they confer the same costs and benefits in both a tangibles and intangibles economy? At the very least, this is uncharted territory for policy-makers and demands a deeper understanding of quickly evolving industries and more intense public discussion than it has received to date. We don't want to be caught fighting the last war.

The third section deals with the critical common ground between these two worlds, the ever-greater need to nurture and develop human capital. Talent and skills, from executive suites to the shop floor, have long been vital components of economic success or failure. Even when a nation is blessed with forests, minerals and energy abundance, and access to the U.S. for manufactured goods, human ingenuity is part of the mix. When ingenuity itself — the capacity, for instance, to develop unique IP or data sets as a basis for ongoing wealth creation — becomes the driver of competitive advantage, the quality of one's human infrastructure becomes even more consequential.

With this paper, PPF hopes to broaden the terms of the competitiveness debate in Canada as the country seeks a new policy consensus for a radically changing set of economic circumstances. The work would not have been possible without the contributions of our sponsors: RBC, Business Council of Canada, Teck, University of Toronto, Universities Canada and McCarthy Tétrault; the PPF team, including Chris Cornthwaite, Daniel Pujdak, Jonathan Perron-Clow, Masha Kennedy and Bev Hinterhoeller; and, of course, the two PPF Fellows who devoted their time and deliberation to puzzling over these issues, Robert Asselin and Sean Speer. I thank them all.

**Edward Greenspon**

*President & CEO, Public Policy Forum*

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The rise  
of the  
intangibles  
economy  
requires that  
we test old  
assumptions  
and are  
open to new  
thinking.

Canada's  
economy  
cannot afford  
complacency  
in this new  
economic era.

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# SUMMARY OF POLICY CONSIDERATIONS

## THE OLD CLASSICS



**The enabling environment of competitiveness includes levers such as taxation, regulation and trade rules**

The old classics in the policy and regulatory toolkit are still important, but they need rethinking.

### Improve the tax system

- Mandate a regularized review of the tax system that operates on a thematic basis (e.g., seniors, students, housing and so on) with the goal of making the system simpler, fairer and more efficient.

- Phase out the preferential small business tax rate with the goal of better supporting small business growth and lowering overall business and capital taxes.

### Adopt systematic regulatory reform

- Adopt a systematic and transparent real-time platform for policy-makers, businesses, unions, academics and the general public to track the enactment of new regulations, the repeal of old ones, and ongoing regulatory policy planning.

- Incorporate the objective of regulatory harmonization with the United States into the federal government's regulatory budgeting model so that departments are credited and penalized for regulatory changes that converge or diverge with U.S. and other global standards.

### Leverage infrastructure

- Earmark a share of intergovernmental infrastructure investment for the purposes of catalyzing innovation in Canada's construction sector.

### Enable internal trade

- Establish a comprehensive interprovincial database that provides for an apples-to-apples comparison of laws, rules, policies and regulations.

## THE NEW INTANGIBLES



**The global 'intangibles' economy is driven by data and intellectual property, and is notable for the meteoric growth of companies and their winner-take-all model**

Policy-makers must draw attention to the extent to which the rise of the intangibles economy will require that we adjust and augment conventional thinking about economic competitiveness and the right policies to support it. Canada will need a policy landscape that supports developing, financing and exporting intellectual property as much as physical assets.

### Patents and IP retention

- Public funds for research and development should go to homegrown Canadian companies that will keep IP and data in Canada.

### Data governance

- Promote a new global governance model for the collection, transmission and commercial use of data.

### Procurement

- Leverage public procurement to encourage the development and scalability of new Canadian-based technologies and applications, and keep the money working at home.

### Investment

- Reform the Investment Canada Act's "net benefits" test to better account for the potential effects of a transaction on the broader innovation ecosystem with a particular focus on intellectual property and human capital.
- Lower the Investment Canada Act's "net benefits" threshold for sensitive sectors such as artificial intelligence.

### Competition

- Conduct a comprehensive review of the Competition Act to ensure that it remains relevant for the intangible economy.

## SUSTAINABLE HUMANS



**Human capital is the bridge between the intangibles and tangibles economies, and competitiveness increasingly will rely on developing talent through education, training, lifelong learning and immigration**

Among the training and immigration measures identified in the report:

- Expand work-based learning models across the post-secondary system and enable new educational pathways including broadening the skilled trades/apprenticeship model to a wider range of occupations.
- Streamline and expedite the student work visa process to enable international students to better participate in work-based learning and in Canada's innovation ecosystem.
- Establish mentorship programming for international students involving local entrepreneurs and community leaders.
- Create a new education bond available to young children in low-income households in order to "nudge" them in the direction of post-secondary education.
- Use public funds to catalyze a constellation of training providers to test different models for demand-driven skills training.
- Establish new individualized accounts with a combination of tax preferences and public subsidies to support lifelong learning, professional development, and skills training.
- Expand on current models of Indigenous-led education to increase funding, raise standards, and promote culturally appropriate curriculum.
- Place a greater emphasis on early childhood education in Indigenous communities.
- Increase the phase-out thresholds for the Guaranteed Income Supplement to enable low-income seniors to continue working without facing a steep financial penalty.

# INTRODUCTION

In the world of policy and politics, short-termism and complacency are difficult to resist. They trump partisanship. They trump best intentions. Pressure mounts on any government or political party to respond to immediate issues and keep an eye fixed on the four-year election cycle. Both of us observed these demands in our respective positions as economic advisers to national governments.



The problem is that reactive governance is inconsistent with the mix of long-term policies required to promote broad economic participation and growth. For a competitiveness agenda to maintain and raise Canadians' quality of life, it demands discipline, focus and a vision that extends beyond the election cycle. It thus requires a multi-partisan commitment. A change in government may naturally result in new preferences and priorities, but it should not cause us to lose collective sight of the common bases of competitiveness, productivity and jobs, and the greater opportunities and outcomes they produce for successive generations.

Thus this report leans neither left nor right. The analysis and recommendations do not emerge from a liberal or a conservative perspective, but a bi-partisan one. We take a hard look at the particularities of Canada, including the blessings and curses of being an open economy nestled next to an increasingly wilful superpower that is home to many of the new generation of global technology superstars. On top of the ever-present regular competitiveness issues, Canada, like others, faces a set of new challenges emanating from rapidly changing geopolitical and technological realities. Yet our country is also blessed with advantages conferred by both nature and a legacy of good policy choices, especially in terms of education, immigration and social cohesion.

It is an ongoing challenge to keep coming up with the right answers even as the questions become more perplexing and complex. This paper represents our attempt — in conjunction with PPF — to identify the opportunities and challenges on the road ahead and offer directions to guide policy-makers as they navigate Canada’s economic future.

Our overall assumptions for this paper are as follows:

- **A competitiveness agenda must be fixed on a “north star” that represents a clear, multi-partisan set of long-term economic objectives.** This is the best means to ensure policy-makers remain focused on the overarching goals of competitiveness, innovation and productivity.
- The process of identifying these objectives and developing the policies to achieve them must be inclusive, including voices and perspectives from different industries, regions and backgrounds. We submit that one of the principal reasons these issues have not had greater public resonance is that most Canadians have felt excluded from the conversation and do not understand what it means for them and their families. **The question of long-term economic competitiveness is one of fundamental importance for all citizens.** It cannot be confined to a debate among elites.
- **The rise of the intangibles economy (what has been described as “capitalism without capital”) is a game changer.** Canada’s current policy toolkit is mainly designed for a world of tangible assets, where capital and labour are the main factors of production and investment and trade raise everyone’s boat. The growing trend towards intangible assets, such as data, brands and IP, requires that policy-makers re-evaluate, refine and improve our basic assumptions about economic competitiveness and the best mix of public policies to support it. This does not mean discarding foundational ideas about markets and openness. But it does mean questioning old assumptions and augmenting them with emerging thinking about new factors at play and the “winner-take-all” nature of the intangibles economy.
- **The tangibles economy and the intangibles economy share an interest in the development and deployment of human capital.** Canada has done well relative to other nations but, again, new issues and different points of emphasis are coming into play in a fierce, global competition for talent. Importantly, then, training, attracting and retaining human capital is the one major policy area that bridges these two paradigms.

There are other issues and topics that must inform and shape a pro-competitiveness agenda for Canada. Climate change and the ongoing transition in the energy sector are certainly among them. We recognize that we have glossed over some matters in order to concentrate on under-explored areas badly in need of increased public debate. Our goal is to inform a more elaborate discussion about how policy-makers ought to think about both the old and new drivers of competitiveness, and how Canada’s overall policy framework needs to evolve and adapt in light of changing circumstances.

## PART 1

# CANADA'S COMPETITIVENESS QUANDARY

## What is competitiveness and why does it matter?

Policy-makers, media and other commentators frequently talk about economic competitiveness. One could not read the editorial pages or watch market-related news in 2018, for instance, without encountering a discussion or debate on the topic. The whole policy dialogue was often reduced, unsatisfactorily, to the single variable of corporate taxation.

Canadians may instinctively understand that competitiveness is related to job prospects in their communities or the size of their paycheques. But they have not generally been invited into these larger conversations. The concepts can seem abstract. The policy prescriptions can sound technocratic. And the discussion can be insular — involving a small number of the “usual suspects” in a continuous loop of deliberation among themselves.

The development of such a long-term, inclusive and participatory competitiveness agenda starts by addressing some basic questions.

- What is competitiveness?
- Why does it matter?
- How does Canada perform?
- How can we do better?
- What will it mean for ordinary Canadians?

Careful and deliberate answers to these questions are essential ingredients to well-designed, evidence-based policies and the necessary multi-partisan commitment to sustain them. There is arguably no more fundamental question that Canadian policy-makers must address. A dynamic, competitive and growing economy represents the foundation for all other policies, whether they target broad-based opportunity and participation or income distribution and equity. Social goods are built on strong economies.

Competitiveness is, by definition, a dynamic process as different jurisdictions strive to give themselves a policy edge in order to enhance investment and productivity and to create jobs. It is thus a never-ending process involving a multiplicity of interacting policy levers and tools.

## Why competitiveness matters

The World Economic Forum defines competitiveness as “the set of institutions, policies and factors that determine the level of productivity of a country” — a description we find as useful as it is under-utilized.

A competitive economy is a productive one. More productivity leads to greater prosperity, opportunity and higher living standards.

This point cannot be overstated. Competitiveness matters because it contributes to greater productivity, and greater productivity drives economic growth and rising incomes, which in turn allows for higher living standards, more sustainable social programs and greater social mobility. The Canadian economy is built on selling more goods to the world than we consume. That is the ticket for a relatively small population to run with the economic leaders. This is neither a theoretical point nor a subject of concern only to business executives or institutional shareholders. Rising incomes are a key economic measure for the satisfaction of Canadian households, whether in our hometowns of Salaberry-de-Valleyfield, Quebec and Thunder Bay, Ontario, or anywhere in Canada. Competitiveness is the major determinant between economic growth and economic stagnation. It is the foundation for successful communities and nations. Addressing it is not an issue of left or right; it is necessary and expected across political divides.



**In an age of low trust and high expectations, a competitiveness agenda must be built on two principles if it is to sustain the necessary long-term political commitment:**

- 1** The development of a consensus among the governed that eschews exclusion and elitism; and
- 2** The embrace of a long-term, multi-partisan mindset capable of resisting the gravitational political pull toward short-term, stop-gap measures.

This, of course, does not mean that the processes of innovation and rising productivity produce universal benefits, particularly in the short term. An emphasis on efficiency and dynamism will invariably cause short- and even long-term dislocation for certain sectors, regions and people. It is essential therefore that a corollary of any competitiveness agenda must be a credible plan of transitional adjustment support for those affected. The development, design and implementation of such a plan is beyond the scope of this paper. But we cannot overemphasize how important it is that these two policy agendas work together. The concept of “creative destruction” recognizes that innovation and dislocation are inseparable. The same goes for public policy. This is essential for sustaining public support for dynamic capitalism and protecting against rising economic and social inequality. Canada has benefited from broad political support for different forms of redistributive policies. Going forward, it is imperative for the general good that a well-functioning safety net remains a central preoccupation for policy-makers.

As we mentioned earlier, Canada’s economic competitiveness has been the subject of great debate in recent months, but this discussion has focused on short-term actions and individual policies. Yet a competitiveness agenda is ultimately about a mix of public policy choices over the long term. There are no silver bullets.

As an example, one aspect of Canada’s competitiveness quandary is our stagnant business investment, including Foreign Direct Investment (FDI). Slow business investment is a multi-faceted problem. There is no federal or provincial policy lever that will singularly catalyze large-scale private sector investment. It will require a careful and deliberate agenda involving various policy levers, including possible tax changes, regulatory reform, investments in productivity-enhancing infrastructure, and so on, to restore higher levels of business investment in the country.

An obstacle to such an agenda is that the benefits and costs do not materialize in the short term. For instance, stagnant or declining business investment may only have minimal effects on the short term. Economist Frances Donald describes the economic challenge as eventually “com[ing] up against a speed limit it [the economy] cannot pass.”<sup>1</sup> Low business investment ultimately catches up. Think of an under-capitalized auto plant that can sustain itself now but fails to compete for new global mandates in the future. Or an oil pipeline that can move current supply but cannot handle future growth. Employment and income may be unaffected in the short term. Yet, delays or ignorance will invariably come home to roost as Canada reaches the economic speed limit that Donald describes. Today’s policy choices can produce outcomes that lag but eventually they show up.

Policy-makers must think ambitiously about positioning Canada for long-term competitive advantage in an age of rapid technological and economic disruption. While debates on how best to achieve a competitive economy or how to distribute its fruits should be vigorous, it serves the country best when political parties and private players agree on the essentials of competitiveness and their importance.

One obstacle to reaching this consensus is a tendency to think of economic competitiveness as a static question. This is a mistake. Competitiveness is a dynamic process involving different economic cycles, different policy areas and different policy instruments. It requires a long-term vision that is continuously refined and strengthened to advance key objectives related to investment, productivity and living standards. The idea of a “journey rather than a destination” may be clichéd, but it is important for policy-makers to resist the urge to ever think the dossier is closed and declare “mission accomplished.”

Nowhere is this more true than when it comes to the intangibles and data-driven economy, which is rapidly

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1 Donald, F. June 5, 2018. Canada needs business investment for short-term growth and long-term competitiveness. The Globe and Mail.

producing new factors of competitiveness. These new drivers are creating a fresh paradigm, one that obeys a different set of rules than the conventional economic thinking that has underpinned policy-making the last few decades. New perspectives are challenging basic assumptions about how to think about competitiveness and the right set of policies to sustain it in a tech-driven economy.

The rise of this intangibles economy could have sweeping policy implications. Understanding its effects on public policy can be difficult for political actors. This debate began in the technology world and is only now starting to spill into the public domain. The basic premise is that the new economy will no longer be mainly fueled by capital assets such as equipment, machinery and physical plants and instead will be increasingly driven by intangible assets such as domain names, service contracts, computer software, data and patented technologies.

The intangibles economy is principally about accumulating assets that produce continuous streams of rents with low or no capital requirements after initial investments, and therefore have practically zero marginal costs. Conventional economic thinking is poorly equipped to account for these non-rivalrous assets that can be consumed or possessed by multiple users for multiple purposes. Think of data, for instance. A single dataset can fuel multiple algorithms, analytics and applications, and so the data owner operates with minimal costs and with greater chance of dominating a market.<sup>2</sup>

Famed Silicon Valley investor Peter Thiel has pointed out that the new economic set of rules is unlike those that have existed previously. For someone who owns a yoga studio, for instance, expansion entails higher fixed costs in the form of additional premises or instructors. In contrast, the marginal cost of an added user of Google or Twitter is essentially zero. This is what is meant in



## The new economy will be increasingly driven by intangible assets such as service contracts, software, data and patented technologies.

the technology world by “scalability.”

A new, more zero-sum economy, according to this perspective, requires that policy-makers must both revisit traditional economic policies (such as IP and a foreign investment regime) and enact policies related to new and emerging questions (such as data governance and ownership.) It has been audaciously argued that “neoclassical economic policy has yet to come to terms” with these economic changes and that “a coherent framework has not emerged.”<sup>3</sup>

Add the emergence of AI and growing questions about the “future of work,” and policy-makers face a new paradigm when it comes to Canada’s competitiveness and its long-term economic prospects. Most examinations of competitiveness stick with the classic knitting of taxes and deficits and access to markets — all valid, even critical, to a country’s economic success. In this paper, we aim on top of that to expose the opportunities and challenges associated with the intangibles economy. It behooves policy-makers to rethink and refine conventional policies and enact new ones to set Canada on a long-term path for competitiveness, innovation and productivity.

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2 MIT Technology Review. April 7, 2016. Data’s identity in today’s economy.

3 Ciuriak, D. February 21, 2019. [@DanCiuriak] “When facts change, it is wise to change one’s mind — and one’s strategy (or so said Keynes, Samuelson and maybe both). The knowledge-based and data-driven economy is about accumulating rent-generating assets. Canada’s neoclassical econ policy has yet to come to terms with this.”

# How is Canada performing?

The purpose of our analysis is not to render judgments about Canada's economy in the here and now. There is no doubt that the Canadian economy has been performing relatively well compared to various others since the last global financial crisis. But this type of judgment can, in our experience, reinforce a political predisposition to complacency.

The onus must be on policy-makers to look beyond today's headlines and develop a competitiveness agenda that accentuates Canada's economic strengths and minimizes its weaknesses for a changing world over the long term. Competitiveness must be at least three-quarters about tomorrow rather than today.

Canada must come to grips with both huge opportunities and challenges on the horizon. It has a stable political environment, an immigration system that enables fresh thinking and economic mobility, domestic safety and security, proximity to the U.S. market, and one of the best educational attainment rates in the world. But we also face significant challenges: an aging population, low levels of business investments (domestic and foreign), structural impediments to globally scaled firms, regulatory obstacles that go well beyond pipeline debates, and so on.

**While a multi-partisan consensus around competitiveness from the mid-1980s has served Canada well for more than three decades, policy-makers now must wrestle with growing challenges, including demographic change and productivity stagnation, while adapting to the new drivers of the intangibles economy and preserving and strengthening Canada's position among the traditional factors of competitiveness and growth.**

**Consider the following:**



The country's population aged 65 and older hit **17.2%** on July 1, 2018, compared with **14.4%** on July 1, 2011. That's an increase to 6.4 million<sup>4</sup> people from 4.9 million<sup>5</sup> in just seven years. According to the most recent demographic projections, one in five Canadians will be 65 and older in 2024.<sup>6</sup>



The stock of foreign investment in Canada has grown by just **2%** a year since 2005, compared with an average of 7% for all OECD nations and 8% for Australia. A tiny sliver of sectors — mining, energy and manufacturing — received half of all inbound FDI.

A 2018 Brookings report concluded that our advanced industries — the high-value innovation and technology application industries that disproportionately drive regional and national prosperity — lag significantly compared to the U.S. The gap has widened over the last few years. Our auto sector, for instance, has been less productive compared to the U.S. and Mexico.<sup>8</sup>

**Our relative productivity is at its worst where it matters most.**

In 2017, Canada had only **11** firms in the Global 500 directory (biggest firms based on annual revenues).

On the trade front, the Fall Economic Statement notes that exports of non-energy goods have remained **stagnant for the last 10 years** and that Canada's share of goods exports going to emerging economies is the lowest among the G7 (and one-quarter that of the U.S.).

In 2017/2018, Canada ranked **14<sup>th</sup>** on the World Economic Forum Global Competitiveness Index<sup>9</sup> behind comparable jurisdictions such as Denmark and New Zealand.



4 Statistics Canada. Table 17-10-0005-01 Population estimates on July 1st, by age and sex.  
 5 Ibid. Age and Sex Highlight Tables, 2011 Census.  
 6 Ibid. January 25, 2019. Canada's population estimates: Age and sex, July 1, 2018. The Daily.

7 Business Chief. July 21, 2017. Fortune's Global 500: the six biggest Canadian companies on the list.  
 8 Munro, M., J. Parilla and G.M. Spencer. June 2018. Canada's Advanced Industries: A Path to Prosperity. The Brookings Institution.



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**Canada is losing the advantage of a young population, large injections of foreign capital, global demand growth for our goods, and of productivity gains in areas of increasing strategic importance.**

**The resulting lack of globally competitive firms condemns us to falling disastrously behind.**

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Take this together: Canada is losing the advantage of a young population, large injections of foreign capital, global demand growth for (or domestic supply of) our goods, and of productivity gains in areas of increasing strategic importance. The resulting lack of globally competitive firms condemns us to falling disastrously behind. The demographic trends alone are squeezing labour markets and talent pools while depressing tax revenues and increasing social and health spending. This needs to be turned around through a sustained policy agenda that enhances our competitiveness.

Notwithstanding Canada's most recent economic success, our country faces an urgent long-term growth challenge. In the last 2019 budget, the Government of Canada's five-year growth forecast for 2018-2023 shows an annual average of 1.8% GDP growth, which is far below the rate of 3% observed over the previous 50 years.<sup>10</sup> What this means for succeeding generations is rather than doubling Canada's wealth every 24 years (almost four-fold in a working life), it will be doubled every 40 years, a huge erosion in living standards and the capacity to finance redistributive and social programs.

So although the Canadian economy has performed relatively well, there are flashing caution signs that ought to be the subject of long-term concern. The main one is that the economy is not as productive as it should be. A failure to address this challenge will have long-term consequences in the form of less investment, fewer jobs, less wealth and diminished opportunity.

