TEN BIG IDEAS TO DRIVE INNOVATION

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Our mission statement for this project is:

Our mission is to create a set of Big Ideas with the potential to increase innovation in Canada, which, if enacted, would have measurable results, whose benefits would be well understood, and that would increase the economic well-being and personal autonomy of the middle class and those working hard to join it.

To generate this list of big ideas, we travelled around the country, getting feedback from a variety of experts in both the private and public sectors to discover the major bottlenecks to innovation. In our travels, we examined eight separate industry clusters across the country, recognizing that clusters accelerate innovation through knowledge spillovers. Based on this feedback, we set out to determine the market and regulatory failures that could be causing the bottlenecks to innovation. Examining the successes and failures of past innovation proposals, we set out to create a set of big ideas that are actionable, identify a responsible party for enacting the reforms and focus on causes rather than symptoms. Furthermore, following the lead of the Council of Canadian Academies’ 2009 Expert Panel on Business Innovation and others, we took a firm-centric view of innovation when crafting our big ideas. We made the decision not to limit our recommendations to one level of government, as we believe all levels of government, along with firms, institutions of higher education and Canadians all have a role to play to make Canada more innovative.

To analyze and describe these ideas, we used our list of six innovation policy questions from Chapter 4:

1. What is the idea?
2. Who will be responsible for administering the idea?
3. What mechanisms for accountability or measurement can be put in place for the idea?
4. What failures is the idea trying to solve?
5. What are the potential benefits of the idea and what are the costs?
6. Will the idea increase economic inclusion and/or enhance autonomy? If so, how?

Armed with these questions and the feedback we received from our roundtables, we propose the following 10 big ideas to enhance Canadian innovation:

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5.1 BIG IDEA 1 - CREATION OF A PARLIAMENTARY COHERENCE OFFICE AND OFFICER

5.1.1 WHAT IS THE IDEA?

One of the most common issues we heard in our roundtables was the lack of coherence in many areas of government policy, particularly in the area of funding programs. Policy coherence, as defined by the OECD is the “systematic promotion of mutually reinforcing policy actions across government departments and agencies creating synergies towards achieving the agreed objectives.” Policy incoherence can be the result of a lack of communication between departments or a result of conflicting priorities and objectives. It often results in well-meaning policies either conflicting or being unnecessarily confusing.

**Recommendation:** The Government of Canada should create a Parliamentary Coherence Office and Officer. Similar to the Parliamentary Budget Officer, this position and office will be non-partisan and will provide independent and objective analysis to Parliament on the coherence of government policies.

The Parliamentary Coherence Office and Officer will work to highlight regulatory failures in which different policies contradict each other. For example, policies that create agricultural subsidies on ingredients that are used to make junk food may be in conflict with health policies that encourage consumers to lower their intake of that same junk food. Not only do these contradictory policies confuse Canadians, they also have a long-term economic impact. The New York Times reported on a similar policy conflict in the United States and noted, “the subsidies damage our country’s health and increase the medical costs that will ultimately need to be paid to treat the effects of the obesity epidemic.” Similarly, in its report on policy and nutrition, the United Nations System Standing

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Committee on Nutrition noted the need for coherence within policies to ensure trade policy is supportive of a country’s nutritional objectives and stated:

“The degree of coherence and/or incoherence between trade policy and nutrition action depends on a wide range of factors, including the forms of malnutrition and the foods affected; the characteristics of sub-populations and food systems in countries; and the trade reforms and existing policy and institutions in place in countries and trading partners.”

Another example is the standardization of the way the date is recorded. Different Canadian governmental agencies write the date in different ways (dd/mm/yyyy; mm/dd/yyyy; yyyy/mm/dd), which increases the chances that individuals fill out forms incorrectly. This lack of standardization is also an issue outside of Canada. The National Post reported in 2011 that “a U.S. customs form requests the day first, and its military abides by the same but spells out the abbreviation for the month — but its civilian population has agreed to write the month first.”

A final example of this need for policy coherence is the policies that create subsidies for the fossil fuel industry. CBC News reported in 2015 that Canada has policies in place to both subsidize fossil fuel industries and to end the use of fossil fuels.

By identifying these regulatory failures, this office can start the process of prioritizing, co-ordinating and implementing efforts in policy coherence.

Given that the “alphabet soup” of funding programs with “overlapping mandates” was frequently cited as an issue at the roundtable, we would recommend innovation policy coherence be among the first issues studied by the OPCO.

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6 Kathryn Blaze Carlson, “Is 02/04/12 February 4, or April 2? Bill seeks to end date confusion,” National Post, October 29, 2011.
7 Margo McDiarmid “G20 countries spend $450B a year on fossil fuel subsidies, study says,” CBC News, November 12, 2015.
5.1.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?

The position of Parliamentary Budget Officer was created by the federal government as part of the Federal Accountability Act (2006). The creation of an Office of the Parliamentary Coherence Officer would follow a similar process.

5.1.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

The accountability and measurement mechanisms put in place for the Parliamentary Budget Office can be reused in the creation of the Parliamentary Coherence Office.

5.1.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

**Regulatory Failure:** From an innovation perspective, the overarching goal of policy coherence is to ensure that policy objectives avoid negative consequences which would affect innovation.

**Market Power:** Unnecessarily complex regulatory environments create both barriers to entry for new firms as well as barriers to growth, as described by the Canadian Chamber of Commerce:

“I deal with enough policy hassles overseas. Why does Canada’s policy environment have to be so complicated?”

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SME manufacturers in Canada often struggle to understand and comply with the underpinning details, incentives, steps and variances among the myriad of policy frameworks in which they operate. As a result, the cumulative impacts and costs of government policies can be barriers to innovation, just as thickening borders between countries — a common complaint of manufacturers — is a barrier to exporting.

**5.1.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?**

**Benefits:** There are two main ways that increasing coherence will help increase Canadian innovation. First, by identifying conflicting policy objectives we can start the process of addressing these conflicts and reducing the costs associated with the resulting confusion. Second, policy coherence can exploit the potential for positive spillovers and consequences by addressing potential policy synergies across all levels of government.

**Costs and Risks:** This position and office are modelled on the PBO and OPBO. The operating budget for the PBO and OPBO was $2.8 million for the 2014-15 fiscal year.

There is a risk that the government ignores the work of the OPCO. The European Centre for Development Policy Management investigated the Policy Coherence for Development (PCD) work and found that there is a lack of political support for the work of PCD despite agreement on the importance of the initiatives. As a result, departments responsible for PCD throughout Europe are under-resourced and isolated.

Another risk will be the potential for government interference in the work of the OPCO. Learning from the experiences of the OPBO, the OPCO will remain independent by not reporting to a cabinet minister. By ensuring the office is funded and by making the office non-partisan, these risks can be avoided as much as possible.

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11 Small and medium enterprises.
5.1.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** A lack of policy coherence often results in unnecessarily complicated systems that exclude people from participating. This lack of coherence harms small businesses that do not have the resources to navigate incoherent policy environments particularly. The federal government found that “regulatory costs and their impact fall disproportionately on small businesses, as these businesses have fewer resources to devote to compliance. Stated another way, the fixed costs of regulatory compliance for larger firms can be spread over a larger employee and revenue base.” It calculated in 2011 that the regulatory burden for firms of between one and four employees was $1,029 per employee, whereas for firms with 100 to 499 employees the per-employee regulatory burden was $149.

**Autonomy:** Confusing regulations due to a lack of policy coherence may deter individuals from starting businesses, though we are not aware of any studies that have examined this issue.

To ensure that economic inclusion and autonomy are priorities for government policy, we would recommend that within the OPCO mandate there be a requirement to consider both economic inclusion and autonomy when analyzing government policies.

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5.2 BIG IDEA 2 - DATA: OPEN, SHARED, STEWARDED AND TRANSPARENT

5.2.1 WHAT IS THE IDEA?

A common theme that emerged during the roundtables was the importance of access to both research data and government data. Data is a valuable resource for innovation, as long as it is available and easily accessible.

Part 1. Research Data

Canada has a good track record of funding research in the sciences, social sciences and health sciences through granting councils. However, this data is often not stored in a way that means it is protected and shareable among researchers. Without a robust data stewardship program, the data that has already been generated is at risk of being lost, recreated or under-utilized. By storing the data properly, in a comprehensive network of trusted digital data repositories, it will be available to be re-used in a variety of ways, not just by other researchers, but by innovators throughout Canada.

Recommendation: The federal Minister of Science should follow through on the first “top priority” given in her mandate letter from the prime minister: “Create a Chief Science Officer mandated to ensure that government science is fully available to the public, that scientists are able to speak freely about their work and that scientific analyses are considered when the government makes decisions.”