A long-term competitiveness strategy is therefore not just about corporate profits or global market share. It is about enabling more dynamism and growth in serving the cause of opportunity, jobs and prosperity for Canadian households across the country.

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9 World Economic Forum. Global Competitiveness Index.

10 Macklem, T. and K. Lynch. January 31, 2019. What will it take to restore Canada's potential growth? The Globe and Mail.



## Canada's wake-up call

As a high-expectations but mid-sized economy, Canada has always worked hard to shape international institutions and relations as a means to manage the risk of being sideswiped by agendas beyond our command. As a commodity-based economy, Canada relies heavily on a stable, rules-based trading environment in which global prices are based on market dynamics of supply and demand, and not on great powers throwing their weight around.

Canada is dependent on global pricing mechanisms, for better or for worse. Precipitous downturns in Alberta in the mid-1980s and in the mid-2010s as world oil prices collapsed illustrate

that Canada is vulnerable to policy decisions and market dynamics far from home. Similar cases have occurred in copper, iron, lumber, and so on. Disruptions to the global pricing system by different economic and geopolitical forces have implications at home. Canada's reliance on natural resources means it will be disproportionately affected.

The geopolitical tumult of the last 18 months or so has served as a real wake-up call regarding Canada's vulnerabilities. Given Canada's limited influence on the trends that we describe, policy-makers must maintain a razor focus on the aspects where our country can exert some level of control. Protecting,

sustaining and strengthening Canada’s competitiveness is now more urgent than ever. The things Canadians collectively took for granted until recently — a reliable trading partner on our single land border, grounded in a regional trade agreement (NAFTA) and a liberal international trade architecture (WTO); our ability to get our resources to market and plug into integrated global supply chains that included China — have been subjected to a huge stress test.

Canada’s longstanding trade reliance on the U.S. has made it too comfortable. The Trump administration’s erratic trade policy, including the imposition of tariffs on Canadian aluminum and steel for “national security” reasons, has jolted Canada from its complacency and reinforced the case for trade diversification. Successive Canadian governments have sought to expand Canada’s trade network. The current government, for instance, deserves credit for signing and implementing the Comprehensive Economic Trade Agreement (CETA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), building on work started by its predecessor. Still, the numbers speak for themselves — in 2018, 74% of Canadian exports were still going to our southern trading partner.<sup>11</sup>

Without U.S. leadership, the global order and international institutions upon which Canada relies are getting weaker. The international architecture largely founded after the Second World War is rapidly eroding. All the institutions created to manage an orderly globalization — including the United Nations, the World Trade Organization, the North Atlantic Treaty Organization and the G7 — are losing legitimacy and traction. The capacity for countries to come together and resolve global irritants, whether over classic issues such as trade or emerging challenges like data governance, has been

weakened. The decline of global institutions and global dialogue represents a huge risk to the management of Canada’s economy and the economic interests of its citizens.

Then there is the U.S.-China rivalry. No matter its short-term ups and downs, it will have significant implications for the global economy in general and Canada in particular. It is not really about trade balances. It is fundamentally a technology war, driven in large part by a race for global leadership in an era where technology can confer huge economic and strategic advantages.

The Trump administration is determined to see U.S. companies reduce their reliance on inputs from China and limit the transfer of intellectual property, particularly in high-tech sectors and those related to national security. Even if the U.S. and China can resolve their current trade tensions, the U.S.-China relationship could escalate to a real schism between the two main economic superpowers, with the risk of disrupted global supply chains. Canada will be stuck in a difficult position between its largest and, by a large margin, second-largest trading partners. Navigating these tensions will have significant implications for Canada’s geopolitical and economic interests.<sup>12</sup>

We highlight these global trends in large part to remind readers of the broader context in which Canadian policy-makers must develop and advance a competitiveness agenda. Global turmoil and disruption only reinforce the importance of an unremitting focus on enhancing Canada’s long-term capacity and consistency of actions to attract investment, enable innovation, and create jobs, wealth and opportunity.

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11 Statistics Canada. Table 12-10-0011-01 International merchandise trade for all countries and by Principal Trading Partners, monthly (x 1,000,000)

12 Ed. note: For more on the Canada-China relationship, see PPF’s report “Diversification not Dependence: A Made-in-Canada China Strategy.”



## A winner-take-all paradigm

As we have stated, there now exists a new layer of complexity to our relative economic performance. Canada is faced with a new generation of competitiveness drivers.

The global economy is going through a major transformation, sometimes referred to as the fourth industrial revolution. This refers to the explosion of new technologies and technological applications, such as artificial intelligence, nanotechnology, quantum computing or robotics, which are reshaping industrial processes and products, as well as how firms interact and compete.<sup>13</sup> These technologies and their commercial applications have the potential to suddenly upend sectors, firms and workers.

This disruption is happening at lightning speed and labour markets are going — and will continue to go — through significant transitions, at an even greater pace to similar transitions over the last three industrial revolutions. The pace of this revolution is dramatic; some would say scary. The data-driven economy seems markedly different from the 20th-

century economy, or what others have called “the production economy.” It can leave countries and firms in the dust if they do not adjust and adapt at rapid speeds.

In large part, this velocity is driven by how scalable the intangibles economy is. Businesses with intangible assets can grow faster and bigger than those that lean on tangibles. A family-run taxi firm that owns a fleet of cars cannot scale as quickly and significantly as a ride-sharing app that owns no vehicles and yet leverages its platform and algorithms based on big data aggregation around the world.

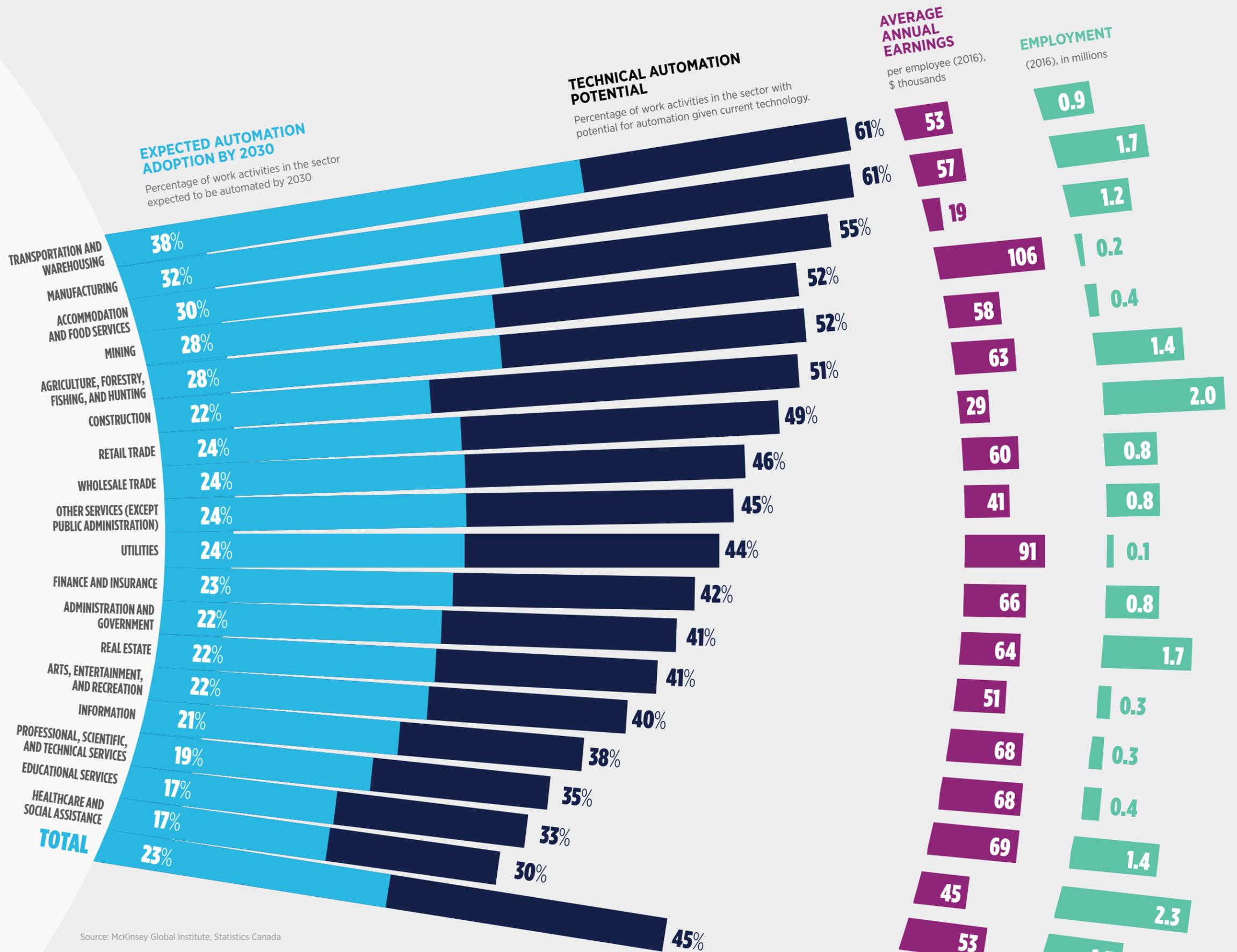
Big data and artificial intelligence allow us to access and transform information beyond anything the human mind has ever imagined. Even more fundamentally, these tools add exponential power to those who control them. Public policy has a significant role to play in enabling and facilitating these transitions while helping people ride the technology-induced waves.

13 Schwab, K. The Fourth Industrial Revolution. World Economic Forum.



# THE RISE OF AI

Nearly a quarter of all current work activities in Canada could be displaced by automation by 2030



Source: McKinsey Global Institute, Statistics Canada

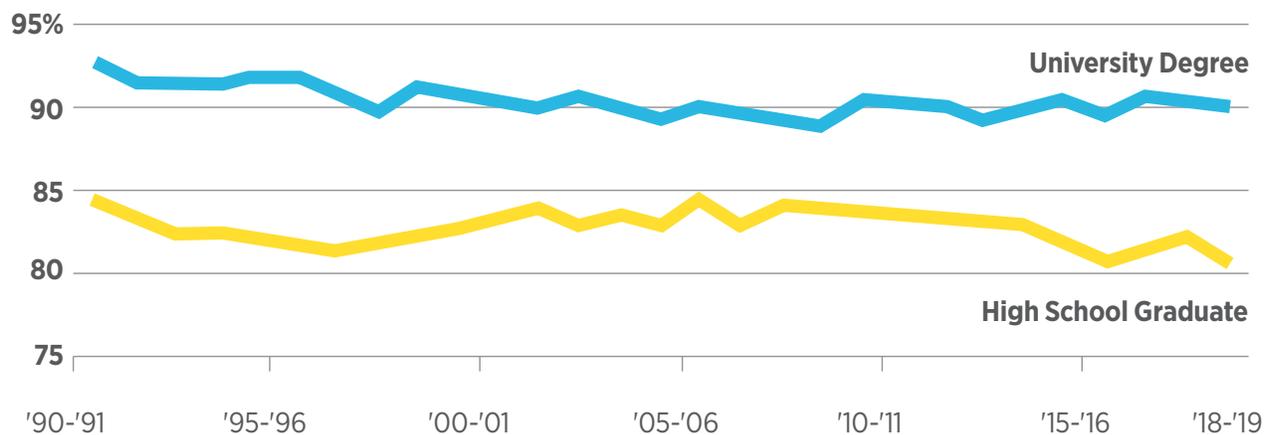
The fourth industrial revolution is further widening a growing opportunity gap between those with post-secondary credentials and those without. Routine work is being crushed by technology. Non-routine work is heavily rewarded. This phenomenon, described by some as “skills-biased change”, is producing an economy in which opportunities are increasingly bifurcated based on education.

Differing market outcomes based on education levels is not new. Education-driven differences in employment, income growth, job security, and so on have existed for some time. The chart below, for instance, shows a consistent labour force participation gap based on educational attainment over the past 30 years. But the gap seems to be widening. One example: the median annual earnings of working-age Canadian males employed in 2015 was \$82,082 for those with a bachelor’s degree and \$55,774 for those with high-school education — a gap of nearly 50%.<sup>14</sup>

This polarization of labour market outcomes contributes to higher rates of inequality among people and geographies. High-skilled occupations are generally clustered in cities. Mid-skilled jobs tend to be located on the periphery.<sup>15</sup> The result is increasingly unequal outcomes in society and the concentration of trade and technology induced dislocations in certain demographic groups, sectors, regions and communities. The consequences of these clusters of economic “losers” cannot be neglected. A failure to address their needs can cause people to question the utility of a dynamic economy and governments, and even express their disillusionment through radical politics, as we have observed elsewhere. Political instability, just like economic uncertainty, impacts competitiveness. It is imperative, therefore, that a long-term strategy incorporates a robust policy response to support those who are disrupted by “creative destruction.” Policy-makers must seriously think through a new human capital agenda to ensure that outcomes of the fourth industrial revolution are broad-based and inclusive. We will more directly address these issues in Part Two of the paper.

## THE EDUCATION GAP IS GROWING

Canada labour force participation rates by educational attainment (25 to 54 years old). Not seasonally adjusted.

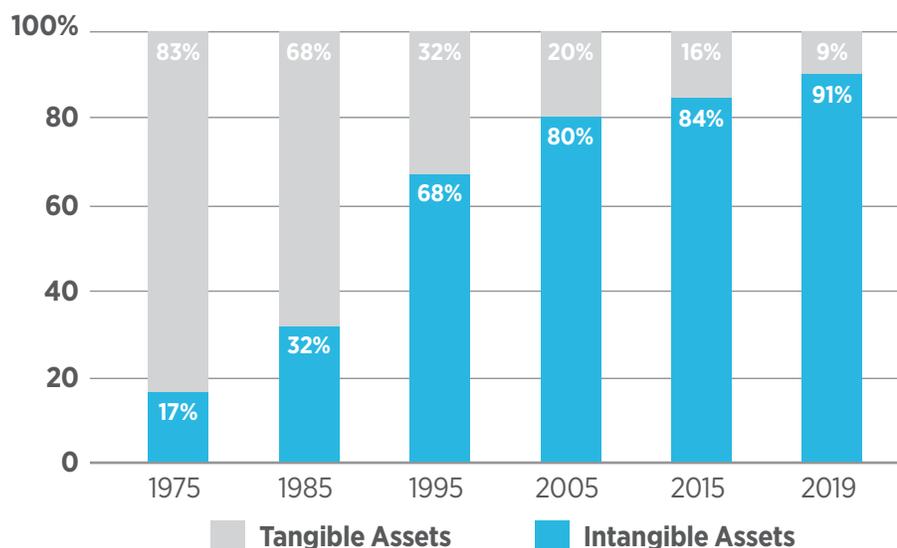


14 Statistics Canada. November 29, 2017. Does education pay? A comparison of earnings by level of education in Canada and its provinces and territories.

15 Smith, N. January 22, 2019. Big Cities No Longer Deliver for Low-Skilled Workers. Bloomberg

# RISE OF THE INTANGIBLES ECONOMY

Proportion of tangible and intangible assets in the market value of the S&P 500, 1975-2019



As important as these matters are, they are not the only or even the primary way in which the fourth industrial revolution is confounding policy-makers. The most significant may be how the interaction between technology and data is promoting large-scale corporate concentration and a “winner-take-all” business model.

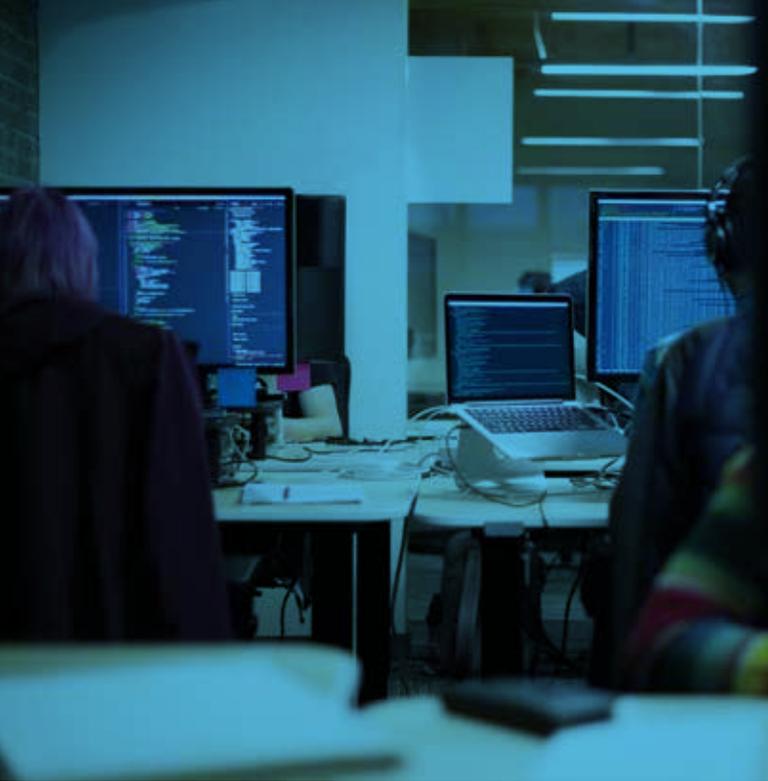
Canada has experienced corporate concentration in the past. The contemporary regulatory state was established in large part in the early 20th century in response to earlier bouts of corporate concentration. But the new experience seems both similar and different. Earlier episodes at least occurred in industries physically situated within sovereign jurisdictions. They were more easily subjected to policy measures. Today, there is an unprecedented convergence of wealth and power by a small number of tech giants based in the U.S. and China. The facts of their increasing hold on the economy speak for themselves:

- In 2018, while the U.S. share of global GDP was 24.2%, the U.S. corporate market share of global markets was 55%.
- In nominal terms, Google, Apple and Microsoft’s market capitalization figures (varying between

\$800 billion and over \$1 trillion) are equivalent to the combined GDP of Philippines, Thailand and Malaysia.

- Since 2010, the cumulative total return of the S&P 500 — which comprises stocks issued by 500 large-cap companies and traded on American stock exchanges covering about 80% of the American equity market by capitalization — was 192%. In comparison, MSCI’s All Country World Index, the industry’s accepted gauge of global stock market activity, had a cumulative return of 47%.

The S&P 500, in fact, is a telling barometer of how profound is the unfolding transition to a data-driven economy. In 1976, 16% of the value of the S&P 500 was in intangibles assets (i.e. brands, IP, data, etc). Today, intangibles assets comprise 91% of the S&P 500’s total value (see chart above). Together, the world’s five most valuable data-driven companies are worth well over \$4 trillion (Canada’s annual GDP is about \$2 trillion), but their balance sheets show only \$225 billion is in tangible assets, or just over 5% of their total value. Increasingly, this is a radically different economy, with new commanding heights.



It is striking and disturbing how little we know about or are looking into these trends. We had difficulty finding a Canadian intangibles assets figure to compare with the S&P 500 number (something ultimately produced for us that will be discussed in Part Two of this paper.) Several public commentators who have started to look at these issues argue that the data-driven economy is fundamentally different than the production economy and that, therefore, the conceptualization of the role of government and public policy needs to change accordingly.

Traditional economics assume that mutual exchange at the individual, firm or country level involves mutual benefits, with both parties extracting value. Some argue that this historic insight does not apply to the collection and deployment of data by a small number of firms that quickly develop market dominance. The idea here is that large tech firms (such as Google, Amazon and Facebook) have the capacity to own such significant market shares that they can exercise sprawling influence on the marketplace — including with suppliers, workers, consumers, legacy competitors and even citizens. Mutual exchange can thus be replaced by large-scale monopolies with significant

market power. The takeaway is that classical economics provides an incomplete framework to think and respond to dynamics of the data-driven economy. There is thus an urgency to come up with a game plan for our economic prosperity over the long term.

In a recent blog post, Bill Gates offered a few insightful reflections from the 2017 book, *Capitalism Without Capital*, by Jonathan Haskel and Stian Westlake.<sup>16</sup> He argued that policy-makers need to ask fresh questions and adjust their economic agenda to reflect the new realities emerging from the intangible economy:

**Measurement [of intangible assets] isn't the only area where we're falling behind — there are a number of big questions that lots of countries should be debating right now. Are trademark and patent laws too strict or too generous? Does competition policy need to be updated? How, if at all, should taxation policies change? What is the best way to stimulate an economy in a world where capitalism happens without the capital? We need really smart thinkers and brilliant economists digging into all of these questions.**

We agree. It does not, of course, mean that all of the insights from classical economics can be dismissed. But it is incontrovertible that a long-term competitiveness agenda for Canada needs to engage the growing shift to an intangibles economy and the extent to which policy-makers must re-conceptualize policy assumptions about IP, taxation, competition, FDI and other areas. This interaction between old and new economies and the accompanying policy implications is the *raison d'être* of this paper. Canada's competitiveness quandary transcends partisanship and political ideology. Whichever political party wins the next federal election will be faced with these questions and challenges.

16 Gates, B. August 14, 2018. Not enough people are paying attention to this economic trend.



## PART 2

# A STRATEGY FOR CANADA'S LONG-TERM COMPETITIVENESS

We spoke earlier about our experiences in government and how difficult it is for policy-makers to resist the tendency towards short-termism. One solution is to set out a long-term economic vision that can serve as the government's "north star." A clear set of long-term objectives can inform individual policy choices and reforms, and keep policy-makers on track in the face of the inevitable pressures of unexpected developments or the political cycle.