Recommendation: Building on the work done by Research Data Canada and the Tri-Agency Statement of Principles on Digital Data Management, the Chief Science Officer should create a national program to manage the digital research data funded by the federal government.
Recommendation: Any group conducting research funded by the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council or the Social Sciences and Humanities Research Council should be required to create a robust data-sharing plan and deposit their data to be shared promptly with others in an accessible, secure and curated repository.

Researchers will not be responsible for the storage of the data. Each university and institute will need to ensure that their researchers have access to a research data management (RDM) program, both the system and policies, to easily and properly store their data.

Recommendation: The Chief Science Officer should require that universities and institutes receiving funds from federal agencies create a research data management (RDM) program to ensure their researchers store their research data properly. This RDM program would include creating policies and procedures as well as the repository itself.

Universities and institutes may choose to create their own RDM program or use an RDM program already in use at their university or institute. Either way, the data in these programs should be easily accessible to others both inside and outside of the original university or institute.

Recommendation: The Chief Science Officer should work with research institutions and universities to create a comprehensive network of trusted digital data repositories that provide reliable, long-term access to all research data deemed to be of enduring value that researchers and innovators can easily access.

Universities and institutes will need to be held accountable to ensure that data is properly stored and accessible in these programs.

Recommendation: The Chief Science Officer should create a national agency that monitors, oversees and sanctions specific standards for use by Canadian researchers in storing their data.

Part 2. Municipal Data

Canadian cities produce and collect a wide variety of data on aspects of city life such as employment, transit, road accidents and living conditions that are used in their decision-making processes. However, most of this data is only used internally despite the fact that it could be used by innovators (municipal administration, businesses, universities, academies, research facilities and citizens) to create new services, products and businesses.

Recommendation: Building on the work of the Helsinki Region Info-share (HRI) Service in Helsinki, Finland, and Canadian cities like Oakville, Vancouver and Toronto, we recommend the creation of Open Data Cities (ODC) a pan-Canadian coordinating organization, which will act as a bridge between cities providing open data and individuals and organizations who wish to use this data.
The ODC will be responsible for:

1. helping cities prioritize data releases
2. helping cities ensure data is accessible for a variety of user needs
3. collecting and giving user feedback to cities regarding the data and service
4. ensuring quality control of all data released

The aim of the ODC is to make municipal statistical data open, timely, free to use and easily accessible to all.

**Recommendation:** The ODC should create a web portal that will allow users to search for data from all participating cities.

**Recommendation:** The ODC should work with municipalities to help them identify new data sets they can create and should work to connect separate data sets either within the municipality or with several municipalities together. This collaboration will include the creation of a taxonomy and the standardization and description of data and data-collection methods.

**Recommendation:** The ODC should host events to encourage developers, public servants and members of the public who have identified problems to work with the open data to solve municipal challenges and create innovations.

**Part 3. Transparency of Past Government Records**

In Budget 2016, the federal government proposed creating “a simple, central website” where Canadians could submit data requests to any government institution or department. While commendable, there is still a missing link. The mandate of Library and Archives Canada (LAC) is to acquire and preserve governmental records of archival value and to make them available to the public. In theory, if a Canadian wanted past documents, he or she could submit a request to LAC. However, in his 2014 report on LAC, the auditor general found that LAC was not “acquiring all the archival records it should from federal institutions, and that the disposition authorities, “which tell federal institutions which records can be disposed of when no longer needed and which records must be transferred to Library and Archives Canada,” were both incomplete and out of date. Also, LAC had a backlog of 98,000 boxes of government archival records. While LAC reports that this backlog has been eliminated, it is unclear what records were found and how to access them.

This lack of clarity means that it is possible that if a Canadian submitted a request on the proposed website, they may not get the items requested. If they did get them, they might not be given in a useful format, and they may not be provided promptly.

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Recommendation: A dedicated and funded program in LAC to digitize all past government records of value should be created.

Recommendation: A system of accountability by which the progress of this program is audited quarterly should be created.

5.2.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?

For the research data proposals, we would recommend the newly created Chief Science Officer be responsible for the idea, given his or her responsibility to ensure “government science is fully available to the public.” The municipal data and transparency of data proposals should fall under the purview of the president of the Treasury Board, as the prime minister mandated he “expand open-data initiatives and make government data available digitally.” It may be prudent, however, to create a board formed from the participating cities to oversee the operation and execution of the ODC.

5.2.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

Universities and institutes will need to be held accountable to ensure that their research data is properly stored and accessible. For municipal data, we would recommend the ODC issue an annual report and measure how Canadian cities are doing regarding opening their data, using measurements of readiness, implementation and impact. Furthermore, Library and Archives Canada (LAC) would need to report regularly on their progress, including measurements of the readiness, implementation and impact of the data being digitized.

Office of the Prime Minister of Canada. President of the Treasury Board of Canada Mandate Letter (2015).
5.2.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

**Regulatory Failure:** We have data that is being collected and has value, but it is not being made available for use, which is preventing knowledge spillovers. By making data more easily available, researchers will have more timely and complete information to build into their research, creating an environment in which new products and processes may be developed more quickly and easily.

**Inequality of Opportunity:** By not releasing data and making it easily available, we are disproportionately benefitting firms and individuals that have the resources and ability to recreate these data or discover ways to access them. Our proposal levels the playing field to ensure equal opportunity to be innovative.

5.2.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

**Benefits:** Innovation will be encouraged by releasing research data to innovators as well as to other researchers. Opening up municipal data can help drive the creation of innovative businesses and services that deliver social and commercial value. By making government data open, we can better understand actions the government has taken in the past.

**Costs and Risks:** There is a risk that Canadian researchers may be resistant to sharing their data. We believe it is important to follow the lead of the United States and make data management and specifically data sharing a requirement of the Tri-Council research grants. There will be a financial cost to universities and colleges, but we believe these can be kept manageable.

For the ODC proposal, the main risk is that a system will be built that cities will refuse to join. The financial costs are relatively modest, with the yearly budget for the Helsinki Region Info-share (HRI) Service in Helsinki, Finland, being less than $100,000.\(^{22}\)

The main risk to our transparency proposal is setting a goal the government cannot meet. In 2014, the auditor general of Canada noted that LAC was behind schedule on retrieving government documents and had a growing backlog of approximately 98,000 boxes of records.\(^{23}\) There is a potential that LAC will find this goal too onerous and may fall behind schedule again.

\(^{22}\) Olli Sulopuisto, “How Helsinki Became the Most Successful Open-Data City in the World,” City Lab, April 29, 2014.

5.2.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** By ensuring that research data is available to other researchers and innovators, we can ensure that economic opportunities are not limited because of a lack of data. The availability of this data will be particularly valuable to small businesses that do not have the resources to collect large amounts of data.

**Autonomy:** Better access to municipal data will give citizens and community groups the tools they need to understand the decisions of local governments better and influence those decisions through evidence-based proposals.
5.3 BIG IDEA 3 – THICKEN LABOUR MARKETS

5.3.1 WHAT IS THE IDEA?

In early 2015, the Mowat Centre assembled a roundtable of executives from the emerging information and communications technologies sector in London, Ont., and asked them about their bottlenecks to growth. They identified attraction to and retention of talent in London as their most pressing challenge. Talented technology workers told companies they were reluctant to move to or stay in London for two reasons:

1. There are a limited number of information and communications technologies companies in the London area, so if they ever needed to change jobs, they were concerned they would not be able to find employment quickly in the city.

2. While they could find meaningful employment in the city, they were part of a “power couple” and had concerns about their spouse’s ability to obtain a good job locally. In most cases, the spouse was highly educated and had a very specific skill set valued by only a handful of employers.

Both of these problems are ones of thin labour markets with only a handful of buyers and sellers. Thin labour markets are often self-perpetuating. A limited number of firms causes talent to migrate out of a centre, preventing new firms from emerging, causing a further erosion of talent from the market.

The “power couple” issue of both individuals having employment opportunities is a particular concern for mid-sized cities. In a seminal 2000 piece, Dora Costa and Matthew Khan examined the migration patterns of college-educated Americans between 1940 and 1990. They found significant “power couple” migration to large centres (defined as cities over two million in population). In 1990, 50 per cent of all dually college-educated couples lived in the cities, compared with 32 per cent in 1940. Contrast this to the proportion of couples where neither had college educations, which had only modest growth in the period (from 27 per cent in 1940 to 34 per cent in 1990). Power-couple migration to large cities is not simply due to the college educated (regardless of their relationship status) migrating to larger centres:

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Costa and Kahn estimate that “coincidental couple concentration suggests that at most 35 per cent of the increase in power-couple concentration in large cities is attributable to the growing urbanization of the college educated.” Ultimately, families matter and drive location choice.