Canada has been generally well-served by a north star that was broadly shared across the political spectrum, beginning first with the policies and institutions — domestic and international — of the post-war era and then, from the mid-1980s to the present, the basic market framework and accompanying public policy agenda envisioned by the 1985 Royal Commission on the Economic Union and Development Prospects for Canada. Key parts of that agenda were subsequently adopted and advanced by Canadian governments of different political orientations.

But there are growing questions as to whether that north star set in the early 1980s — including its rote support for greater market reliance and a free trade agreement with the U.S. — still offers the best objectives under new geopolitical and technological circumstances. Do our main public policy actors at the federal, provincial, territorial and municipal levels still have the right plans to lift the economy of today? The rise of the intangibles economy challenges the long-

standing policy consensus. Concerns about climate change, income inequality and the future of work, as well as the most profound geopolitical changes since the collapse of the Soviet empire, are also causing people from across the political spectrum to ask new and equally profound sets of questions.

With all this change, it is time to reflect upon a new north star.

We think of it this way: there is certainly a need to consider refinements to conventional pro-competitiveness, pro-innovation policies and the adoption of new ones in light of the emerging issues flowing from technological change. But Canada should not discard willy-nilly the ideas of economists and scholars who have studied the drivers of growth since Adam Smith's seminal work nearly 245 years ago. The time-proven standards, such as smart taxation and fiscal policies and physical access to markets, will live alongside the rising challenges of the intangibles economy for the foreseeable future.

Policy-makers will therefore need to strike the right balance as they reset Canada's north star toward a contemporary policy agenda strengthening long-term competitiveness. And they must incorporate the opportunities and challenges associated with the intangible economy into their policy framework without neglecting or harming those sectors such as natural resources that sustain our economy.

This co-existence is especially important given Canada's traditional sectors appear to be better at creating jobs and generating exports than the intangibles economy. Even as of 2018, Google's parent company employed just 99,000 people worldwide<sup>17</sup> versus 180,000 at General Motors<sup>18</sup> and 2.2 million at Walmart.<sup>19</sup>

The good news is that it is not a binary choice. There is considerable overlap between old and new, traditional and modern, tangible and intangible. Canada's natural resource sector, for instance, is increasingly drawing on cutting-edge technologies and processes to drive efficiency and reduce its climate emissions. Data, nanotechnology and other innovations are reshaping traditional sectors as much as they are creating new ones.

In fact, it is the modern manifestations of these traditional sectors where Canada may be best poised to become a global innovation leader. It is no accident, for instance, that the Minister of Finance's Advisory Council on Economic Growth identified agriculture and agri-food and energy and renewables as two of the four domestic sectors with the highest potential to compete and win in the global economy.<sup>20</sup>

This economic dualism requires that policy-makers set a north star that recognizes the

ongoing importance of traditional sectors and their technology-driven transformations, and the emergence of the new intangibles economy and its unique characteristics and policy peculiarities.

Our north star thus remains sustaining and strengthening Canada's capacity for competitiveness, innovation and productivity and, in turn, higher living standards, broad-based opportunity and inclusive growth. Progress should ultimately be measured by higher rates of economic growth, rising levels of business investment and new ranks of Canadian-headquartered, globally scaled firms. We have organized our recommendations into three categories that reflect the evolving economic trends and their policy implications, as described in Part One: (1) The Old Classics, (2) The New Intangibles, and (3) Sustainable Humans.

In our view, these are ideas and proposals that ought to enjoy bipartisan support. As former senior advisers to different governments, we have placed a priority on practicality and political survivability. Our recommendations are bold but doable.

Readers may identify gaps in our analysis and prescriptions, including, but hardly limited to, climate change and its economic, environmental and social effects. We have made a conscious attempt to focus our attention on some elements more than others, without meaning to marginalize these other issues' obvious importance. We simply are trying to concentrate our firepower where debate is under-developed. The road to competitiveness is never-ending and others, no doubt, will lend their voices along the way. We welcome that. Our recommendations are intended to help Canadian governments and other economic actors begin a new and essential phase of the journey.

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17 Alphabet Announces Fourth Quarter and Fiscal Year 2018 Results. February 4, 2018.

18 General Motors Company 2017 Annual Report (Form 10-K). February 2018. U.S. Securities and Exchange Commission.

19 Walmart. Company Facts. 2018.

20 Advisory Council on Economic Growth. February 6, 2017. Unleashing the Growth Potential of Key Sectors



# THE OLD CLASSICS



## Foundational frameworks in the era of FAANGs

A private sector cannot soar when public policy or public services act as deadweight. Any pro-competitiveness agenda must consider policies which fall under what the World Economic Forum calls the “enabling environment.” An enabling environment is a jurisdiction’s underlying policy foundations to

promote investment, hiring and innovation, including institutions, infrastructure, IT adoption and macro-economic stability.<sup>21</sup> The quality of these foundational institutions and policies is considered core to a jurisdiction’s economic competitiveness.

Such policy areas as taxation, regulation, public finances, public infrastructure, and trade have stood at the centre of how we thought and talked about competitiveness since the early 1980s. The notion of

21 For more information about how these different features of the enabling environment are assessed and comparatively evaluated see the World Economic Forum’s Methodology and Computation of the Global Competitiveness Index 2017–2018.

a competitive “enabling environment” has informed our federal and provincial policy debates about the appropriate role of government within market-driven economies. There are exceptions, of course, such as ongoing government involvement in the dairy and poultry sectors, foreign ownership restrictions in financial services and telecommunications, and sector-based and regional-based subsidies. But Canadian governments from the mid-1980s to the present have generally opted to think about competitiveness and innovation primarily in passive (unshackling the market) rather than active (purposely shaping markets) terms. We have chosen to enable rather than direct.

This impulse has manifested itself in a political consensus in favour of competitive corporate taxation, sound public finances, public investments in education and infrastructure, and a neutral approach to industrial development. Even while targeting public spending on agriculture, aerospace and autos — which are exceptions to the rule — successive governments have generally pursued conventional, liberal investment and trade agendas to enable competitiveness and innovation.

A good example of this passive impulse is the role of



indirect subsidies for business research and development compared to direct subsidies. As of 2010, roughly 70% of federal spending related to business R&D came in the form of indirect tax subsidies. The remaining 30% was spread among various direct subsidies such as repayable grants and government-performed R&D expenditures.<sup>22</sup> This balance has since been adjusted due to changes to the Scientific Research and Experimental Development Tax Credit and new direct spending programs such as the Superclusters Initiative. Still, the federal government’s mix of direct and indirect spending on business R&D tilts further towards indirect support than in comparable jurisdictions like Australia, the United Kingdom and the U.S.<sup>23</sup>

Essentially, other than in crisis situations, Canadian governments have taken a laissez-faire approach to the enabling environment when devising a policy agenda in support of competitiveness and innovation. Like other countries, it has ascribed to the political consensus of a conventional, liberal trade and investment agenda.

We call this section “The Old Classics” because, in most cases, these policies are able to weather changing times. The right mix of taxes, sound public finances, as well as predictable legal and regulatory regimes and treaties, are always foundational to macroeconomic success.

Yet the traditional policy framework requires revision given the rise in competitive importance of new intangible areas such as data governance and IP ownership. In this section, we discuss whether and how these economic trends necessitate a refinement of the basic institutions and policies for competitiveness and innovation. We describe the right enabling environment in the era of FAANGs — the tech giants Facebook, Apple, Amazon, Netflix and Google — and their smaller Canadian competitors, and how this environment differs from that of a manufacturing branch economy.

22 Industry Canada. 2011. Innovation Canada: A Call to Action. Ottawa.

23 Ibid.

## Canada's enabling performance and the need to resist complacency

Any discussion of Canada's enabling environment should acknowledge that the consensus described above has served the country well. Though it is far from perfect and there is certainly room for improvement, Canada provides a strong climate for investment and business development.

The World Economic Forum ranks Canada first among 140 countries for macroeconomic stability and eleventh for our institutions.<sup>24</sup> It has also consistently ranked our financial system as the soundest in the world.<sup>25</sup> And the World Economic Forum is hardly the only source of praise. In recent years, the International Monetary Fund,<sup>26</sup> the Organisation for Economic Co-operation and Development (OECD)<sup>27</sup> and others have highlighted the strengths of Canada's macro-policy framework.

Yet there are negative signs, too. Canada has fallen from first in 2011 to sixth in 2019 in the Forbes ranking of business environments,<sup>28,29</sup> and from seventh in 2011 to twenty-second in 2019 in the World Bank's ranking.<sup>30</sup> Similar global comparisons and rankings come to mixed conclusions.<sup>31,32</sup>

The main message from these global rankings and comparative reports is that policy-makers should resist concluding that Canada's enabling environment requires no adjustment or refinement. Economic



**A pro-competitiveness agenda must respond to the new and emerging competitiveness questions of the intangibles economy while continuously reforming and strengthening traditional policy levers that underlie the enabling environment. These ideas are not at odds with each other; policy-makers must do both.**

competitiveness is a dynamic and relative question. Canada does not have to enact damaging policies for its ranking to fall; other countries just have to enact more competitive ones.

The key takeaway, then, is that a pro-competitiveness agenda must respond to the new and emerging competitiveness questions of the intangibles economy while continuously reforming and strengthening traditional policy levers that underlie the enabling environment. These ideas are not at odds with each other; policy-makers must do both.

24 Schwab, K. 2018. The Global Competitiveness Report 2018. World Economic Forum.

25 Martin, W. October 24, 2017. These are the 17 countries with the world's safest banks. Business Insider.

26 International Monetary Fund. Western Hemisphere Dept. July 16, 2018. Canada: 2018 Article IV Consultation-Press-Release; Staff Report; and Statement by the Executive Director for Canada.

27 Department of Finance Canada. July 23, 2018. OECD Recognizes Strength of Canada's Economy and Soundness of Government's Plan.

28 Badenhausen, K. October 5, 2011. Canada trounces U.S. in best countries for business. Forbes.

29 Badenhausen, K. December 18, 2018. The best countries for doing business: U.K. on top, U.S. down. Forbes.

30 The World Bank's historical data are available at this website.

31 Gwartney, J. et al. 2018. Economic Freedom of the World: 2018 Annual Report. Fraser Institute.

32 The Conference Board of Canada. May 14, 2018. Canada Falls in Conference Board's Innovation Rankings, As Weaknesses Persist.

## Strengthening Canada's enabling environment

In our consultations, research and analysis, we identified four key areas of reform to strengthen Canada's enabling environment:

### 1 Improving Canada's tax system

Debates about economic competitiveness tend to focus on the role of taxation, a tendency heightened by corporate tax reform in the U.S. Considerable political attention has since been dedicated to a short-term defensive response to the drop in the overall tax burden on American businesses and investment.

While we have previously discouraged an over-emphasis on tax policy as policy-makers think about competitiveness and innovation,<sup>33</sup> neither can it be neglected. A jurisdiction's tax regime (including its tax mix, rates and structure) is a key determinant of its overall economic competitiveness.<sup>34 35</sup> It is the reason that both of us supported the previous lowering of the federal corporate tax rate to 15% and the government's recent, short-term changes to capital expensing. It may also be possible for some provinces to lower their corporate tax rates with minimal revenue loss.<sup>36</sup> But, as we have argued elsewhere, a competitive tax system is a necessary yet insufficient condition for competitiveness, innovation and productivity.

Tax policy changes must take into account fiscal

circumstances as well as inherent technical and political challenges. A failure to account for these real considerations risks producing impractical recommendations.

The former observation should be but is not always self-evident. The federal government and several provinces are currently running budgetary deficits. Deficit-financed tax cuts that significantly reduce a government's revenue capacity risk the kind of structural deficit that bedeviled Canada in the 1970s and 1980s and currently threatens the U.S. in the aftermath of last year's tax cuts.<sup>37</sup> Canadian policy-makers should avoid similar deficits recurring here, especially given the fiscal challenges on the horizon from an aging population and Canada's reliance on the outside world for investment and trade.<sup>38</sup>

The political controversy over the small business tax reforms in late summer 2017 and the introduction of the GST in 1991 highlight how technical issues and political forces can stymie reform that challenges the status quo. Moreover, as the majority of income tax revenues come from the top 10% of earners, any personal income tax reductions will benefit high-income earners at a time when, for better or worse, most polls show that people want high earners to pay more.<sup>39</sup> This made a tax-cutting agenda during the Harper years susceptible to regular criticisms about harming equity. We each have observed firsthand the challenges of tax policy changes.

Some have argued that the solution to these technical and political challenges is a royal commission on tax reform. The purpose would be to depoliticize tax policy by putting it in the hands of accountants,

33 Asselin, R. and S. Speer. May 8, 2018. Canada must play the long game to fix competitiveness. *The Globe and Mail*.

34 Chen, D. and J. Mintz. February 2015. *The 2014 Global Tax Competitiveness Report: A Proposed Business Tax Reform Agenda*. The School of Public Policy.

35 Murphy, R.P., J. Clemens and N. Veldhuis. October 2013. *The Economic Costs of Increased Marginal Tax Rates in Canada*. The Fraser Institute.

36 A 2011 study published by the C.D. Howe Institute estimated that half of the provinces would experience a revenue increase in response to a cut in the corporate tax rate.

Dahlby, B. and E. Ferde. 2011. *What Does it Cost Society to Raise a Dollar of Tax Revenue?: The Marginal Cost of Public Funds*. C.D. Howe Institute

37 Schwartz, N.D. September 25, 2018. As debt rises, the government will soon spend more on interest than on the military. *The New York Times*

38 Parliamentary Budget Office. September 27, 2018. *Fiscal Sustainability Report 2018*.

39 Statistics Canada. High income tax filers in Canada, specific geographic area thresholds, Table: 11-10-0056-01.

economists and other technocrats. We are skeptical that this would be useful. Such a process would be slow (UBC economist Kevin Milligan has shown that policy reforms flowing from the Carter Commission in the 1960s came roughly a decade after the launch of the process),<sup>40</sup> and off-loading these sensitive questions to an independent body neglects the extent to which questions about the tax base, structure and rates are shaped by normative considerations. A panel of experts cannot decide how the tax system should be balanced between efficiency and equity, or how it should appropriately treat individuals and families. These judgments are ultimately shaped by competing preferences and political views and belong in the realm of politics.

Instead, policy-makers should focus on incremental yet constructive reform. A mandated and regularized review process that evaluates and reforms different components of the tax system annually would, in our view, be more likely to survive the bureaucratic and political process and move the ball down field.<sup>41</sup> The current government's consolidation, refinement and enhancement of tax expenditures related to caregiving is a good example. This 2018 reform made the tax system simpler, more efficient and more progressive at a minimal incremental cost.

This thematic approach could be expanded to include home ownership, post-secondary education, employment, medical expenses, savings and retirement, and aging, as well as fossil fuels, clean energy investments, capital expensing and small businesses. Moving through the tax system on an incremental and thematic basis may not produce fundamental change but the resulting reforms could simplify the system, make it more efficient and make it more

progressive. And the resulting reforms would become baked into the system, yielding big improvements over time. As part of this exercise, policy-makers could consider the mix of taxes on income, capital and consumption, and if and where this mix should be adjusted for efficiency and other policy objectives.

In our consultations, we frequently heard ambitious calls for the elimination of the preferential rate for small businesses. There is evidence that the lower rate for small businesses, which fell to 9% this year, creates the equivalent of a "welfare wall" for small businesses. A higher tax rate above the \$500,000 income threshold can discourage firm growth or encourage tax planning<sup>42 43 44</sup> just as the wrong mix of welfare benefits and minimum wage can discourage people from seeking employment.

Policy should help Canada's small businesses grow and, in turn, make them more likely to invest in and to export technology. It should not encourage stasis. Phasing out the preferential rate would remove this distortion from the tax system and produce considerable new revenues (possibly as much as \$6 billion per year) that could be used to lower the general corporate tax rate on a revenue-neutral basis.<sup>45</sup>

This is a good idea with considerable political risks. Nearly 745,000 firms benefit from the current tax treatment. Phasing it out without (or even with) offering other benefits could produce a political maelstrom that would make the response to 2017's more technical changes seem modest. Incorporating such a change in a broader tax package that lowers the general corporate tax rate, and possibly changes personal income tax rates, might provide a chance of success.

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40 Milligan, K. 2018. Presentation: Longer Term Reform. Canada 2020 Tax & Competitiveness Summit, delivered October 22, 2018.

41 Speer, S. February 2017. The Public Purse and the Public Good: A Framework for Reviewing Federal Tax Expenditures. Macdonald-Laurier Institute

42 Lanthier, A. September 25, 2015. Why it's time to abolish the small-business tax rate. The Globe and Mail.

43 Martin, R. October 2013. Taxing for Growth: A close look at tax policy in Ontario. Institute for Competitiveness & Prosperity.

44 Clemens, J. and N. Veldhius. Date unknown. Remove the Tax Barrier to Small Business Growth. Fraser Forum (Fraser Institute).

45 Department of Finance. April 2018. Report on Federal Tax Expenditures 2018: Concepts, Estimates and Evaluations.

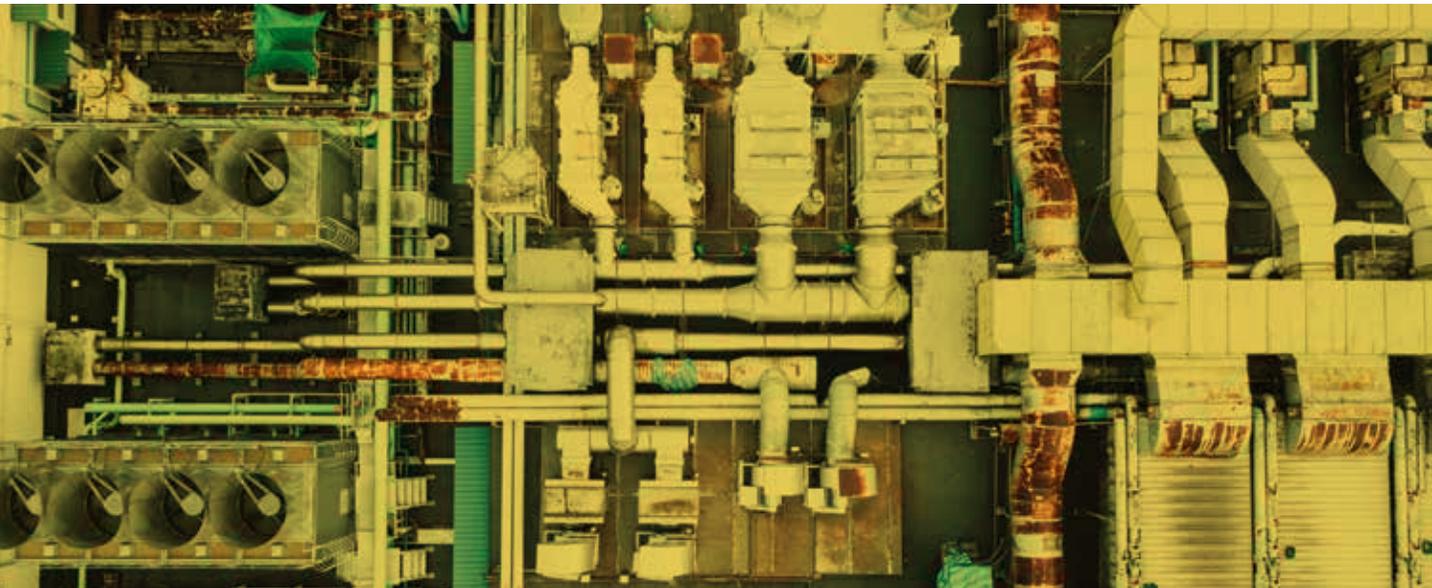
## 2 Advancing systematic regulatory reform

Regulatory reform requires greater ambition and rigour. Policy-makers regularly talk about “red tape reduction” as a priority and there has been progress on simplifying or repealing outdated and onerous regulations at the federal level and in various provinces. But these exercises have generally involved “weed whacking” rather than systematic reform.

Moreover, political pronouncements about red tape have often occurred against the backdrop of the creation of new rules, regulations and other impediments to investment. Canada’s poor performance in international comparisons of regulatory policy is evidence of this. According to the OECD, Canada now ranks 34th of 35 countries for the time it takes to get a general construction permit.<sup>46</sup> The World Bank observes that it takes an average of 250 days to receive a general construction permit in Canada, the longest amount of time in the G7 and almost three times as long as in the U.S.<sup>47</sup> The World Economic Forum ranks Canada 38th of

137 countries on the burden of government regulation.<sup>48</sup> And there is plenty of evidence that Canada underperforms comparable jurisdictions in the regulation of natural resource projects. For instance, oil well licensing in Alberta is much slower compared to Texas.<sup>49</sup>

In our consultations, global energy companies told us that Canada’s regulatory requirements lead to significantly longer lead times between discovery and development, hindering their efforts when seeking investment capital from international headquarters. Canada’s world-class mining and pipeline companies are moving investment and head office jobs outside Canada. Some smaller organizations said that they lack the capacity to keep up with the flow of regulatory additions and changes. We were told by innovative sectors — from cars to canola — that regulators cannot keep pace with technological advances. And legacy companies regularly lamented that their upstart, often external, competitors, whether fintech and banking or digital services and global platform companies like Facebook and Google, were able to play by different regulatory and tax rules.

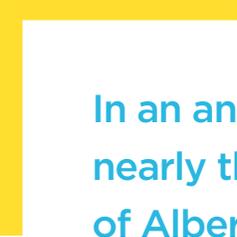


46 D'Avignon, G. May 3, 2018. Available at: <https://twitter.com/bcbcgreg/status/992235264020856832>.

47 RBC Economics Research. January 2019. Navigating 2019: 9 big insights for the year ahead.

48 World Economic Forum. 2018. Canada: The Global Competitiveness Index 2017-2018 edition.

49 The Canadian Association of Petroleum Producers. July 2017. A competitive policy and regulatory framework for Alberta’s upstream oil and natural gas industry.



**In an annual survey, nearly three-quarters of Alberta-based energy executives cited regulatory compliance as a deterrent to investment in the province; only 10% of executives in Texas and 7% in Kansas raised the same concern.**

Most foreboding, in a recent annual survey, nearly three-quarters of Alberta-based energy executives cited regulatory compliance as a deterrent to investment in the province; only 10% of executives in Texas and 7% in Kansas raised the same concern.<sup>50</sup>

It is a positive sign that the current government's Fall Economic Statement committed to regulatory reform including yearly deregulation bills and the creation of the new Centre for Regulatory Innovation.<sup>51</sup> Smart, effective and competitive regulation needs to become the subject of a political consensus in Canada. And a way to hold government's feet to the fire must be found if steady progress is to be made.

The government should adopt a systematic approach to understand the origins of regulations, how they

interact with other federal and provincial rules, how they compare with those in peer jurisdictions, and what are the metrics for measuring their benefits and costs. As with our earlier step-by-step tax reform proposal, better functioning and transparent process of continuous review and modernization is required to achieve the objective of better functioning regulatory system. Sometimes this may mean new or reformed regulations, sometimes greater speed in adjusting regulations to new technological and market developments, and often it will require clearing away redundant regulations. In all cases, it should mean greater certainty and clarity over who regulates what. Subjecting businesses to both federal and provincial regulations creates confusion and slows movement without adding to the public interest.

Canada needs a mechanism that provides real-time public tracking on regulations that impact on global competitiveness so that businesses, labour unions, NGOs, academics, think-tank scholars and other levels of government can monitor progress and hold governments accountable. Right now, the system lacks communications and coherence. From our experience, it is not uncommon for departments to unknowingly seek Cabinet approval for new regulations based on statutes that have been repealed. Regulatory duplication across departments and with other levels of government is examined on an ad hoc basis. This inability to comprehensively analyze regulatory policy is a major impediment to meaningful reform.

Arizona and Kentucky have recently contracted with a U.S.-based software company to build an interactive database to track cost and benefit considerations across their regulatory agencies.<sup>52</sup> Canadian governments should consider a similar model to create a centralized, standardized and interactive regulatory database.

Another step is to pursue greater regulatory

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50 Stedman, A. and E. Aliakbari. December 1, 2018. Investor confidence in Alberta oil and gas sector continues to wane. The Calgary Sun.

51 Department of Finance. 2018. Fall Economic Statement: Investing in Middle-Class Jobs.

52 Lonsdale, J. January 5, 2019. Esper is the Future of Governance. 8VC News.

harmonization with our major trading partners, including the U.S. This should apply to the regulation of goods and services in the economy and to project approvals, permitting and licensing. Unjustified regulatory differences and their resulting costs amount to an inefficiency tax on Canadian firms and investors.<sup>53</sup> This indirect tax imposes undue costs on bilateral trade and provides an advantage to U.S. states competing for investment with Canadian provinces and territories. New efforts, such as establishing global standards for issuing permits that provide for best practices and transparent mechanisms to compare different jurisdictions, can nudge countries to improve their policy frameworks. This agenda is not about a blind following in the direction of de-regulation, but when Canadian policy-makers design regulatory policies that deviate from global competitors, there should be an onus to justify the economic and public interest case.

**There is no reason that Canada cannot become a global leader in innovative public infrastructure and support a dynamic, forward-looking construction industry that can compete for major projects around the world.**

It is promising that the current government has signed a renewed Memorandum of Understanding with the U.S. Office of Information and Regulatory Affairs to advance the regulatory co-operation file.<sup>54</sup> The 2019 budget provided incremental resources to the Treasury Board Secretariat to begin translating the agreement into an actionable agenda.

A creative option would be to incorporate the goal of regulatory harmonization in Ottawa's regulatory budgeting legislation (the "one-for-one" rule) so that departments could be credited or penalized for enacting new regulations and regulatory reforms that converge or diverge with U.S. standards and practices.<sup>55</sup> This approach would tilt bureaucratic and political incentives in the direction of greater regulatory harmonization.

### **3 Leveraging infrastructure investments for competitiveness and innovation**

High-quality public infrastructure can be a source of economic competitiveness. Yet Canada underperforms in this area. Canada has seen its ranking on the overall quality of its infrastructure fall from 15th in 2012 to 23rd this year according to the World Economic Forum's global competitiveness analysis.<sup>56</sup>

The good news is that the federal government and several provinces have committed unprecedented funding for public infrastructure. The bad news is that we continue to face challenges in prioritizing productivity enhancing projects such as public transit, leveraging private capital and expertise, and managing intergovernmental decision-making in a time-efficient way. We must make these issues a priority if Canada is to take full advantage of the funding pledged by Ottawa and the provinces and territories.

53 Speer, S. and K. Kosar. July 1, 2017. A call for greater regulatory harmonization with Canada. Real Clear Policy.

54 Memorandum of Understanding Between the Treasury Board of Canada Secretariat and the United States Office of Information and Regulatory Affairs Regarding the Canada-United States Regulatory Cooperation Council. June 2018. Available at: <https://www.whitehouse.gov/wp-content/uploads/2018/06/US-CanadaMOU.pdf>

55 Speer, S. June 2017. Regulatory Harmonization between the United States and Canada. R Street.

56 World Economic Forum. 2018. Canada: The Global Competitiveness Index 2017-2018 edition.

The Canada Infrastructure Bank (CIB) was conceived to leverage private capital and project management expertise in order to advance the current government's ambitious plan for infrastructure investment. The bank was seeded with \$35 billion and given a mandate to draw in private and institutional capital to build revenue-generating infrastructure. The early signs have not been positive. Starting this new organization has been consumed by the usual bureaucratic delays. Few infrastructure projects have been tapped.

We should not flinch, however. Canada's pension funds are some of the most sophisticated institutional investors and are heavily invested in infrastructure around the world. The bank can play a useful role in catalyzing their investments here in Canada.

As part of a north star for Canadian competitiveness, policy-makers should apply a "competitiveness filter" to project prioritization and selection. There is a balance to be struck between federal leadership and local priority-setting, but the CIB can start by prioritizing new and dynamic infrastructure projects. This might include a special focus on such areas as climate adaptation, export infrastructure, smart cities and getting ahead of the requirements to be early adopters of the Internet of Things, which enables technologies from autonomous vehicles to heating and cooling systems to interact continuously with grids. PPF has previously asked whether the next dollar of infrastructure money is better spent on asphalt or transponders<sup>57</sup>. A long-term competitiveness filter is critical to answering such a question.



**A specific idea we heard in our consultations was a proposal to leverage the large-scale public investments in infrastructure over the next decade to support innovation in Canada's construction sector. The basic concept was that the federal and provincial governments could earmark a small percentage of the \$750 billion planned for public infrastructure over the next decade or so to support new construction designs, processes, and technologies.<sup>57</sup> The goal would be to use this massive medium-term investment in public infrastructure to catalyze innovation that could be scaled and exported. Such an initiative could be broadly modelled around the activities of the Defence Advanced Research Projects Agency in the United States. There is no reason that Canada cannot become a global leader in innovative public infrastructure as well as support a dynamic, forward-looking construction industry that can compete for major projects around the world. The Canada Infrastructure Bank could ostensibly play a role in managing this effort.**

57 Drew Fagan, Building the Future: Strategic Infrastructure for Long-Term Growth, Public Policy Forum, 2016.

Available at: <https://ppforum.ca/publications/building-the-future/>

## 4 Enable more internal trade through regulatory harmonization

Liberalizing internal trade is building political momentum. This is the good news. The bad news is that Canada is still at this obvious starting point. Strategic competitiveness policies assume

that before firms become exporters, they need to sharpen their skills domestically. Dividing an already small and dispersed national market hobbles the ability for global champions to grow from a Canadian base. Obstructed at home, too many Canadian companies reluctantly turn to the more hospitable U.S. market to build their base.

**As a measure that promotes higher levels of economic growth, an assault on interprovincial 'tariffs' should be low-hanging fruit.**

A recent Bank of Montreal study concludes that the positive impact from free interprovincial trade would cumulate over a decade to add as much as

**2%**

to national GDP, or nearly

**\$50 billion**

That is more than twice Canada's exports to China, its second-largest trading partner.

Interprovincial trade barriers in the form of provincial or local preferences, regulatory differences or legislated prohibitions impose economic costs beyond stifling business development.<sup>58</sup> Estimates of these costs vary considerably. A 2008 report by the Government of Alberta estimated the cost to Canada's economy to be \$14 billion per year.<sup>59</sup> A 2016 Senate committee put the number as high as \$130 billion per year.<sup>60</sup> Other figures fall somewhere in between.

Interprovincial trade barriers essentially function like tariffs. In fact, Statistics Canada estimates that they are the equivalent of a 6.9% tariff on trade within Canada.<sup>61</sup> It is notable that Canadians (rightly) protested President Trump's imposition of tariffs on Canadian steel and aluminum products but ignore the significant tariffs that our own governments impose on Canadian goods and services. It is perverse and self-defeating.

As a measure that promotes higher levels of economic growth, an assault on these interprovincial "tariffs" should be low-hanging fruit. The Bank of Canada has estimated that removing interprovincial trade barriers could add 0.1 to 0.2 percentage points to potential annual output.<sup>62</sup> A recent Bank of Montreal study concludes "the positive impact from free interprovincial trade would cumulate over a decade to add as much as 2% to national GDP, or nearly \$50 billion."<sup>63</sup> That is more than twice Canada's exports to China, its second-largest trading partner.

The Canada Free Trade Agreement, which came into force on July 1, 2017, is still a work in progress. While the ambition and rhetoric are high, the results have been limited. The most promising aspect of the agreement is the establishment of the Regulatory Reconciliation and Co-operation Table, with a mandate to reconcile regulatory differences among the

provinces. But the federal government operates at a disadvantage; it does not erect these barriers nor can it unilaterally dismantle them. We are told that Nova Scotia has begun unilaterally lowering internal barriers. Alberta's United Conservative Party has made a similar commitment. This kind of behaviour should be encouraged.

Reducing interprovincial trade barriers is hard work. Most are subtle and unjustified regulatory differences that cannot be resolved through mutual recognition. There is no big-bang solution. They can only be eliminated by moving to a common standard. For instance, Alberta's labour code protects workers who require Reservist leave after 26 weeks of consecutive employment, while Saskatchewan's only requires 13 weeks of employment. Why is this different? What is the point? And, most importantly, which standard should be adopted? Any common standard is better than different ones.

Identifying these differences and answering these questions is painstaking yet important work. The main challenge is that many of the provinces do not use the same language, legal design and structure so it is laborious to figure out where regulatory differences exist. The federal government could support a methodical exercise by funding the creation of a comprehensive interprovincial database that provides for an apples-to-apples comparison of laws, rules and regulations across the provinces and territories. It could operate similarly to the 25-year-old health database run by the Canadian Institute for Health Information, which has a multiple jurisdiction governance structure. This would support the work of the Regulatory Reconciliation and Co-operation Table and the provinces to expedite the process of reconciling unjustified regulatory differences and provide data to validating those jurisdictions moving in the right direction.

58 The Canadian Federation of Independent Business has identified three types of barriers: (i) prohibitive barriers; (ii) technical barriers; and (iii) regulatory or administrative barriers. This means, for example, that businesses were prohibited from shipping alcohol directly to consumers (prohibitive barriers); struggled to meet differing regulations in different jurisdictions (technical barriers); and had to complete extra paperwork to show companies meet standards in each jurisdiction (administrative barriers).

59 Cited in: Andrea Pierce. November 2013. SME Profile: Interprovincial trade. Industry Canada

60 The Standing Senate Committee on Banking, Trade and Commerce. June 2016. Tear Down These Walls: Dismantling Canada's Internal Trade Barriers.

61 Bemrose, R., M. Brown and J. Tweedle. September 14, 2017. Going the Distance: Estimating the Effect of Provincial Borders on Trade when Geography Matters. Statistics Canada.

62 Poloz, S. S. 2016. Living with Lower for Longer. Association des économistes québécois, the Cercle finance du Québec and CFA Québec, delivered September 20, 2016.

63 Porter, D. and R. Kavcic. October 26, 2018. Sizing Up Provincial Trade Barriers. BMO Capital Markets Corp.



# THE NEW INTANGIBLES



## How does Canada win in a data-driven economy, where value is in intangibles?

The foundational drivers of competitiveness are necessary yet insufficient for the new intangibles economy. Policy-makers must go beyond them and address the new drivers of competitiveness.

Canada is accustomed to thinking about competitiveness and productivity in a 20th century mindset, where textbook economics says that the two most important variables of factors of production are labour and capital. Similarly, a 20th century company balance sheet focuses on the tangible, physical things

used to generate revenue for a company — including both fixed assets, such as machinery, buildings and land, and current assets, such as inventory. This is the labour-intensive, factory-based model of automotive manufacturers, General Electric and the energy industry.

The 21st century data-driven economy changes this. It will have increasingly less to do with tangible assets, and more to do with intangible assets, such as IP, data and copyrights. It does not effectively replace labour and capital as drivers of economic growth per se. But it redefines how to conceptualize various economic inputs and their relative role in driving economic growth. At a minimum, it forces us to make a clear distinction between the tangible

and intangible economy — a discussion that has hardly penetrated the policy-making community thus far.

Over the last decade, technology has brought down the labour share of GDP across OECD countries, including Canada, where it fell in 1990 to just over 50% in 2015.<sup>64</sup> This trend has generally been interpreted as a symptom of suppressed wage growth driven by a combination of corporate concentration, technology and various other labour market factors.<sup>65</sup> Artificial intelligence, quantum computing and their applications will further dramatically disrupt our labour markets — and wages — in the future. The result will be even greater labour bifurcation and income inequality.

More generally, if intangibles are the main driver of the emerging data-driven economy, then it follows that to remain competitive as a country, Canada must rethink how to facilitate innovation and enable ecosystems that drive innovation and build greater capacity in the intangibles economy. This has considerable implications for public policy.

Most of the current ecosystem of economic enablers for an innovative economy — such as free trade, competitive taxation, innovation programs based on demand, physical infrastructure, and smart regulations — exist to help Canada perform reasonably well in a world of tangible assets. But they are not necessarily set out for intangibles. Put differently: a classic enabling environment will only get us so far in the new economy. It is necessary yet not sufficient, and so it is essential to build on it with new thinking and new policies. Indeed, we believe a new set of policies are needed to help Canada thrive in a world where intangibles (including data) will increasingly become the primary source of economic competitiveness and a major creator of economic wealth.

The analogy is often made that data is the new oil. While a handy metaphor in terms of their foundational roles in their respective economies, petroleum is found in the ground and can only be transported over land and water controlled by one sovereign state or another.



64 Stephen Gordon. “Why do we care about the labour share of income?” Worthwhile Canadian Initiative (blog). September 6, 2018

65 International Labour Organization. The Labour Share in G20 Economies. G20 Employment Working Group. February 2015.

Data is intangible and, as such, harder to subject to the same liberal-based market rules. Therefore, a regimen of competitive-enhancing policies will not be easy to enact in this new economy and will probably require international co-operation among like-minded countries, usually those that Facebook, Amazon, Google and Alibaba are just visiting. With so much at stake, it is imperative to hold a major debate about technology and competitiveness.

While Canada has enjoyed great economic success in the past, historically it has not been a top-performing country when it comes to innovation. Canada has exhibited a spate of bad habits and outdated thinking when it comes to adapting to big structural shifts in the global economy; it has always been simpler to rely on our abundance of natural resources for wealth creation and our close relation to the U.S. in adopting new innovations. As demonstrated at the time of the demise of Nortel Networks, Canada has not been attentive to the value of IP as a driver of competitive advantage, even when it has been wholly or partly funded by public dollars.

Policy-makers must become more attuned to the trends of an intangibles economy and, in turn, the extent to which it requires us to adjust, refine and improve our competitiveness-related policies. The first order of business is to understand what is happening.

We mentioned earlier that we sought to obtain a Canadian comparator for the data on the share of S&P 500's value represented by intangible assets. The S&P 500's share has climbed from 16% in 1976 to 91% today. We discovered that few, if any, had carried out such analysis of the Toronto Stock Exchange (TSX). RBC Economics was kind enough to crunch the numbers for us based on Bloomberg's price to tangible book value per share.

The comparator figure for Canada is 70%. The lower number for the TSX reflects the greater weight of the financial service and energy sectors which have lower intangible to market cap ratios. For the S&P 500, IT is the largest sector and has a high intangible ratio.

Canada's overall share puts it in the middle of the pack among advanced economies. It is much lower than the U.S., slightly lower than Europe, the U.K., France and Germany, and higher than Spain, Italy and Japan (see table below).

## INTANGIBLES TO MARKET CAP RATIO IN ADVANCED ECONOMIES

<b>United States</b> (S&P 500)	<b>91%</b>
<b>Europe</b> (Euro Stoxx 50)	<b>77%</b>
<b>United Kingdom</b> (FTSE 100)	<b>77%</b>
<b>France</b> (CAC 40)	<b>77%</b>
<b>Germany</b> (DAX)	<b>75%</b>
<b>CANADA</b> (S&P/TSX)	<b>70%</b>
<b>Japan</b> (Nikkei)	<b>55%</b>
<b>Spain</b> (IBEX 35)	<b>54%</b>
<b>Italy</b> (FTSE MIB)	<b>54%</b>

This data shows two important points. The first is that, notwithstanding the traditional characterization of Canada's economy as "hewers of wood and drawers of water," the trend toward the intangibles economy is occurring here similar to comparable jurisdictions. And the second is that Canada has work to do if it is to compete with the U.S. and others who are currently ahead on this path. The table puts a fine point on how important this debate and economic reorientation is for Canada. The fact we could not find such a table, or explanations of intangibles intensity in given industries, for private and public companies, for large and small businesses, or for domestically and foreign-owned companies, suggests Canadian policy-makers have not even begun to ask critical questions, let alone find answers to them.

## A new approach on patents and IP retention

As a country, Canada has emphasized publicly funded research and development (R&D) as a driver of its innovation policy. As a whole, the economic returns have been insufficient, as Canada's low productivity metrics over the last few decades show. Canada has put too many eggs in that one basket.

But that does not imply a strong R&D system is not one of the conditions for success in an innovative economy. In any innovation ecosystem, R&D is a factory of IP. Without it, whether is it publicly or privately funded, there is almost no foundation for innovation.

For a country of its size, Canada's major universities produce world-class research and discovery. In the private sector, Canada lacks scale given the chronic, decades-long problem of R&D investment being limited to just a small cohort of Canadian firms. Business investment is already a problem for Canada's declining productivity, with this additional shortcoming now layered on.

Governments, universities and granting councils have a significant role in enabling public R&D. But they have failed to overcome the longstanding challenge for Canada to commercialize its research and reap the economic benefits. Canada's commercialization problem is twofold. First, in comparison to economic competitors, Canada produces anemic amounts of IP, such as patents (though, to be fair, not all patents are created equal and not can all be commercialized). Second, Canada too easily surrenders homegrown IP to foreign companies, even when public money has been used to help create its value.

The goal of innovation economics is to amass innovation assets — IP, data and the talent that creates it — and then to exploit those assets when the assets are commercialized. Creating innovation assets and then divesting them before commercialization or losing out on the potential to grow companies to global scale is a failure of innovation policy. This is the difference between being a landlord nation and a tenant nation in the new intangibles economy.



**As a country, Canada has emphasized publicly funded research and research and development (R&D) as a driver of its innovation policy. As a whole, the economic returns have been insufficient, as Canada's low productivity metrics over the last few decades show. Canada has put too many eggs in that one basket.**

**To succeed in the intangibles economy, Canada needs to be more conscious of the strategic imperative to generate and retain IP. If intangible assets are a major component of what will drive economic growth in the data-driven economy, Canada cannot afford to be complacent or naive about IP ownership.**



On patents, recent figures show a significant decline over the last decade.<sup>66</sup> Canada risks falling behind.

In a 2017 op-ed published in *The Globe and Mail*, James Hinton and Peter Cowan succinctly described how and why Canada is falling short on commercialization:

"To commercialize research, publicly funded institutions currently partner with industry players. Most agreements end up with newly developed IP wholly-owned by the industry partner because they have the vision to harness the value in the IP. These industry partners are almost always foreign multinationals, leading to critical leakage of IP out of Canada. This explains why Canadian universities have developed world-leading IP in highly valuable fields such as regenerative medicine, Ebola vaccines, ma-

chine learning and AI, but most of the IP is currently owned by foreign firms, moving the resultant wealth and associated economic benefits outside Canada. Ensuring that IP generated in Canada with taxpayer funding is available to Canadian innovators is critical to beginning to boost our innovation outputs."<sup>67</sup>

AI, a field where Canada is globally recognized for its leadership role in quantitative and qualitative research, is a great recent example of the challenges Canada faces. In 2009, there were 183 AI patents filed in Canada; by 2017 that number dropped to just 72 patents. In 2018, 52 patent applications were filed. Canada is the only jurisdiction among the top 10 by AI patents filed to see a decrease in the number of patents applied for each year between 2016 and 2018 — and this despite more than \$250 million from the Canadian government in Budget 2017.