In our view, this leaves Canadian governments with two options:

1. Focus its innovation agenda on the three census metropolitan areas with more than two million people (Toronto, Montreal and Vancouver) and recognize that, as it stands, labour markets are too thin in other Canadian cities to support sustainable clusters except in unusual cases. Develop a suite of policies that addresses the issues inherent in further migration to big cities (rapidly rising real-estate prices, lack of affordable housing, traffic gridlock and overstretched transit systems) as well as the issues inherent in de-populating secondary centres (falling property values and a shrinking tax base’s inability to properly service the existing stock of infrastructure).

2. Actively work to “thicken” labour markets in mid-sized cities, which will allow for the emergence of clusters in these cities.

In our view, the government should take the second approach, while recognizing that “the big three” will continue to grow and have the challenges associated with growth.

In the global war for talent, workers will migrate to areas that give them the most career opportunities. As non-compete agreements limit career opportunities, talent will naturally migrate to jurisdictions that lack such agreements. One example is California, where non-compete clauses are invalid and unenforceable unless they fall under some very specific exemptions, which is oft-cited as a major factor in the success of Silicon Valley’s technology sector. Or as Bijan Sabet, a general partner at Spark Capital told Fortune, “If you’re a graduate of MIT who studied a specialty like robotics and a Massachusetts company says, ‘Come here and sign this non-compete,’ and a San Francisco company says, ‘We know this isn’t your last job — do whatever you want,’ which would you choose?” Peer-reviewed studies back up this phenomenon, with Matt Marx, Jasjit Singh and Lee Fleming finding that “non-compete agreements are responsible for a “brain drain” of knowledge workers out of states that enforce such contracts to states where they are not enforceable. Importantly, this effect is felt most strongly on the margin of workers who are more collaborative and whose work is more impactful.”

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A 2016 study by the U.S. Department of the Treasury on the economic impact of non-compete contracts found that “the effect of maximal enforcement of non-compete contracts, relative to minimal enforcement, is five per cent at age 25 and 10 per cent at age 50.” 30 The Treasury study also found that California’s restrictions on the use of non-compete clauses both thickens labour markets and increases innovation through a process of knowledge diffusion. They find that “employee departures impose costs on their firms, but yield benefits for destination firms and act to broadly disseminate improvements in technologies and best practices. Non-compete enforcement can stifle this mobility, there by limiting the process that leads to agglomeration economies.”

While non-compete clauses are often difficult to enforce in Canada (putting us closer to the minimal enforcement end of the spectrum), no province has gone as far as California and simply banned the use in most instances. 31 We would advocate that provinces consider doing so. Explicitly banning non-compete clauses would create less uncertainty of the rights of workers, increase worker mobility and help Canada attract and retain talent. Such a ban would likely lead to higher wages in many industries, so naturally firms will raise concerns about the effect even modestly higher wages will have on their competitiveness. Given that higher wages will lead to attraction and retention of talent in Canada and incent more students into entering innovative fields, we believe it is a price worth paying. Finally, given that we are trying to create economically inclusive innovation, we see higher wages that are driven by market forces as a feature, not a detriment.

**Recommendation:** Canadian provinces should follow the lead of California and explicitly ban the use of non-compete agreements, to attract and retain talent.

An obvious way to address the thin-market problem is through linking mid-sized cities through intercity transit. Consider London, Ont. London’s Census Metropolitan Area (London CMA) has a population of just under 500,000, which includes the city of London, the city of St. Thomas and rural areas and towns around London. The CMA is simply too small to have a significant number of jobs in every occupation, limiting opportunities for couples that work in two different occupations. Furthermore, individuals might be hesitant to take a job in a community with a small number of companies in that same industry. A large number of companies in an industry creates an “option value” for a worker; if they need to leave their job at their existing company, there are plenty of alternatives, which should make it relatively easy to switch companies. However, if there are few local companies in their industry, then workers are “locked in” to their current employer and risk prolonged unemployment should they leave that employer. This potential for “lock in” and unemployment creates significant risk for workers considering taking a position in that community. This problem is particularly acute for ‘power couples,’ where employment options for two people have to be considered.

This thin market problem has a straightforward solution. If it is easy and inexpensive to live in one community but work in other, then the effective population of the community (and its clusters) grows. Consider all of the Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs) of population sizes of 75,000 or more, within 200 kilometers of London, Ont.