66 James McLeod. "Intellectual property may be a state of mind, but Canada's mind is not on the game." *Financial Post*. December 19, 2018.

67 James Hinton and Peter Cowan. "Canada needs an innovative intellectual property strategy." *The Globe and Mail*. May 19, 2017.

When it comes to IP policy or strategy, it seems Canada has a generation and retention challenge. As commentary in *The Logic* recently pointed out, a series of deals with foreign companies raise questions on how “Canadian universities are managing tech transfer and the difficult business of licensing inventions to startups, investors or large firms with an eye to commercializing university-generated intellectual property.”<sup>68</sup>

We believe more accountability is needed from governments and universities. Protecting, marketing and licensing IP is an expertise in itself, and this should become a deliberate policy objective with corresponding implementation mechanisms. Whether it is best for universities themselves to retain or pool this capacity is a matter meriting further public debate. Either way, a big policy gap exists that cries out to be bridged.

As a country, if we want to succeed in the intangibles economy, we need to be more conscious of the strategic imperative to generate and retain IP in Canada. As such, we need to develop the proper frameworks. If intangible assets are a major component of what will drive economic growth in the data-driven economy, we cannot afford to be complacent and naive about IP ownership.

Creating good tech jobs — as high skilled and well paying as they generally are — is not a sufficient measure of economic success. Canada will have a hard time growing start-ups into global firms and developing self-perpetuating economic hubs if, as a matter of public policy, it continues to conceive of success in tech as having a few big foreign multinationals employing Canadians. The innovation gains from employment alone barely makes a ripple. It is only through the Canadian ownership of IP and data when it is commercialized — or, in some cases, foreign firms dedicated to giving their Canadian operations the capacity to develop products and services they sell globally — that significant innovation payouts can be achieved.

This means shifting away from providing major public investments, such as tax incentives and university resources, for IP generation by non-Canadian technology companies. This should not be controversial. It is impossible to justify scarce public resources going to large global firms that produce minimal value in Canada. In the past, it has been difficult to extract promises of global mandates from Canada over any reasonable period of time. This is even more difficult when assets are intangible and therefore totally mobile.

Critically, there are no major spillovers in the innovation economy because IP is a negative right. Each patent that is not retained by Canadians limits the freedom to operate of a future Canadian company. It hinders rather than helps business creation. This does not necessarily imply full-blown economic nationalism, which can also carry costs from programming jobs to technology transfers. At a minimum, however, Canadian policies should not directly subsidize foreign firms that provide little value for Canada. This is especially the case given that most of these firms will ultimately choose to invest in Canada based primarily on access to talent. The generosity of public subsidies is not going to be decisive for well-capitalized global tech firms.

## A national data strategy

Data is the fuel of the 21st-century economy. Technological change has radically increased both the supply of data in the economy and its velocity through our rapidly growing capacity to process it. To harness the power of data is not really a choice in today’s economy; it is the penny-ante stakes of success.

Recognizing the importance and sensitivities around data, the government of Canada is currently developing a data strategy. We will reserve judgment until its release, other than to say that the readiness to

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68 John Lorinc. “The complicated relationship between tech and universities.” *The Logic*. Feb 7, 2019.

pursue this issue is a necessary policy advance and a positive sign in itself. Even with a wider berth on the exercise of sovereignty, this would not be a simple task. There are various complex dimensions, with the economic and social often competing against each other.

First, there is **the economic value of data**. As we have previously argued, big data and machine learning allow the access and transformation of information beyond anything the human mind has ever reached. The OECD estimates that in 2015, the global volume of data stood at eight zettabytes (eight trillion gigabytes), an eight-fold increase from 2010. By 2020, that volume is forecast to grow up to 40 times greater, as technologies including the Internet of Things create vast new datasets.

It is not just the volume of data. The rapid evolution of data-processing technologies is contributing considerable economic value. Think about cloud storage and software, new data science applications and the increases in both the power and the speed of big data processing. The potential for various sectors of the economy to use and aggregate data for their economic benefit is tremendous although first there must be storehouses of accessible data to exploit.

Second is the issue of **data access and ownership**. For policy-makers, this is key.

In a typical marketplace, before a commodity is acquired or traded, there is an acquisition price. The commodity has a *market* value. Currently, in the absence of any regulatory framework, data is essentially a free commodity.

Global corporations that have the capacity to aggregate considerable amount of data are free to collect all the data they want for little or no cost. And once they have it, it is theirs. They have proprietary rights over vast storehouses of data.

There is simply no market pricing mechanisms for data. This is why some have characterized this as a rent system, where there are landlords (those who have and own big data) and tenants (those who do not). It creates considerable asymmetry that does not allow the normal competition one would normally find in a regulated marketplace. It is a winner-take-all system.

#### **As Professor Dan Breznitz has argued:**

**/// If data is the main resource for growth and innovation, policy should ensure that well-functioning data markets with efficient price-setting mechanisms exist to enable the optimal allocation of resources, incentivizing growth and innovation. However, for any economic transaction to happen, there is a need to establish property rights, decide what they entail and set the rules about the transfer of said property rights in whole or in part. [... ] Having markets that put prices on data would also have the wonderful effect of optimizing the allocation of resources to the collection, acquisition and processing of data, resulting in a positive impact on economic growth.<sup>69</sup> ///**

Property rights can be defined in many ways, and designing data markets will not be an easy endeavour, especially for a mid-sized country operating among global tech players largely headquartered in the U.S. and China. There are different licensing models, including data trusts, which would essentially function under the same principles as a normal trust with a fiduciary relationship between a trustee and a trustor. The U.K. has been at the forefront of launching pilot projects on data trusts, and the Canadian government has been considering a similar approach that would allow for greater aggregation of limited data.

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69 Dan Breznitz in Data Governance in the Digital Age. Centre for International Governance Innovation. May 16, 2018.

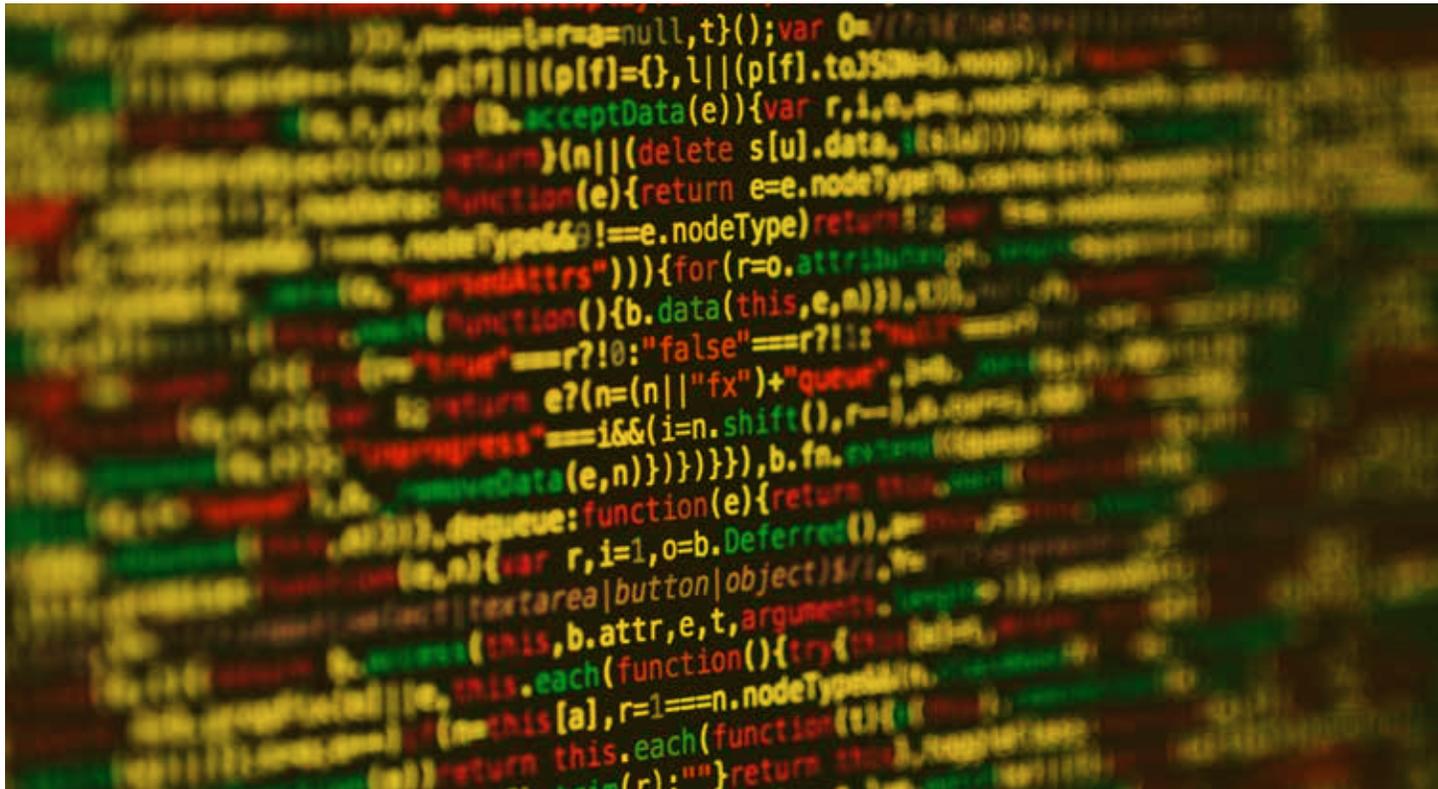
This is a competitive issue that cannot be ducked in a modern economy. Public debate needs to turn to the individual economic rights of the data creators and aggregators versus the social and economic good of more open systems of data, as with the genome project. Even in the pharmaceutical industry, property rights over invention have a term limit. Getting the right balance in the right circumstances is an essential ingredient of competitiveness policy.

Third is the issue of **global data governance and trade**. G20 and G7 heads of governments, central bankers and finance ministers meet almost quarterly to discuss global systemic risks, financial cycles and monetary policy. The WTO resolves trade disputes. The UN facilitates multilateral collaboration on many fronts.

But there is no supranational body that deals with data regulation within a global commons. When it

comes to data, there is no international architecture, no international mechanisms or rules. This is an area where Canada could lead. Former RIM CEO Jim Balsillie has called for a new Bretton Woods moment on data governance.<sup>70</sup> We agree there is a vacuum on the international stage, one that hurts countries like Canada that do better in rules-based systems.

Fourth, there is an absolute prerequisite for **data protection and privacy**. This is paramount. Over the long term, nothing will work or be sustainable in any business model if data protection and privacy is not completely assured. Sovereign states, including Canada, need to have much stronger legal frameworks and enforcement mechanisms. Commercial interests cannot be allowed to trump privacy; the public trust costs are simply too high. This is not an either/or debate — with the right regulatory framework, both consumer privacy and business interests can be served.



70 Ronald Orol. "The IMF Should Spark a Bretton Woods Moment for the Digital Age, Says Balsillie." Centre for International Governance Innovation. Nov. 22, 2018.

Canada cannot take a “hurry up and wait” stance. Other countries are moving. Singapore has released its AI governance framework.<sup>71</sup> Finland is set to release its AI strategy. In such areas as health care, infrastructure, energy and agri-food, Canada could develop significant competitive advantages. But AI is unarmed without data, so in order for Canadian industries to effectively leverage these technologies, policies must be created to govern IP as well as data protection, data security, data ownership, data flows and so on.

### Our innovation capacity problems

As we mentioned earlier, Canada does not have a stellar record on innovation policy outcomes. Different historical factors explain this: our reliance on the U.S. for trade and on our primary industries as the main driver of growth; a slow transition from an industrial economy to knowledge economy; significant trade barriers in our own domestic markets; and a lack of competitive intensity in many sectors of our economy.

In a recent policy paper, Peter Nicholson suggested that our innovation capacity problem resides essentially in an over-reliance on the U.S. for acquiring innovation.<sup>72</sup> He defines it as “taker” mentality. His prescription to fix Canada’s low-innovation conundrum is to fundamentally change the way of approaching the problem. Instead of working on what he calls supply-side measures or policy prescriptions — i.e., those that “strengthen a company’s *capacity* to innovate” (his words) — he proposes focusing on demand-side measures — i.e., those that “increase the market *incentive* to innovate.” He writes:

“This choice of a demand-side definition — which focuses on the business enterprise — is motivated by the need to create, through public policy, effective incentives to shift business behaviour away from

## Canada ranked 32nd in the world for high-tech exports in 2018

its low-innovation habit. Thus, what are needed are demand-side policy measures that provide strong incentives for businesses to innovate, either to seize new or expanded market opportunities (carrots) or to meet stronger competition (sticks).”

The two demand-side policy measures that stand out for us are public procurement and competition policy.

On public procurement, governments are big buyers of products and services. Most countries have procurement policies that are designed to help their own companies. The Finance Minister’s Economic Growth Council has advocated for a redesign of our procurement policy to build and help current Canadian-based companies. We agree. The procurement system can be a powerful tool for innovation that invests in keeping IP, wealth, jobs and a skilled labour force in Canada. It is one thing for governments to provide tax credits or grants to a growing business. It is another to become a customer. Acting as an early customer can have huge market effects domestically and in the firm’s efforts to expand their customer

71 Personal Data Protection Commission. A Proposed Model Artificial Intelligence Governance Framework. Government of Singapore. January 2019.

72 Nicholson, P. October 4, 2018. Facing the Facts: Reconsidering Business Innovation Policy in Canada. Institute for Research on Public Policy.

base in other markets.

As things stand now, health industry innovators complain about getting blocked by newcomer-averse provincial health procurement practices. They are left with little choice but to grow their businesses in the more experimental U.S. market. This is an area where our procurement needs and our innovation objectives can be aligned. It ought to be one of the main advantages of a single-payer health care model.

The competitive weakness of some of our economic sectors is well known and has been a major cause of structural underwhelming business investments (in R&D mostly). It has also nurtured a less-than-optimal innovation and entrepreneurial culture. Political factors are in play and reforms will be difficult to achieve. But we are convinced this is a structural impediment to Canada's long-term economic competitiveness.

## The missing links between start-ups and global firms

Start-ups are a strong part of Canada's innovation ecosystem. In cities such as Toronto, Vancouver, Montreal and Kitchener-Waterloo, the start-up scene is thriving. But Canada struggles to catapult these into high-growth and large anchor firms.

According to the latest report card from Innovation, Science and Economic Development Canada:<sup>73</sup>

- Measured by employment, 99.7% of firms are small or medium-sized, with just 0.3% classified as large;
- Technology adoption hampers the competitiveness of many Canadian firms. Canadian firms ranked 22nd in the OECD

for firm-level technology absorption;

- Availability of late-stage capital to help Canadian firms scale up is limited, as government funding diminishes for firms as they grow. Government innovation programs have focused more on supporting small and medium-sized enterprises (SMEs) over large firms and have dropped firms as they gain size or profitability; and
- Few Canadian firms export. Of those that do, the vast majority export solely to the U.S. In 2017, only 12% of SMEs exported. Canada ranked 32nd in the world for high-tech exports in 2018. Operating in a relatively small domestic market, Canadian firms must export — and export further afield given global growth patterns — if they hope to become globally competitive.

Government incentives are also impactful when it comes to scaling up. For example, the Scientific Research and Experimental Development Tax Credit (SR&ED) is a roughly \$3 billion annual expenditure for the federal government. The way SR&ED is designed is such that companies that earn more revenues receive less of a tax break on new research and development projects.

We heard from the tech sector that the taxable income ceiling on the refundable portion of the SR&ED program could be amended to benefit companies as they continue to scale up. There could also be an implicit incentive for the companies who own the resultant IP that arise from qualifying SR&ED activities. The 2019 budget makes a step in the right direction by removing taxable income as a factor in determining a small firm's annual expenditure limit for the purposes of the enhanced SR&ED tax credit. This should make the phase-out smoother and more predictable and help firms scale.

73 Innovation, Science and Economic Development Canada. 2019. Building a Nation of Innovators

## Time to rethink our foreign investments strategies?

Policy-makers currently use several criteria to evaluate foreign investments, number and quality of jobs, national security and strategic national assets among them. But an intangibles economy, with its winner-take-all model, requires revisiting assumptions that are based on a tangible-economic model in which FDI is connected to physical assets, local jobs and tax payments.

Economist Dan Ciuriak, fellow at CIGI, explains it very well:

**“ The key assets of a knowledge-based and data-driven economy are proprietary data and the intellectual property built on it. The contest for these assets results in strategic trade and investment policies, in which the role of foreign direct investment (FDI) is to extract knowledge and expatriate knowledge assets and skilled personnel from host economies.**

**This differs from FDI in industrial sectors, where it is associated with knowledge inflows, introduction of advanced management practices, and increased R&D. This reflects the fact that firms capable of investing abroad tend to be the dominant, most advanced firms in their own countries. They have something to bring to the host economy.**

**From the perspective of the host country for FDI, the extraction of knowledge capital from a research hub has negative implications for its dynamism because it reduces knowledge spillovers within the hub. These spillovers, which cannot be monetized by private interests, constitute the externalities that underpin public policy intervention. Thus, when a start-up sells, there is a net, uncompensated outflow of wealth from a country. By the same**

**token, there is a public interest in the transaction that goes beyond the private interest.**

**The realization that knowledge extraction may not be good for host countries requires us to create a new public policy filter for screening inward FDI — and not only when the inward FDI is from a state-owned enterprise or is acquiring technology that might have security implications. This filter needs to be applied more broadly given the pervasive incentives for international rent capture through strategic trade and investment policies.**

**[...] Canada’s understanding and approach to inbound tech FDI remains rooted in the industrial era understanding of the role and impact of FDI. It is the opposite of the approach being taken by successful innovation economies globally.<sup>74</sup> ”**

In our consultations, we heard that a fundamentally different approach to thinking about foreign investment in the intangibles economy is needed. Some argued that Canada needs to lift foreign ownership restrictions in order to promote more competition in the economy. Others argued that our foreign investment regime should better support domestic firms in the intangibles economy. One of the surprises from these discussions was a major focus on the Investment Canada Act. We have been thinking about and debating it ever since.

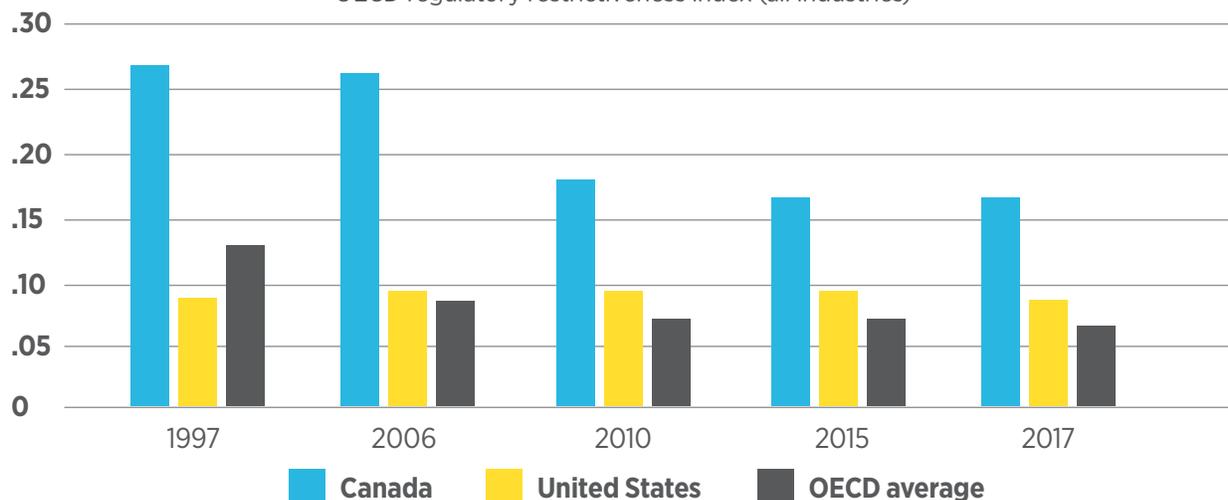
It is fair to say that a presumption about the benefits of foreign investment has underpinned federal policy since the Investment Canada Act was enacted to replace the old Foreign Investment Review Act in the mid-1980s. Notwithstanding ongoing foreign ownership restrictions in certain key sectors and a few high-profile blocked transactions, Canada’s approach to FDI has been generally liberal. The threshold for transactions to be screened under the “net benefit test” has steadily risen to \$1 billion for WTO members and \$1.5 billion for free trade partners.<sup>75</sup> Successive prime ministers have

74 Ciuriak, D. December 2017. The Knowledge-based and Data-driven Economy: Quantifying the Impacts of Trade Agreements. CIGI Papers No. 156. Centre for International Governance Innovation.

75 Bodrug, J., C. Tingley and D. Feldman. September 21, 2017. Investment Canada Act Net Benefit Review Threshold Increases Again for Many Foreign Investors. Davies Bulletin.

# OVERALL INWARD FDI RESTRICTIVENESS

OECD regulatory restrictiveness index (all industries)



traveled abroad and met with foreign business leaders to promote and attract foreign investment. Canada has also used direct and indirect subsidies to bring product mandates and R&D investments into the country.

The principal critique of federal policy tends to be that it is insufficiently liberal — that is, that ongoing sheltering of key sectors and politically motivated decisions on foreign transactions (such as the BHP Billiton potash transaction) are harmful to Canadian competitiveness and innovation (see chart above). In our consultations, some participants argued that the best means for galvanizing more investment and innovation in Canada is to increase competition by liberalizing investment restrictions. This perspective is widely shared in a large body of government reports, think tank papers and academic scholarship.<sup>76,77</sup> As the Council of Canadian Academies has put it, the view is that “Canadian firms have been as innovative as they have needed to be.”<sup>78</sup>

This line of argumentation still resonates, but it well might be increasingly incomplete and even outdated. We would be remiss if we did not recognize an alternative line of argument.

There is an emerging and challenging view among some entrepreneurs and policy commentators that more foreign investment and ownership can possibly harm rather than help Canada’s innovation performance.<sup>79</sup> This perspective sees the intangibles economy as a zero-sum proposition where mergers and acquisitions can be wielded as an anti-competitive tool whereby IP and human capital are gobbled up by large global players at the expense of the domestic innovation ecosystem.<sup>80</sup> The upshot is that the time may have arrived for policy-makers to reconceptualize how they think about foreign direct investment and the relevant screening mechanisms in the age of the intangibles economy. The heavy attention of competition policy on pricing to consumers over

76 Industry Canada. 2011. Innovation Canada: A Call to Action. Review of Federal Support to Research and Development — Expert Panel Report.

77 The Institute for Competitiveness & Prosperity. June 2010. Beyond the Recovery: Report on Canada 2010.

78 Council of Canadian Academies. 2013. Paradox Lost: Explaining Canada’s Research Strength and Innovation Weakness.

79 Ciuriak, D. October 2018. Rethinking Industrial Policy for the Data-driven Economy. Centre for International Governance Innovation.

80 Balsillie, J. November 2018. Remarks: Why We Need a Second Bretton Woods Gathering. IMF Measuring Economic Welfare in the Digital Age: What and How? delivered November 20, 2018.

other factors certainly seems an inadequate analytical framework. Other policy priorities such as the potential effect on investment in wireless infrastructure must be considered, or an over-concentration of data or markets fundamental to our democracy.

We believe both sides of this argument can be correct. The government should promote competition and foreign investment while at the same time ensuring the net benefit test under the Investment Canada Act considers the effects of transactions on the broader innovation ecosystem. The tests should also kick in at lower thresholds for particularly sensitive industries, like AI.

The government should conduct a **comprehensive review of the Competition Act** to ensure that the current statute is suitable for the intangibles economy. The law has been subjected to some amendments over the years. But the basic foundation remains unchanged since 1986. Such an exercise would judge where the Act should be liberalized to enable more market-based competition and where a home-team strategic policy makes more sense in the current economic environment. Either way, Canada should also explore working with like-minded jurisdictions on global competition issues and to ensure companies are not tax shopping. Several European countries have already begun moving in this direction without waiting

for an OECD consensus to emerge.

The government should also **reform the “net benefits test”** under the Investment Canada Act to ensure that it considers the potential effects of a transaction on the broader innovation ecosystem. One of the present criteria stipulates that transactions are evaluated based on “the effect of the investment on productivity, industrial efficiency, technological development, product innovation and product variety in Canada.”<sup>81</sup> These criteria should be refined to ensure that Canadian innovation assets (including IP and human capital) are not targeted purely for offshoring or anti-competition purposes. A simple reform would be to add to this guideline that the government should consider the role of data and IP as part of the review process.

One tangential consideration is whether to account for the role and magnitude of public subsidies in such cases. Israel requires that foreign firms that purchase domestic businesses and have received public subsidies must maintain investment and employment in the country or repay a portion of the past subsidies. We heard mixed views about adopting this model in Canada and have refrained from a recommendation here, but we encourage policy-makers to investigate it.

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81 Innovation, Science and Economic Development Canada. What does “net benefit” mean? in An Overview of the Investment Canada Act (FAQs).



# SUSTAINABLE HUMANS



**In a world in which the application of ideas drives competitiveness, people are more important than ever**

Education, training and lifelong learning—what one might call “human capital development”—are the linchpin of a competitiveness and innovation agenda. As Nobel Prize-winning economist Paul Romer has observed: “My number-one recommendation is to invest in people. Humans that are well trained are the inputs into this discovery process.”<sup>82</sup>

Human capital is the bridge between the intangibles and tangibles economies. It is critical for both economic paradigms. Tangible economies require human capital as traditional sectors are increasingly driven by knowledge and grapple with demographic-driven labour scarcity. And there is no doubt of human capital’s value in the intangibles economy, in which a narrow band of highly talented engineers, scientists, mathematicians, programmers, financiers, entrepreneurs and managers play a disproportionate role.

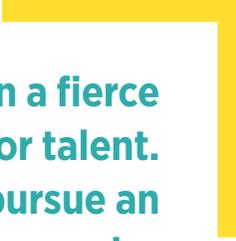
82 Conversations with Tyler. December 5, 2018. Paul Romer on the Unrivaled Joy of Scholarship. [Podcast].

This means the principal pro-competitiveness step governments can take is to invest in Canadians and attract others to Canada. Canada's prosperity increasingly depends on intellectual capital. Public policy must support its cultivation and accumulation. This is not an elite enterprise to be directed at a small swath of people. It takes a large funnel at the front end, and thus public policy must maximize inclusivity.

Research finds a positive relationship between a jurisdiction's level of human capital and its overall economic performance.<sup>83</sup> The same goes for regions,<sup>84</sup> communities,<sup>85</sup> <sup>86</sup> and individuals.<sup>87</sup> The evidence of a positive relationship between human capital and competitiveness is similarly powerful.<sup>88</sup> <sup>89</sup>

Take Silicon Valley as an example. Its core strength as an innovation hub is its critical mass of talented, dynamic and entrepreneurial people. Firms start there, locate there, and grow there because of its rich supply of people. Other people, in turn, migrate there because of the location's dynamism, opportunity and rewards. The result is a network effect whereby the convergence of talent drives and shapes more and more innovation. One analysis attributes 70% of the value of Silicon Valley's tech sector to these network effects.<sup>90</sup>

This insight has important policy implications for an agenda focused on long-term competitiveness — particularly in a world of intangible assets. A policy focus on attracting firms through subsidies and tax preferences risks missing this point. These types of market interventions make relatively small contributions to employment and tend to produce few long-term benefits for Canada. Instead, Canadian



**Canada is in a fierce competition for talent. It must pursue an unrelenting, people-centric strategy if it is to successfully create the conditions to compete in the growing intangibles economy.**

policy-makers should nurture and attract a critical mass of talented and entrepreneurial people. As one Silicon Valley investor recently told us: “[Canada's long-term strategy] must be to pull the people not the firms.” Canada must focus on creating the conditions to develop and retain talented Canadians who may otherwise feel the lure of Silicon Valley and other innovation hubs, and it must go big on attracting foreign talent.

Policy-makers must therefore prioritize expanding educational access, promoting higher education opportunities, attracting highly skilled immigrants and generally promoting the cultivation of human capital. Canada is in a fierce competition for talent. It must pursue an unrelenting, people-centric strategy if it is to successfully create the conditions to compete in the growing intangibles economy.

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83 World Economic Forum. 2017. The Global Human Capital Report 2017: Preparing people for the future of work

84 Diebolt, C. and R. Hippe. July 28, 2018. The long-run impact of human capital on innovation and economic development in the regions of Europe. *Applied Economics*, 51:5, p. 542-563.

85 Abel, J. R. and T. M. Gabe. July 2008. Human Capital and Economic Activity in Urban America. Federal Reserve Bank of New York. Staff Report no. 332. Revised February 2010.

86 Wilding, C. and M. Hillier. April 15, 2013. How human capital drives Canada's cities. *The Globe and Mail*.

87 Torpey, E. April 2018. Measuring the value of education. Bureau of Labor Statistics.

88 Martin, R. June 2011. Canada's innovation imperative. *The Institute for Competitiveness & Prosperity*.

89 Whitehurst, G. J. June 2010. Spurring Innovation Through Education: Four ideas. Policy Brief, No. 174. *The Brookings Institution*.

90 Currier, J. November 28, 2017. 70% of Value in Tech is Driven by Network Effects. *NFX*.

## Human capital in an era of “skills-biased change”

A focus on human capital is, of course, critical for all aspects of competitiveness. Technology touches everything and is dividing work into those tasks that can be undertaken by machines and algorithms and those that require humans’ technical, creative and interactive skills. Under these pressures, the economy is experiencing what has been described as “skills-biased change.”<sup>91</sup> Shifts in production technology favour skilled over unskilled labour by increasing its relative productivity and, in turn, its relative demand.

Evidence of this trend can be observed across the economy. Opportunities for those without higher education training and degrees are narrowing.<sup>92</sup> Labour participation rates for working-age people are stagnant.<sup>93</sup> The pay gap between those with and without post-secondary degrees is growing.<sup>94</sup> These are clear signals of the high returns to human capital development.

Think about it this way: the economy increasingly places greater value on cognitive skills and educational credentials and less on physical strength or maintenance skills. The resulting labour market bifurcation is only likely to grow as the fourth industrial revolution continues.

A 2018 report by the Institute for Competitiveness & Prosperity used government data from Ontario and the U.S. to evaluate skills requirements in the provincial labour market over the next four years. Cognitive and social skills such as reading comprehension, writing, complex problem solving and social

perceptiveness will be required for between 80% and 96% of projected job openings. But opportunities for those with traditional technical and maintenance skills, such as installation, equipment maintenance and repairing, are becoming exceedingly rare.<sup>95</sup>

Automation, AI and other forms of labour-replacing technology will further hasten this dynamic. A 2018 study by the OECD estimated that 13.5% of Canadian jobs are at risk of “automatability.”<sup>96</sup> Royal Bank estimates it at 35%.<sup>97</sup> The Brookfield Institute puts the figure at more than 40%.<sup>98</sup> These different estimates reflect differing views about the percentage of jobs that are fully disrupted versus those with tasks within the job that will be restructured. Generally, the occupations facing the highest risk of automation only require low levels of education.

This trend is the corollary of a dynamic, innovative economy. Canada cannot and should not aim to inhibit the labour market consequences of Schumpeterian “creative destruction.” Rather, it needs to ensure our system of education, training and lifelong learning enables people to participate in the economy while supporting those who cannot navigate the effects of dislocation.

A long-term strategy for human capital development is thus essential to building resilience in our labour markets (and, because of the understandable sense of grievance and alienation when people are left behind, in our political markets, too). At both ends of the employment spectrum, investing in human capital is the single most important policy response to the unceasing forces of disruption, dislocation and skills-biased change.

91 Violante, G.L. Date unknown. Skills-biased technical change.

92 Steeve, J. September 2017. The Labour Market Shift: Training a highly skilled and resilient workforce in Ontario. The Institute for Competitiveness & Prosperity.

93 Statistics Canada. Table: 14-10-0019-01 Labour force characteristics by educational attainment, monthly, unadjusted for seasonality.

94 Statistics Canada. November 29, 2017. Does education pay? A comparison of earnings by level of education in Canada and its provinces and territories. Census in Brief.

95 Macklem, T. 2018. Teaching for Tomorrow: Building the necessary skills today. The Institute for Competitiveness & Prosperity.

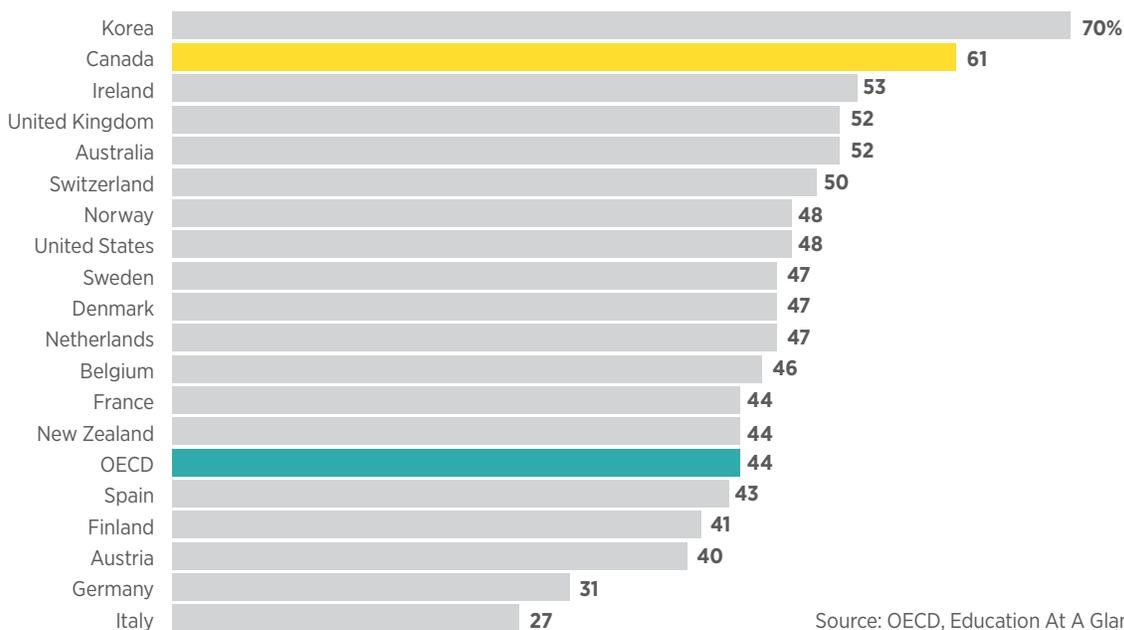
96 Nedelkoska, L. and G. Quintini. 2018. Automation, skills use and training. OECD Social, Employment and Migration Working Papers, No. 202. OECD Publishing: Paris.

97 Desjardins, D. and A. Agopowicz. March 5, 2019. Advantage women: how an automated future could play to women’s strengths. RBC Economics.

98 Lamb, C. and S. Doyle. 2017. Future-proof: Preparing young Canadians for the future of work. Brookfield Institute.

# CANADA IS A GLOBAL LEADER IN HIGHER-EDUCATION ATTAINMENT

Percentage of those aged 25 to 34 with a post-secondary credential



Source: OECD, Education At A Glance 2018.

## Canada's education, training and lifelong learning performance

A competitiveness and innovation agenda must focus on people — both to create the conditions for new firms, new technologies, and new processes, and to better support those who are dislocated by these forces. This will necessarily involve different levels of government, different policy levers and new responses from the educational and training sectors. The one commonality though must be a recognition that Canada's economic future rests in our ability to train, retain and attract a critical mass of human capital and that no matter how good we may think we are at this, the future demands more.

A recent Public Policy Forum paper authored by Daniel Munro provides a useful evaluation of the current performance of Canada's system of education, training and lifelong learning. The good news is that we are starting from a position of strength. Our

education system, in particular, has shown itself able to run with the best in the world. But that does not mean there is not room for improvement.

Let us dwell for a moment on our strengths. Canada is a world leader in providing high quality and equitable education to nearly everyone in the country. Canada has one of the top high school attainment rates globally. Nearly 90% of Canadians aged 25 to 64 have completed high school versus an OECD average of 78%. Canada is also among the world leaders in terms of higher educational attainment. More than 57% of Canada's population has attained a higher education credential versus 31% in the OECD.<sup>99</sup> Among people aged 25 to 34, higher education attainment in Canada reaches 61% versus 44% in the OECD.

We also perform well in international assessments of science, math, and reading proficiency among high school-aged students. Canadian students exceed the

99 This analysis draws heavily from Daniel Munro's report *Skills, Training, and Lifelong Learning*, to be published by the Public Policy Forum.

OECD average in the standardized international PISA tests (Program for International Student Assessment) ranking third in science, fifth in mathematics, and first in reading.<sup>100</sup>

But there are also key gaps demanding attention. Let us highlight five:

**1** Notwithstanding Canada's strong performance on higher education access and attainment, **36% of Canadians aged 25 to 64 and 39% aged 25 to 34 do not have post-secondary credentials.** This cohort faces enormous economic headwinds due to the trends described earlier. It has also formed the bedrock of populist support in the U.S., U.K., and elsewhere.<sup>101</sup>

## **2 The skills and educational attainment of Indigenous peoples continues to lag that of non-Indigenous**

**Canadians.**<sup>102</sup> Approximately 30% of Aboriginal people do not have a high school diploma and only 48% have some post-secondary education. In fact, Indigenous people are 18 percentage points less likely than non-Indigenous Canadians to hold a university degree, diploma or certificate. This gap contributes to poorer labour market outcomes for Indigenous people, including an unemployment rate that is roughly double the Canadian average.<sup>103</sup> Raising post-secondary rates opens the door to engaging more Indigenous peoples in the economy, which



100 Munro, D. May 2014. *Skills and Higher Education in Canada: Towards Excellence and Equity*. Canada 2020.

101 Speer, S. December 2018. *Working-Class Opportunity and the Threat of Populism in Canada*. Macdonald-Laurier Institute.

102 Statistics Canada. November 29, 2017. *Education in Canada: Key Results from the 2016 Census*. The Daily.

103 Statistics Canada. *Labour force characteristics by region and detailed Aboriginal group*, Table: 14-10-0365-01.

could unlock an estimated \$7 billion in GDP.<sup>104</sup> Thus, this is not just a stain on Canada; it is also a failure to take advantage of the fastest-growing source of young workers to boost Canada's economy.

**3 Canada's performance on later career training and development is poor relative to peer countries,** a hole in our educational excellence that becomes increasingly salient with changes to the economy. Average employer spending on training (\$1,000) is just half of the per employee spending of their American counterparts (\$2,000).<sup>105</sup> Public spending on training (0.07% of GDP) is also only half the OECD average (0.13%) and well below spending by global leaders such as Denmark (0.53%), Finland (0.4%), and Austria (0.45%). The latter is complicated by the labyrinth of active labour market policies at the federal and provincial levels that can be difficult to navigate and even more challenging to measure and evaluate. That the 2019 budget identified 106 such federal programs across 30 departments and agencies totaling \$7.5 billion is a sign that there is a need for consolidation and reform.

**4 Despite years of attention, Canada continues to struggle with foreign credential recognition.** As with Indigenous education, the failure to adequately draw the skills and experience of immigrants into the economy represents a wasteful human capital loss for Canada. A 2015 report by the Conference Board of Canada estimates that lost earnings due to unemployment or underemployment of those with international credentials ranges from \$13.4 billion to \$17 billion annually.<sup>106</sup>

**5** Arguably the most important gap in competitiveness and innovation is that **Canada bleeds away homegrown talent to the U.S. and other places.** According to the INSEAD Global Talent Competitiveness Index, Canada ranks 18th in its ability to retain talent.<sup>107</sup> A 2018 study found that one in four recent science, technology, engineering and math (STEM) graduates from three of the country's top universities — the University of Waterloo, the University of British Columbia and the University of Toronto — were working outside Canada.<sup>108</sup> Nearly 44% of those working abroad were software engineers, many employed by big tech companies like Microsoft, Google and Facebook.<sup>109</sup> Failing to retain these types of people will preclude Canada from building the critical mass of human capital needed to compete and innovate within the requirements of an intangibles economy.

Our emphasis in this paper on how the intangibles economy places a premium on homegrown firms and domestic talent is not meant as a rejection of foreign investment. It is a question of the commitment of these companies to Canada. Foreign operations are certainly a net positive when they pursue global mandates from Canada and are not merely hoovering away talent, data and IP. The fact that a number of global firms, such as Uber and General Motors, have opened knowledge-intensive labs in Toronto to research autonomous cars is certainly welcome.

Nor is it bad that Canadians go elsewhere and are exposed to new ideas, people, and practices. The measure, ultimately, is what is good for Canada — and globally competitive domestic firms and globally tested individuals are always good for Canada. Building this capacity requires an ecosystem with a rich supply of talented, dynamic, and entrepreneurial

104 Government of Canada. March 19, 2019. Investing in the Middle Class (Budget 2019), p. 48-49.

105 Munro, D., Skills, Training, and Lifelong Learning, Public Policy Forum. March 2019.

106 Grant, M. January 26, 2016. Brain Gain 2015: The State of Canada's Learning Recognition System. The Conference Board of Canada.

107 Lanvin, B. and F. Monteiro (eds.). 2019. The Global Talent Competitiveness Index 2019: Entrepreneurial Talent and Global Competitiveness. Fontainebleau, France: INSEAD.

108 Spicer, Z., N. Olmstead and N. Goodman. 2018. Reversing the Brain Drain: Where is Canadian STEM Talent Going? Munk School of Global Affairs and Brock University.

109 Silcoff, S. May 3, 2018. Canada facing 'brain drain' as young tech talent leaves for Silicon Valley. The Globe and Mail.



people. Reversing the outflow of talent should be the first policy stop before attracting new talent for policy-makers. We should start by examining an inventory of policies that may serve as obstacles to Canadians abroad who may, at some point, want to return home. Why, for instance, should there not be some mechanism so they can make their registered retirement savings plans whole? And we should be careful that high marginal tax rates do not act as a deterrent to the most mobile parts of the job market.

Canada cannot afford complacency. It must do better to support and cultivate human capital across the country.