<table>
<thead>
<tr>
<th>COMMUNITY</th>
<th>POPULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>LONDON CMA</td>
<td>474,786</td>
</tr>
<tr>
<td>LONDON CMA + &amp;75K CMA/CAS LESS THAN 100KM AWAY</td>
<td>1,177,002</td>
</tr>
<tr>
<td>LONDON CMA + &amp;75K CMA/CAS LESS THAN 150KM AWAY</td>
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<tr>
<td>LONDON CMA + &amp;75K CMA/CAS LESS THAN 200KM AWAY</td>
<td>8,437,721</td>
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If Londoners can easily, affordably and reliably get to employment opportunities within 100 kilometres of the CMA, the effective size of London’s employment market grows to almost 1.18 million people by adding the Kitchener-Cambridge-Waterloo CMA (population 477,760), the Brantford CMA (135,501) and the Sarnia CA (89,555).\(^{32}\) Make the radius 150 kilometres, and the market size nearly doubles to 2.14 million by adding the Hamilton CMA (721,053), the Guelph CMA (141,097) and the Chatham-Kent CA (104,075). Finally, a travel radius of 200 kilometres creates an effective market of more than eight million by adding the Toronto CMA (5,583,064), the St. Catharines-Niagara CMA (392,184) and the Windsor CMA (319,246).

Currently, an individual in London who wishes to take a job in one of these communities (or an individual in one of these communities who wishes to take a job in London) can only commute by car unless they have an incredibly flexible work schedule. This time by car is essentially wasted time, where the individual is away from family and cannot work because they are driving. Taking a train or a bus, on the other hand, allows individuals to complete work while they commute. Unfortunately, the earliest a Londoner can arrive at Toronto’s Union Station by train is 8:35 a.m., assuming the train is on schedule. These time limitations makes commuting by train impractical for jobs that involve morning meetings. The situation is worse for commuters taking the opposite trip, as someone living in Toronto cannot arrive in London until 9 a.m. at the earliest. On the return trip, travellers to London or Toronto must leave before 8 p.m., which makes attending dinner meetings difficult.

Increased and more reliable train service, with earlier and later options than currently offered, would significantly help thicken mid-sized markets. Given the challenges these cities are currently experiencing, we recommend this happen as soon as possible. While high-speed rail is a fantastic technology, these cities do not have 15 years or more to be connected to each other, so we recommend enhanced investments in existing transportation technologies happen as soon as possible.

\(^{32}\) All population data from Census metropolitan area of London, Ontario (Statistics Canada, 2011).
**Recommendation:** Both the federal and provincial governments should increase their funding of intercity transit between cities, with a focus on projects that can be completed quickly and increase the availability and reliability of transit between communities.

Finally, clusters in all-sized markets could be thickened by ensuring that no Canadians are excluded from employment opportunities in clusters due to “socially determined exogenous factors, such as gender, race or socioeconomic background, beyond an individual’s control.” The first step to addressing barriers to exclusion is having better data so we can determine their root causes. These root causes could include those with the proper skills lacking employment opportunity as well as individuals being unable to obtain the skills they need, which leads us to the following two recommendations:

**Recommendation:** Statistics Canada should conduct a yearly employment survey of clusters, with a focus on employment levels for traditionally under-represented groups, including women, visible minorities and Aboriginal Canadians.

**Recommendation:** Statistics Canada should collect post-secondary education access rates by ethnic background and family income.

- **5.3.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?**

No new mechanisms are needed, as this idea mostly involves governments doing more of what they already do (transit funding, data collection). Changing rules around non-compete agreements is a one-time activity.

- **5.3.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?**

**Thin Markets:** This proposal is explicitly designed to thicken markets, as the goal is to increase the pool of available workers for hire in fast-growing clusters.

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33 Ricardo Paes de Barros et al., *Measuring Inequality of Opportunities in Latin America and the Caribbean* (World Bank, 2009).
Inequality of Opportunity: This idea increases opportunities for those who get left out of clusters, either due to geography (lack of transit) or because they belong to a traditionally under-represented group.

5.3.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

Benefits: Thicker, more-inclusive clusters create economic wealth and opportunities for all Canadians.

Costs and Risks: Transit is extremely expensive to build, so there is a risk that the benefits do not outweigh the costs. Statistics Canada could have difficulties collecting the needed data because of privacy concerns or budget. Finally, a lack of non-compete agreements could deter companies from supplying worker training.