## A people-centric strategy for Canada

Policy-makers must concurrently do three things:

1. Train, retain and attract a critical mass of talented, dynamic and entrepreneurial people to form the nucleus of Canada's innovation ecosystem;
2. Enact policies to foster inclusive growth and help underrepresented or marginalized groups better participate and benefit from a dynamic economy;

3. Redesign retraining and income-support policies so those dislocated by economic trends can continue to participate in a more technological and productive labour market.

The following recommendations principally focus on the first and second challenges. PPF's "Brave New Work" project aims to comprehensively address the third.

## Stronger links between Canadian universities, students and our innovation ecosystem

We have previously described the important link between research and IP generation. Long-term competitiveness requires cultivating a critical mass of world-class researchers. There is no reason that Canada should not have the best STEM programs in the world. Just as Stanford University is an important component of Silicon Valley's innovation ecosystem, the University of Waterloo is a key part of the innovation hub around Kitchener-Waterloo. Academic excellence creates a virtuous cycle of attracting capital and talent. Once innovation ecosystems have



## Canada's immigration system provides it a huge comparative advantage in building a critical mass of talented people to strengthen its innovation ecosystem.

attained a critical mass, they are resilient and can grow exponentially.

As a result, it is paramount to build stronger links between students and the innovation ecosystem by emphasizing experiential learning and work-integrated learning such as apprenticeships, co-ops and internships.<sup>110</sup> To date, a focus on work-based learning has been principally driven by an imperative to improve the labour market readiness of young people. A 2015 McKinsey report, for instance, found that only 34% of employers believed graduating students in Canada were “job ready.”<sup>111</sup> This causes lower productivity and places a higher burden on employers. Work-based learning models are a low-cost, high-impact solution to this problem.

They can also foster stronger relationships between emerging new talent and Canada's innovation ecosystem. These early connections enable talent identification, mentorships and other benefits. Work-based learning, if tilted towards Canadian

companies, can also expose students to opportunities in Canada's innovation system and nurture a “home advantage” before the big U.S. firms come calling. In effect, experiential and work-integrated learning can create some “stickiness” between Canadian talent and the domestic market. From this perspective, work-integrated learning is a key, early-stage element of what has been described as a “national-talent retention strategy.”

The Business/Higher Education Roundtable has set the goal of 100% of undergraduate students gaining access to some kind of work-integrated learning prior to graduation.<sup>112</sup> This is a well-placed ambition. As important, however, is that flexible and targeted programs are created in the educational streams that will represent key inputs in the intangibles economy. A 2016 report by the Premier's Highly Skilled Workforce Expert Panel in Ontario recommended that post-secondary institutions recognize longer co-op placements of up to 8-12 months.<sup>113</sup> This strikes us as a no-brainer.

The 2019 budget's focus on work-integrated learning is thus a positive step. A large-scale expansion of the Student Work Placement Program, including the inclusion of arts, humanities, and social science students, is key to meeting the Business/Higher Education Roundtable's goal. It is now up to employers and educational institutions to create tens of thousands of meaningful work placements, and work with every province to make this world-class.

As policy-makers look to expand work-based programming, they will also need to place an emphasis on those students with vocational inclinations or for whom a conventional four-year university degree is not the right option.

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110 McKay, D. 2016. An agile future through work-integrated learning. Speech to the Universities Canada Governing Council Chamber meeting, delivered April 27, 2016.

111 McKinsey & Company. April 2015. Youth in Transition: Bridging Canada's path from education to employment.

112 Business/Higher Education Roundtable. Date unknown. Work-Integrated Learning: Getting to 100%.

113 The Premier's Highly Skilled Workforce Expert Panel. June 2016. Building the Workforce of Tomorrow: A Shared Responsibility.

Provincial programs such as Alberta's Registered Apprenticeship Program and Ontario's Youth Apprenticeship Program permit senior high school students to earn credits, earn income and accumulate hours towards their skilled trade designation. One of the problems is these programs narrowly define skilled trades as traditional trades, such as carpentry and plumbing. In contrast, Germany's youth apprenticeship model incorporates as many as 350 occupations ranging from technical, commercial and industrial sectors to public sector administration and health and social services.

Canada does not need to completely revamp its educational model to replicate Germany's,<sup>114</sup> but it could re-conceptualize the skilled trades and create more hybrid models between universities, colleges and private programs.

Experimenting with these types of reforms can produce a win-win — that is, we will be producing talent with greater labour market readiness and getting them into the pipeline as early as possible. Policy-makers should therefore continue to make a big bet on these types of work-based learning models.

A related area for greater progress is ensuring that Canadian universities are properly and strategically funded. In some provinces, like Ontario, funding has not kept up with population growth and inflation. This is a bad time in history to shortchange research-intensive institutions. If Canada is to be a competitive global player in today's knowledge-based economy, it needs to build its leading research-based institutions into major global players themselves. This will help to create R&D that can be commercialized and to attract and retain leading scholars and students.

The Canada Excellence Research Chairs Program, launched in 2008, is a good step in this direction. But

more can be done. Canada should build ecosystems in key areas around world-leading talent. The superclusters model may be ultimately successful in building such ecosystems and attracting top talent. The impulse toward collaboration is certainly broadly correct.

Post-secondary institutions can also be key drivers of place-based economic strategies. These institutions (including universities, colleges and polytechnics) are economic anchors in their communities, particularly those struggling with economic dislocation and the need for diversification and renewal. University-college partnerships, major public-private research initiatives, and regional and local training programs can spur economic transformation in their communities by training, attracting and retaining talented people.

## Attracting and retaining global talent

Canada's immigration system provides it a huge comparative advantage in building a critical mass of talented people to strengthen its innovation ecosystem. Canada has achieved what few other jurisdictions have: relatively high levels of public support for relatively high levels of immigration. It is a key strength for the country and, if public support can be maintained, will become an even greater advantage as Canada seeks to attract skilled workers to counter the effects of an aging population and as a means of creating sustainable competitive advantages.

Successive governments have done a good job with policy and process-based experiments such as the Start-Up Visa Program and the Canada Global Talent Stream. The overall Global Skills Strategy, including its emphasis on expedited permitting, is certainly a step in the right direction.<sup>115</sup> The strategy brought 12,000 high-skilled workers into Canada through its expedited, two-week process last year and is

114 Handren, L. September 12, 2014. Youth unemployment in Germany is much lower than in Canada. How do they do it and what can we learn? Mowat Centre.

115 Filippone, R. November 8, 2017. New immigration program helping Canada in the global war for high-tech talent. CBC.

earning praise as a major policy innovation in tech sectors around the world. Market observers are even beginning to talk about a “brain gain” after a long period of “brain drain.” But there is more to be done to attract top talent and leverage the network effects of Canada’s ambitious immigration policy.

Canadian universities, colleges and polytechnics have made tremendous strides in attracting international students in the past several years. The numbers have increased from roughly 240,000 in 2011 to 495,000 in 2017.<sup>116</sup> It is a good example of the nexus between our post-secondary institutions and a competitiveness-innovation agenda. This large cohort of talent represents a huge opportunity for Canada. Retaining those with a Canadian education, relationships and connections to the country should be a top priority—particularly in parts of the country where the labour supply is declining.

The federal government and several provinces have enacted various reforms to make it easier for these students to become permanent residents and remain in the country. Nova Scotia’s Study and Stay program has a 2024 target of retaining 10% of international students following their graduation. The government provides a range of services including employment and mentoring support to help international students pursue their professions in the province. Nova Scotia is reaching historic high levels of international student retention that approach its target.<sup>117</sup> Other provinces are now following suit.

There are still further policy steps that can be taken to encourage more foreign students to stay in Canada and increase their retention in our innovation ecosystem. Work-based learning models can be particularly helpful here by creating greater connectivity between these students and the domestic innovation ecosystem. Yet international students face the barrier

of requiring a work visa in order to participate in paid placements. The federal government should streamline and expedite the student work visa process in order to make it easier for international students to participate in work-based learning arrangements. One option would be to automatically grant work visas in conjunction with student visas as long as the work is connected to one’s education program. Another would be a greater emphasis on mentorship programming for international students that draws on local entrepreneurs and community leaders to build greater stickiness between these students and the broader communities in which they are attending school.

International student offices on campuses are often the first and most regular point of contact between these students during their experience in Canada. We should think more ambitiously about these offices and their mandates. Their primary function is to facilitate and support the educational experiences of international students. But there is scope for them to play a larger role in helping these students build external relationships, tap into the innovation ecosystem, and ultimately pursue permanent residency in Canada. Provincial governments should ensure that these offices are properly resourced and have the training and information necessary to support students who are considering their post-graduation options. There is even a case for building a permanent immigration support capacity (staffed by provincial immigration officials) in these offices to build relationships with these students over the course of their studies and to facilitate the immigration process if the students decide to stay.

These “soft”, relational considerations are key determinants of a successful retention strategy.<sup>118</sup>

Federal and provincial policy should also make it as simple as possible for highly educated international students to stay in Canada following graduation. On-

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116 Esses, V. et al., 2018. Retaining International Students in Canada Post-Graduation: Understanding the Motivations and Drivers of the Decision to Stay. Canadian Bureau for International Education.

117 Luck, S. February 11, 2019. More international students choosing to stay in N.S. after studies. CBC.

118 Dauwer, Z. A. October 2018. Assessing Canada’s Support of International Students: A Comprehensive Review of Canada’s Retention and Settlement of its “Model Immigrants.” Ryerson Centre for Immigration and Settlement.

tario does not require Masters and PhD graduates to have a job offer in order to qualify for the Provincial Nominee Program.<sup>119</sup> Other provinces should follow suit.

Another area in need of ongoing reform is foreign credential recognition. It makes no sense that new immigrants with university degrees are four times more likely to be unemployed than university graduates born in Canada.<sup>120</sup> Without a combination of liberalized occupational licensing and targeted training to help new Canadians obtain credential recognition, they will be less able to create value for the Canadian economy and support themselves and their families. This can serve as a deterrent for top talent to come to Canada in the first place.

Various federal and provincial government initiatives have made some progress on this file. But greater ambition is needed. A 2015 federal Panel on the Employment Challenges of New Canadians recommended that each regulated occupation should be required to develop a single pan-Canadian standard and that the assessment process be initiated by prospective immigrants from abroad and tracked in the immigration system.<sup>121</sup> A simplified process that started before prospective immigrants arrived would mitigate the risk that they languish here.

Policy-makers should use a combination of “carrot and stick” to encourage regulatory bodies to accelerate the process. Targeted resources could facilitate the work to streamline the credentialing process. Financial penalties could be applied to those organizations that impose unreasonable barriers to credential recognition. But the overall goal would be to enable faster and more responsive credentialing for foreign professionals with skills in high demand.

## Help under-represented groups fully participate in education and the labour force

Retaining and attracting talent is key, but it is not enough. Labour demand is too high. Canada must leverage the talent and capacity of groups who have been marginalized in its economy. Such a strategy should target vulnerable people including low-income Canadians, Indigenous peoples and older workers.

This is not just a social issue — it is an economic imperative. Although it is beyond the scope of this paper, multiple voices have argued for aggressive public policies to ensure, among other things, better conditions for female participation in the workforce. We have heard how women may fall significantly behind as the economy places greater emphasis on areas in which they are underrepresented, such as engineering and computer science. This would be an affront to social progress and the need for all hands — and the best hands — on deck.

## Expand access to higher education

There is more work to be done to expand post-secondary access and participation among low-income Canadians. Post-secondary participation for students with parents in the bottom income quintile is 55% versus 84% for students with parents in the top quintile. Research shows that financial resources is not the principal barrier for this cohort; rather, they are limited by non-financial barriers such as lower educational aspirations, less academic help and less engagement in a child’s academic and professional future.<sup>122</sup>

Despite the generous financial assistance available, students in low-income households are far less likely to pursue higher education due to lower levels of social capital. Herein lies the policy challenge: Canada

119 Esses, V. et al. Retaining International Students in Canada Post-Graduation: Understanding the Motivations and Drivers of the Decision to Stay.

120 Canadian Magazine of Immigration. February 11, 2018. Immigrants and Employment (January 2018).

121 Report from the Panel on Employment Challenges of New Canadians, Survival to Success: Transforming Immigrant Outcomes, Government of Canada, 2015. Available at: [http://publications.gc.ca/collections/collection\\_2015/edsc-esdc/Em16-7-2015-eng.pdf](http://publications.gc.ca/collections/collection_2015/edsc-esdc/Em16-7-2015-eng.pdf).

122 Jennifer Robson. “Post-secondary access.” Ontario 360 (Munk School of Global Affairs and Public Policy). April 26, 2018.

has generous public support for students who choose to attend university or college, but it is not available until someone opts into the system.

Carleton University policy scholar and PPF Fellow Jennifer Robson proposes providing additional upfront educational savings support to low-income students to address these social capital barriers. Her proposal would have provincial governments contribute to an education bond that would be given to children born in low-income households and held in Registered Education Savings Plans. She estimates that a \$700 bond, when combined with the federal government's Canada Learning Bond, would provide a financial endowment of more than \$4,000 by the age of 18.

The specifics could be adjusted based on fiscal considerations or other priorities, but the principle is important. Dr. Robson's research shows that child and parental awareness of financial assets for education can affect their predisposition to higher education. A small public investment could yield a significant return in social capital. Other jurisdictions have experimented with this sensible policy innovation, which can nudge students in low-income households into a post-secondary stream at minimal public costs.

## Catalyzing new training models and configurations

Another cohort that requires policy-makers' attention is the roughly 40% of those between ages of 25 and 34 without post-secondary training. Canada cannot have a credible human capital strategy that neglects these Canadians—especially because of the labour market bifurcation discussed earlier.

There is growing scholarship and research on how to support this cohort obtain skills and training outside of conventional educational models. This is especially

important for those who experience mid-career dislocation. But the truth is we still do not quite understand the reasons that certain models work and others do not. This agenda will therefore require a degree of trial and error.

The recent federal announcement of the Future Skills Centre can ostensibly help to inform and shape this work.<sup>123</sup> It is important, however, that the federal government permit a high degree of decentralization in policy development and execution. Our collective inability to anticipate innovation and industrial trends ought to push policy in the direction of more decentralization and experimentation. Placing big, centralized bets is a highly risky proposition.

Instead, Canada needs a flourishing of different models and techniques to be tested, refined and either scaled or discarded. As American education policy scholar Andy Smarick has put it: "We should start by assuming that there is no single 100-percent solution. There are more like 100 one-percent solutions."<sup>124</sup> Government can encourage this process of educational innovation. Smarick proposes several policy interventions (such as social impact bonds and income-sharing agreements) that are worth considering.

Federal and provincial governments should dedicate a portion of higher education and job training funding to support a constellation of training providers aiming to prepare people for the workforce. Funding could be given to unions, universities and colleges, industry associations, charities and others. The point would be to leverage public dollars to test out different models that could scale across industries and regions. Some would succeed. Others would fail. But the outcome would be to build a flexible, demand-driven training capacity that Canada will need to support those who face temporary dislocation in the labour market.

There is also growing interest in the potential for individualized accounts to support Canadians' lifelong

123 Press Release. "Government of Canada takes action to ensure Canadian workers are prepared for the jobs of tomorrow." Department of Employment and Skills Development. February 14, 2019.

124 Andy Smarick. "Solving our work problems." Real Clear Policy. December 28, 2018.

learning. In its 2019 budget, the federal government began going down this road with a \$250 a year bankable training tax credit. More will need to be done both on the demand side (giving individuals incentives to invest in their skills) and the supply side (making sure programs exist in the right time and place for those skills currently in demand by employers).

Canadians have access to generous Registered Education Savings Plans for undergraduate education and generous Registered Retirement Savings Plans for when they retire. Something similar will be needed to support the ever-increasing requirement for lifelong learning and skills training. Individuals could draw on these savings for professional development, upskilling or mid-career retraining. We think the model is certainly worth exploring. Placing the resources in the hands of individuals creates a market mechanism similar to vouchers. Assuming labour market information is current and that programs are sufficiently lean so as not to discourage participation, this would help to create a competitive market offering different forms of training. This competitive pressure emanating from the employee-as-consumer can help governments, businesses, unions and individuals identify good and bad training models. The good ones could be scaled, the weak ones discarded. The outcome would be to determine the best means for targeted, demand-driven training.

## Improving Indigenous education

In Canada, no one needs better access to education than Indigenous peoples. Improving educational attainment on- and off-reserve must be a key priority of any human capital strategy. As the Indigenous population is young and growing, a failure to act will leave another generation behind.

Such a strategy would need to systematically improve K-12 education as well as post-secondary access and demand-driven training. Longstanding policy failures in each of these areas are holding this population back. Not only is this regrettable for Indigenous people and their communities, but it also represents a tremendous opportunity cost for Canada's economy and society.

Any such future approach will likely not return in its previous form, but there still may be an opportunity to proceed with smaller-scale models such as the Anishinabek Nation Education Agreement in Ontario and the Mi'kmaq model in Nova Scotia that helps to improve education and skills among Indigenous youth. But it represented a good faith attempt to address curriculum and funding gaps in on-reserve K-12 education.<sup>125</sup>

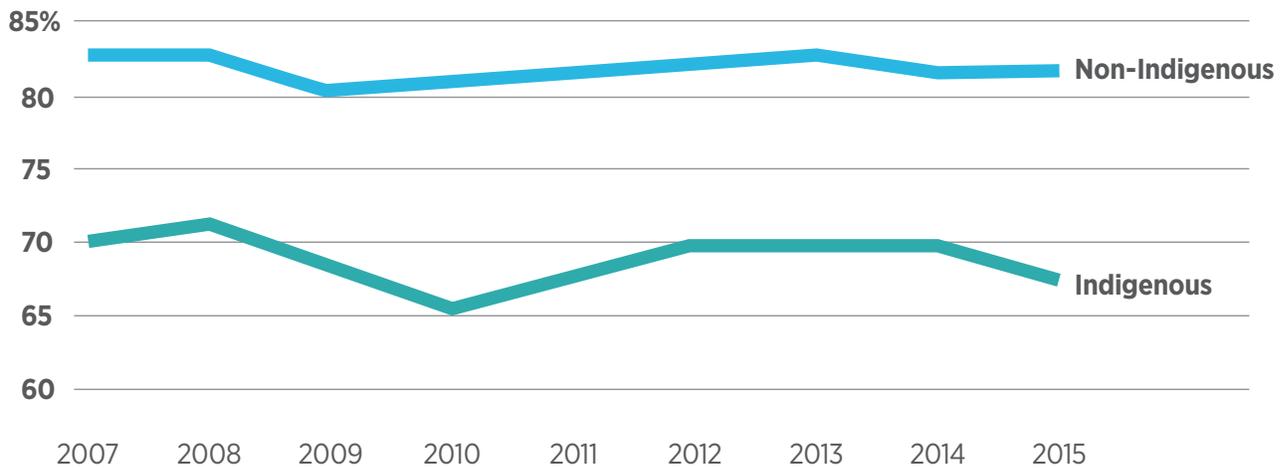
The federal government should make it a priority to work with interested Indigenous communities to



125 Brian Lee Crowley and Sean Speer. A Work and Opportunity Agenda for Canada. September 2018.

# INDIGENOUS AND NON-INDIGENOUS EMPLOYMENT RATES

Percentage of people aged 25-54 employed, 2007-2015



test and experiment with decentralized educational reforms. This process should be informed by the related recommendations from the Truth and Reconciliation Commission<sup>126</sup>. The ultimate goal should be to provide proper funding, higher standards, culturally appropriate curriculums and community control.

Even before that, more basic reforms are needed. Expanded early childhood education in Indigenous communities ought to be a top priority. Research shows that early development interventions are critical for a student's long-term success. Delayed interventions may be too late, especially as Indigenous youth are disproportionately affected by traumatic home environments and receive inadequate nutrition, sleep or personal support.<sup>127</sup> A range of policies are needed, including direct payments for child care, active support for new parents with respect to nutrition and health, and effective programming related to substance abuse and other social pathologies.

Expanding educational opportunities and labour market participation for Indigenous peoples must be key priorities. It is an essential for both competitive and social justice reasons to bring our most systematically disadvantaged populations into the mainstream of Canada's economic life. This will invariably be an iterative process across the spectrum of human capital development — including education, training, and lifelong learning. Policy-makers should start by working with interested communities to test out decentralized models that can be evaluated and scaled.

## Leveraging skills and experiences of older workers

An aging population is already starting to pressure parts of the labour market. It is poised to get worse. The Department of Finance estimates that labour force participation will fall from the current 66% to 61% in 2050.<sup>128</sup> The last time it was at that level was 1976, when women were still gathering steam in overcoming obstacles to inclusion in the workforce.<sup>129</sup>

126 Truth and Reconciliation Commission. Calls to Action. 2015.

127 Ibid.

128 Department of Finance. Jobs Report: The State of the Canadian Labour Market. 2014.

129 Statistics Canada. Table: 14-10-0018-01, Labour force characteristics by sex and detailed age group. Annual.

Part of the policy response must be to leverage the skills and experience of older workers. Japan, where the median age is higher than Canada's, is currently experimenting with different policy instruments to support the ongoing participation of older workers in the labour market. So far, wage subsidies and expanded pension benefits have been key levers.<sup>130</sup>

Canadian policy-makers need to be just as ambitious. Specific sectors and geographies desperately need it. Various reports, for instance, have warned of the "greying" of Canada's skilled trades supply,<sup>131</sup> which is already the reality for employers in Atlantic Canada and smaller cities and towns across the country.