5.3.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

Economic Inclusion: Allowing people to live farther from work increases their affordable housing options as they are not “forced” to purchase expensive housing if they work in an expensive city. Thickening markets in mid-sized cities will lead to spin-off job creation in those centres, which too often have seen job losses through automation and globalization. Finally, a focus on increasing labour market opportunities for excluded groups increases their ability to access good paying jobs.

Autonomy: Increased intercity transit increases autonomy for individuals, as it increases the number of places they can gain employment (or live). It increases their ability to stay with and see a partner who works in a different city. It provides additional opportunities for places to travel to and people to see.
5.4 BIG IDEA 4 – RE-INVENT FIRM AND INFRASTRUCTURE FINANCING IN CANADA

5.4.1 WHAT IS THE IDEA?

Canada needs to re-think both the ways firms obtain financing and how infrastructure is financed. We will start by examining the problems of bottlenecks to firm financing.

A common theme that emerged during the roundtables was the difficulty in obtaining financing, which was seen as being partly responsible for Canadian firms failing to scale-up. Problems cited included difficulty obtaining second- and third-stage venture capital, unnecessarily complicated and occasionally incoherent government funding programs and barriers to obtaining financing to commercialize innovations. Furthermore, roundtable participants discussed how government funding programs often compete with private lenders on some dimensions, while failing to address financing market failures on other dimensions. We believe Canada needs to re-invent firm financing, with a focus on addressing the core market and regulatory failures at play. Here are our recommendations on how Canada can do so.

**Recommendation:** The Cooperative Capital Markets Regulatory System (CCMRS) or provincial governments should create an online finance matchmaking portal (FinMatch) where eligible small and emerging companies can be matched with both private and public providers of capital.

On the demand side for capital, entrepreneurs or companies could apply to join FinMatch, for a nominal fee, at one of three levels. FinMatch would vet applications and successful applicants that met the “listing requirements” for that level would be entered into the system:

- **Level 1:** Pre-startups looking for pre-seed capital for businesses they would like to start.
- **Level 2:** Startups that have been in business less than two years.
- **Level 3:** Established companies that have been in business two or more years.
On the supply side of capital, accredited investors could apply to join the portal with a modest yearly subscription fee. These accredited investors would include individuals, financial institutions, businesses and government entities, such as the Business Development Bank of Canada (BDC) and Export Development Canada (EDC). Furthermore, all firms that met the Level 3 “listing requirements” would also be given the option to obtain accredited investor status, which would allow them to act as suppliers of capital.

FinMatch would act as a matchmaking service between suppliers of capital and entrepreneurs needing funding. FinMatch would suggest potential matches, but members of the system would also be able to view the profiles of other members. Within FinMatch, firms could be matched with accredited investors and raise funds in some different ways, including (but not limited to) the following:

a. Loans and other debt instruments
b. Grants and loans from government funding agencies
c. Selling (or buying) whole companies to (or from) other accredited investors

Once a company reached a certain size, it would be able to apply for Level 4 status, which would allow shares in the company to be traded on FinMatch. The Level 4 “listing requirements” would be less onerous than those for firms wishing to list on exchanges such as the TSX Venture Exchange, but would still provide protection to potential investors. As well, the “listing fees” and “annual sustaining fees” would be set substantially lower than those of traditional exchanges.

Our equity market portion of the FinMatch recommendation is adapted from a 2013 recommendation made by the U.S. Securities and Exchange Commission Advisory Committee on Small and Emerging Companies. In their *Recommendation Regarding Separate U.S. Equity Market for Securities of Small and Emerging Companies*, the advisory committee detailed a plan to reduce the barriers preventing high-growth firms from obtaining equity funding. While the proposal was intended for the U.S. market, the first four points of the advisory committee’s proposal are particularly relevant to Canada’s firm-financing ecosystem:

1. The Committee believes that current U.S. equity markets often fail to offer a satisfactory trading venue for the securities of small and emerging companies because they fail to provide sufficient liquidity for such securities and because the listing requirements are too onerous for such companies.

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34 The Ontario Security Commission’s accredited investor exemption includes individuals of sufficient financial means along with individuals who currently are, or once were, a registered adviser or dealer, other than a limited market dealer; financial institutions; governments and governmental agencies; insurance companies; pension funds; registered charities; certain mutual funds, pooled funds and managed accounts; companies with net assets of at least $5 million; persons or companies recognized by the OSC as an accredited investor. The accredited investor exemption, (Ontario Securities Commission, 2016).