What might such an agenda look like? We would put forward two possible options:

The first is to **increase the phase-out thresholds for the Guaranteed Income Supplement** as the federal government did in the 2019 budget. Raising the threshold from \$3,500 to \$5,000 and then introducing a new partial exemption of 50% up to \$10,000 of annual employment income will enable low-income seniors to continue working without facing a steep financial penalty.<sup>132</sup> The previous threshold was counterproductive public policy to penalize people we need to carry out essential job functions in the trades, service sector and elsewhere, and who would gain a combination of financial and non-financial benefits from the choice of continuing to work.

A second idea is to consider a **differentiated Canada Workers Benefit** (formerly the Working Income Tax Benefit) to counter the clawback of public benefits when older Canadians work. The current benefit is designed to help low-income workers "climb the welfare wall." It is a good program with broad political support and could be worked up the age bracket.<sup>133</sup>

This is important because the current income thresholds and phase-out rates do not account for different circumstances, such as someone whose employment income is interacting with the Canada Pension Plan and Old Age Security/Guaranteed Income Supplement versus mainly provincial social assistance. There is an argument that the federal government should consider redesigning seniors' benefits to better suit our aging cohort.

This is important because the current income thresholds and phase-out rates do not account for different circumstances such as someone whose work-based income is interacting with the Canada Pension Plan and Old Age Security/Guaranteed Income Supplement versus mainly provincial social assistance. There is an argument, therefore, that the federal government ought to consider these redesigned models that are more individualized for our aging cohort — including the design and generosity of seniors' benefits.

Let us close this section by observing that an effective strategy to train, retain and attract top talent to Canada will require policy-makers to consider these prescriptions as well as a wide range of other policies. Canada is in a fierce competition for talented, dynamic and entrepreneurial people. Canadian policy-makers must recognize how intense this competition is and act on the policy reforms required to successfully compete. There may be no public policy issue more important to Canada's long-term competitiveness, innovation and productivity.

Canada starts down this path with some huge advantages. Its cultural dynamism, its commitment to pluralism, its security and safety and the richness of its communities will serve it well. Talented people want to settle in places that challenge their creativity, reward their productivity and deliver safety, security and inclusion for them and their families. There is no place better than Canada.

130 Rintaro Tobita. "Japan will encourage companies to employ workers until 70." *Nikkei Asian Review*, September 6, 2018.

131 Tony Seskus. "Growing grey wave set to crash on Alberta trades." *CBC.ca*, March 15, 2018.

132 Finance Canada. *Investing in the Middle Class (Budget 2019)*, March 19, 2019. P.64.

133 Sean Speer and Rob Gillezeau. "The cross-party case for the Working Income Tax Benefit." *Policy Options*, December 7, 2016.



# CONCLUSION

When New England Patriots quarterback Tom Brady played in his first Super Bowl in 2002, there was no iTunes store, no Facebook, no Instagram, no Airbnb, no Gmail and no Skype. Today the companies who own these intangible assets are worth more than \$4 trillion.

Fifteen years ago, Netflix's annual revenue was \$506 million and Blockbuster Video's was \$6 billion. Last year Netflix's revenues reached \$15.8 billion. Today, Blockbuster has one store remaining world-wide in Oregon. One firm is selling an intangible asset. The other is not.

This example highlights the magnitude of the economic disruption Canada faces. Firms such as Amazon, Uber, Facebook and Google are reshaping conventional business models. Their intangible digital products or processes can be shared a near-infinite number of times at no additional cost.

Data aggregation is how they dominate the marketplace. Commercial expansion happens more quickly than ever. A winner-take-all model is emerging. AI and machine learning will only accelerate this shift.

Conventional economic and policy thinking is struggling to keep pace. Policy-makers must understand these trends and what they mean for Canada. We have examined the policy implications in three categories. The first deals with the traditional drivers of competitiveness such as taxes, regulations and infrastructure. The second addresses new drivers of competitiveness and the attendant policy considerations including related to IP, data and FDI. The third considers the role of human capital and how it bridges these two paradigms.

Our overarching view is that the rise of the intangible economy will have sweeping policy implications that will become clearer over time. We recognize that something is anew. But we are humble in our prescriptive abilities. Nobody knows for sure where this is heading.

The best Canada policy-makers can do is to (1) encourage policy-makers to stay focused on Canada's economic long-term competitiveness and avoid the pitfalls of short-termism and polarization, (2) call for a broad-based and inclusive vision for competitiveness that avoids the tendencies of exclusion and elitism, and (3) draw attention to the extent to which the rise of the intangible economy will require that we adjust and augment conventional thinking about economic competitiveness and the right policies to support it.

None of these observations are incompatible with an ongoing recognition of the importance of traditional sectors or other public policy challenges. We have argued, in fact, that traditional sectors such as agriculture, mining, and oil and gas will continue to be key drivers of our economy for the foreseeable future and

are actually the sectors where Canada is well-positioned to emerge as a global innovation champion. This is where the intangible economy can penetrate the tangible one to Canada's benefit through technology adoption and productivity enhancements. We have similarly observed the importance of broader policy issues such as climate change. Our goal here has been to draw on our respective experiences and bi-partisan dialogue to sketch out a long-term roadmap for Canadian competitiveness in a new world of the intangible economy.

The world that we describe in this paper is fast-paced, dynamic, and uncertain. Canadians are understandably unsure what to think of it. Yet we have produced this paper with a spirit of optimism.

Over time, the progressive benefits of new technology have always outweighed the costs. There is no reason to believe that the era of intangible capitalism will be different. The key, of course, is that we set our "north star" in the right direction.

Canada is as well-positioned as one can be to be successful in this new economic paradigm. But it will require that we become more strategic and deliberate in our policy choices. We need to have high ambitions and focus on the different policy levers relevant for the intangible economy. A new sense of resolve is needed.

Policy-makers must be focused on creating the conditions for the accumulation of innovation assets — including IP, data, and the talent that creates it. The cultivation of these assets is key. Their commercialization will enable Canada to reap the economic benefits and emerge as a "landlord" nation in this new economic environment.

We hope this paper, its analysis, and recommendations will help Canadian policy-makers from across the political spectrum lead our country down the right path for all Canadians. ■

## REFERENCES

- Abel, J. R. and T. M. Gabe. July 2008. Human Capital and Economic Activity in Urban America. Federal Reserve Bank of New York. Staff Report no. 332. Revised February 2010.
- 
- Advisory Council on Economic Growth. February 6, 2017. Unleashing the Growth Potential of Key Sectors.
- 
- Allen & Gledhill. February 26, 2019. Singapore releases Asia's first Model AI Governance Framework for public consultation, pilot adoption and feedback.
- 
- Alphabet Announces Fourth Quarter and Fiscal Year 2018 Results. February 4, 2018.
- 
- Asselin, R. and S. Speer. May 8, 2018. Canada must play the long game to fix competitiveness. The Globe and Mail.
- 
- Badenhausen, K. October 5, 2011. Canada trounces U.S. in best countries for business. Forbes.
- 
- Badenhausen, K. December 18, 2018. The best countries for doing business: U.K. on top, U.S. down. Forbes.
- 
- Balsillie, J. November 2018. Remarks: Why We Need a Second Bretton Woods Gathering. IMF Measuring Economic Welfare in the Digital Age: What and How? delivered November 20, 2018.
- 
- Bemrose, R., M. Brown and J. Tweedle. September 14, 2017. Going the Distance: Estimating the Effect of Provincial Borders on Trade when Geography Matters. Statistics Canada.
- 
- Bodrug, J., C. Tingley and D. Feldman. September 21, 2017. Investment Canada Act Net Benefit Review Threshold Increases Again for Many Foreign Investors. Davies Bulletin.
- 
- Breznitz, D. April 19, 2018. Data and the Future of Growth: The Need for Strategic Data Policy. Centre for International Governance Innovation.
- 
- Business Chief. July 21, 2017. Fortune's Global 500: the six biggest Canadian companies on the list.
- 
- Business/Higher Education Roundtable. Date unknown. Work-Integrated Learning: Getting to 100%.
- 
- Canadian Magazine of Immigration. February 11, 2018. Immigrants and Employment (January 2018).
- 
- Chen, D. and J. Mintz. February 2015. The 2014 Global Tax Competitiveness Report: A Proposed Business Tax Reform Agenda. The School of Public Policy.
- 
- Ciuriak, D. December 2017. The Knowledge-based and Data-driven Economy: Quantifying the Impacts of Trade Agreements. CIGI Papers No. 156. Centre for International Governance Innovation.
- 
- Ciuriak, D. October 2018. Rethinking Industrial Policy for the Data-driven Economy. Centre for International Governance Innovation.
- 
- Ciuriak, D. February 21, 2019. Available at: <https://twitter.com/DanCiuriak/status/1098719002673713152?s=19>
- 
- Clemens, J. and N. Veldhius. Date unknown. Remove the Tax Barrier to Small Business Growth. Fraser Forum (Fraser Institute).
- 
- Clemens, J., M. Palacios and N. Veldhius. October 2013. Reforming Old Age Security: A Good Start but Incomplete. Fraser Institute.
- 
- Conversations with Tyler. December 5, 2018. Paul Romer on the Unrivaled Joy of Scholarship. [Podcast].
- 
- Council of Canadian Academies. 2013. Paradox Lost: Explaining Canada's Research Strength and Innovation Weakness.
- 
- Crowley, B. L. and S. Speer. September 2018. A Work and Opportunity Agenda for Canada. Macdonald-Laurier Institute.
- 
- Currier, J. November 28, 2017. 70% of Value in Tech is Driven by Network Effects. NFX.
- 
- D'Avignon, G. May 3, 2018. Available at: <https://twitter.com/bcbcgreg/status/992235264020856832>.
- 
- Dahlby, B. and E. Ferde. 2011. What Does it Cost Society to Raise a Dollar of Tax Revenue?: The Marginal Cost of Public Funds. C.D. Howe Institute.
- 
- Dauwer, Z. A. October 2018. Assessing Canada's Support of International Students: A Comprehensive Review of Canada's Retention and Settlement of its "Model Immigrants." Ryerson Centre for Immigration and Settlement.
- 
- Department of Finance. 2014. Jobs Report: The State of the Canadian Labour Market.
-

- Department of Finance. 2018. Fall Economic Statement: Investing in Middle-Class Jobs.
- 
- Department of Finance. April 2018. Report on Federal Tax Expenditures 2018: Concepts, Estimates and Evaluations.
- 
- Department of Finance. July 23, 2018. OECD Recognizes Strength of Canada's Economy and Soundness of Government's Plan.
- 
- Desjardins, D. and A. Agopsowicz. March 5, 2019. Advantage women: how an automated future could play to women's strengths. RBC Economics.
- 
- Diebolt, C. and R. Hippe. July 28, 2018. The long-run impact of human capital on innovation and economic development in the regions of Europe. *Applied Economics*, 51:5, p. 542-563.
- 
- Donald, F. June 5, 2018. Canada needs business investment for short-term growth and long-term competitiveness. *The Globe and Mail*.
- 
- Employment and Social Development Canada. February 14, 2019. Government of Canada takes action to ensure Canadian workers are prepared for the jobs of tomorrow.
- 
- Esses, V. et al. 2018. Retaining International Students in Canada Post-Graduation: Understanding the Motivations and Drivers of the Decision to Stay. Canadian Bureau for International Education.
- 
- Fagan, D. 2016. Building the Future: Strategic Infrastructure for Long-Term Growth. Public Policy Forum.
- 
- Filippone, R. November 8, 2017. New immigration program helping Canada in the global war for high-tech talent. CBC.
- 
- Gates, B. August 14, 2018. Not enough people are paying attention to this economic trend.
- 
- General Motors Company 2017 Annual Report (Form 10-K). February 2018. U.S. Securities and Exchange Commission.
- 
- Gillezeau, R. and S. Speer. December 7, 2016. The cross-party case for the Working Income Tax Benefit. *Policy Options*.
- 
- Gordon, S. September 6, 2018. Why do we care about the labour share of income? *Worthwhile Canadian Initiative* (blog).
- 
- Government of Alberta. 2008. FAQ's on the Agreement on Internal Trade (AIT). <http://www.international.alberta.ca/658.cfm>
- 
- Government of Canada. 2015. Survival to Success: Transforming Immigrant Outcomes. Report from the Panel on Employment Challenges of New Canadians.
- 
- Government of Canada. March 19, 2019. Investing in the Middle Class (Budget 2019), p. 48-49.
- 
- Grant, M. January 26, 2016. Brain Gain 2015: The State of Canada's Learning Recognition System. The Conference Board of Canada.
- 
- Gwartney, J. et al. 2018. Economic Freedom of the World: 2018 Annual Report. Fraser Institute.
- 
- Handren, L. September 12, 2014. Youth unemployment in Germany is much lower than in Canada. How do they do it and what can we learn? Mowat Centre.
- 
- Hinton, J. and P. Cowan. May 19, 2017. Canada needs an innovative intellectual property strategy. *The Globe and Mail*.
- 
- Industry Canada. 2011. Innovation Canada: A Call to Action. Review of Federal Support to Research and Development – Expert Panel Report.
- 
- Innovation, Science and Economic Development Canada. What does “net benefit” mean? in *An Overview of the Investment Canada Act (FAQs)*.
- 
- International Labour Organization and the Organisation for Economic Co-operation and Development. February 2015. *The Labour Share in G20 Economies*.
- 
- International Monetary Fund. Western Hemisphere Dept. July 16, 2018. Canada: 2018 Article IV Consultation-Press-Release; Staff Report; and Statement by the Executive Director for Canada.
- 
- Lamb, C. and S. Doyle. 2017. Future-proof: Preparing young Canadians for the future of work. Brookfield Institute.
- 
- Lanthier, A. September 25, 2015. Why it's time to abolish the small-business tax rate. *The Globe and Mail*.
- 
- Lanvin, B. and F. Monteiro (eds.). 2019. *The Global Talent Competitiveness Index 2019: Entrepreneurial Talent and Global Competitiveness*. Fontainebleau, France: INSEAD.
-

Lonsdale, J. January 5, 2019. Esper is the Future of Governance. 8VC News.

---

Lorinc, J. February 7, 2019. The complicated relationship between tech and universities. The Logic.

---

Luck, S. February 11, 2019. More international students choosing to stay in N.S. after studies. CBC.

---

Macklem, T. 2018. Teaching for Tomorrow: Building the necessary skills today. The Institute for Competitiveness & Prosperity.

---

Macklem, T. and K. Lynch. January 31, 2019. What will it take to restore Canada's potential growth? The Globe and Mail.

---

Martin, R. June 2011. Canada's innovation imperative. The Institute for Competitiveness & Prosperity.

---

Martin, R. October 2013. Taxing for Growth: A close look at tax policy in Ontario. Institute for Competitiveness & Prosperity.

---

Martin, W. October 24, 2017. These are the 17 countries with the world's safest banks. Business Insider.

---

McKay, D. 2016. An agile future through work-integrated learning. Speech to the Universities Canada Governing Council Chamber meeting, delivered April 27, 2016.

---

McKinsey & Company. April 2015. Youth in Transition: Bridging Canada's path from education to employment.

---

Memorandum of Understanding Between the Treasury Board of Canada Secretariat and the United States Office of Information and Regulatory Affairs Regarding the Canada-United States Regulatory Cooperation Council. June 2018.

---

Milligan, K. 2018. Presentation: Longer Term Reform. Canada 2020 Tax & Competitiveness Summit, delivered October 22, 2018.

---

MIT Technology Review. April 7, 2016. Data's identity in today's economy.

---

Munro, D. Skills, Training, and Lifelong Learning. Public Policy Forum. March 2019.

---

Munro, D. May 2014. Skills and Higher Education in Canada: Towards Excellence and Equity. Canada 2020.

---

Munro, M., J. Parilla and G.M. Spencer. June 2018. Canada's Advanced Industries: A Path to Prosperity. The Brookings Institution.

---

Murphy, R.P., J. Clemens and N. Veldhuis. October 2013. The Economic Costs of Increased Marginal Tax Rates in Canada. The Fraser Institute.

---

Nedelkoska, L. and G. Quintini. 2018. Automation, skills use and training. OECD Social, Employment and Migration Working Papers, No. 202. OECD Publishing: Paris.

---

Nicholson, P. October 4, 2018. Facing the Facts: Reconsidering Business Innovation Policy in Canada. Institute for Research on Public Policy.

---

Orol, R. November 22, 2018. The IMF Should Spark a Bretton Woods Moment for the Digital Age, Says Balsillie. Centre for International Governance Innovation.

---

Parliamentary Budget Office. September 27, 2018. Fiscal Sustainability Report 2018.

---

Poloz, S. S. 2016. Living with Lower for Longer. Association des économistes québécois, the Cercle finance du Québec and CFA Québec, delivered September 20, 2016.

---

Porter, D. and R. Kavcic. October 26, 2018. Sizing Up Provincial Trade Barriers. BMO Capital Markets Corp.

---

RBC Economics Research. January 2019. Navigating 2019: 9 big insights for the year ahead.

---

Robson, J. April 26, 2018. Post-Secondary Access. Transition Briefing: Better Life Chances for Ontario's Children. Ontario 360.

---

Schwab, K. The Fourth Industrial Revolution. World Economic Forum.

---

Schwab, K. 2018. The Global Competitiveness Report 2018. World Economic Forum.

---

Schwartz, N.D. September 25, 2018. As debt rises, the government will soon spend more on interest than on the military. The New York Times.

---

Seskus, T. March 15, 2018. Growing grey wave set to crash on Alberta trades. CBC News.

---

Silcoff, S. May 3, 2018. Canada facing 'brain drain' as young tech talent leaves for Silicon Valley. The Globe and Mail.

---

Smarick, A. December 28, 2018. Solving Our Work Problems. Real Clear Policy.

---

Smith, N. January 22, 2019. Big Cities No Longer Deliver for Low-Skilled Workers. Bloomberg.

---

Speer, S. February 2017. The Public Purse and the Public Good: A Framework for Reviewing Federal Tax Expenditures. Macdonald-Laurier Institute.

---

Speer, S. June 2017. Regulatory Harmonization between the United States and Canada. R Street.

---

Speer, S. and K. Kosar. July 1, 2017. A call for greater regulatory harmonization with Canada. Real Clear Policy.

---

Speer, S. December 2018. Working-Class Opportunity and the Threat of Populism in Canada. Macdonald-Laurier Institute.

---

Spicer, Z., N. Olmstead and N. Goodman. 2018. Reversing the Brain Drain: Where is Canadian STEM Talent Going? Munk School of Global Affairs and Brock University.

---

Statistics Canada. Date unknown. Table: 14-10-0018-01, Labour force characteristics by sex and detailed age group, annual (x 1,000).

---

Statistics Canada. High income tax filers in Canada, specific geographic area thresholds, Table: 11-10-0056-01.

---

Statistics Canada. Labour force characteristics by region and detailed Aboriginal group, Table: 14-10-0365-01.

---

Statistics Canada. Table 12-10-0011-01 International merchandise trade for all countries and by Principal Trading Partners, monthly (x 1,000,000).

---

Statistics Canada. Table 17-10-0005-01 Population estimates on July 1st, by age and sex.

---

Statistics Canada. Table: 14-10-0019-01 Labour force characteristics by educational attainment, monthly, unadjusted for seasonality.

---

Statistics Canada. Age and Sex Highlight Tables, 2011 Census.

---

Statistics Canada. November 29, 2017a. Does education pay? A comparison of earnings by level of education in Canada and its provinces and territories. Census in Brief.

---

Statistics Canada. November 29, 2017b. Education in Canada: Key Results from the 2016 Census. The Daily.

---

Statistics Canada. January 25, 2019. Canada's population estimates: Age and sex, July 1, 2018. The Daily.

---

Stedman, A. and E. Aliakbari. December 1, 2018. Investor confidence in Alberta oil and gas sector continues to wane. The Calgary Sun.

---

Steeve, J. September 2017. The Labour Market Shift: Training a highly skilled and resilient workforce in Ontario. The Institute for Competitiveness & Prosperity.

---

The Canadian Association of Petroleum Producers. July 2017. A competitive policy and regulatory framework for Alberta's upstream oil and natural gas industry.

---

The Conference Board of Canada. May 14, 2018. Canada Falls in Conference Board's Innovation Rankings, As Weaknesses Persist.

---

The Institute for Competitiveness & Prosperity. June 2010. Beyond the Recovery: Report on Canada 2010.

---

The Premier's Highly Skilled Workforce Expert Panel. June 2016. Building the Workforce of Tomorrow: A Shared Responsibility.

---

The Standing Senate Committee on Banking, Trade and Commerce. June 2016. Tear Down These Walls: Dismantling Canada's Internal Trade Barriers.

---

Tobita, R. September 6, 2018. Japan will encourage companies to employ workers until 70. Nikkei Asian Review.

---

Torpey, E. April 2018. Measuring the value of education. Bureau of Labor Statistics.

---

Truth and Reconciliation Commission of Canada. 2015. Calls to Action.

---

Violante, G.L. Date unknown. Skills-biased technical change.

---

Whitehurst, G. J. June 2010. Spurring Innovation Through Education: Four ideas. Policy Brief, No. 174. The Brookings Institution.

---

Wilding, C. and M. Hillier. April 15, 2013. How human capital drives Canada's cities. The Globe and Mail.

---

World Economic Forum. 2017. The Global Human Capital Report 2017: Preparing people for the future of work.

---

World Economic Forum. 2018. Canada: The Global Competitiveness Index 2017-2018 edition.

---