35 Subject to the user’s privacy settings. Privacy would naturally be a concern in a system like FinMatch, but we believe dating websites provide a good template for allowing users to decide who can access parts of their profile.

2. The frequent failure of U.S. equity markets to offer a satisfactory trading venue for small and emerging companies has discouraged initial public offerings of the securities of such companies, undermines entrepreneurship, and weakens the broader U.S. economy.

3. Establishing a separate U.S. equity market specifically for the securities of small and emerging companies, where these companies would be subject to a regulatory regime strict enough to protect investors but flexible enough to accommodate innovation and growth, offers promise of providing a satisfactory trading venue for small and emerging companies, which may encourage initial public offerings of their securities.

4. A possible feature of an appropriate regulatory regime for such a market would be limiting investor participation to accredited investors who meet a standard designed to assure that the regulatory protection afforded is appropriate given the characteristics of those investors.

We believe that the creation of such a portal would better match sources of capital with investment opportunities, increase liquidity and make it easier for Canadian companies to scale up through mergers. Canada’s lack of mid-sized firms is a commonly cited reason for the country’s lagging innovation and productivity; we believe the merger activity that FinMatch would facilitate would accelerate firm growth and assist aging business owners to receive value for their companies. Finally, FinMatch would make it abundantly clear where the holes in Canada’s firm-financing system are and where government programs are competing with private lenders (and each other).

In an ideal world, there would be a single portal at the federal level rather than separate portals in each province, though it may be possible for the five provinces and one territory that have joined the Cooperative Capital Markets Regulatory System to have a single portal. However, given the lack of a national securities regulator, the portals will most likely need to be administered by the provinces.

**Recommendation:** The federal government should continue negotiations to create a national securities system that includes all provinces and territories.

While we believe FinMatch would be incredibly useful, we also recognize that it is not a silver bullet and would take substantial time to develop. As such, we have additional recommendations, including the following:

**Recommendation:** Given the positive externalities created by growing knowledge-creating firms, Canadian tendencies towards risk aversion and ultra-low interest rates on government borrowing, we recommend the federal government significantly increase the funds allocated to the Venture Capital Action Plan and implement the recommendations of the auditor general as they pertain to selection process, performance measurement and reporting.

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The cost of capital for the federal government is incredibly low, with nominal bond yields hovering around one per cent for 10-year bonds and under 1.7 per cent for 30-year bonds, both under the Bank of Canada’s two-per-cent inflation target. Given this incredibly low cost of capital and the positive externalities created by growing knowledge-creating firms, the federal government is well-positioned to make equity investments in companies. One mechanism it already has at its disposal is the Venture Capital Action Plan (VCAP), which uses a fund-of-funds approach to leverage private-sector knowledge and capital with government investments. We recommend that in Budget 2017 the federal government allocate additional funds to the VCAP. Furthermore, we feel the results of the program can be strengthened by implementing the following three recommendations from the auditor general’s 2016 report on the program:

1. When making investments that are similar to those of the Venture Capital Action Plan, the Department of Finance Canada and Innovation, Science and Economic Development Canada should fully respect the values of fairness, openness, and transparency while meeting the purposes of the investment. Respecting these values will maintain the venture capital industry’s confidence in selection processes run by the Government of Canada.

2. To appropriately assess the performance of the Venture Capital Action Plan and inform decision making, the Department of Finance Canada and Innovation, Science and Economic Development Canada should expand the Action Plan’s Performance Measurement Framework by considering the inclusion of performance metrics, such as exit performance of recipient companies, recipient companies’ export growth and their financial performance, new patents and patent citations, and the number of new or additional key investment personnel and lead investors. To increase transparency, the two departments should report publicly relevant information about Action Plan activities and performance.

3. In formulating future interventions such as the Venture Capital Action Plan, the Department of Finance Canada and Innovation, Science and Economic Development Canada should allow for an early exit of the public-sector partners.

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40 On August 26, 2016, the yield on a 10-year bond was 1.090 per cent, whereas the yield on a 30-year bond was 1.687 per cent. Market data. (Financial Post, 2016).

Finally, we believe firm financing should not just be top-down by large financial institutions or governments, but that community investors have a role to play. The State of California created a useful piece of legislation to give residents more autonomy when making investment decisions. AB 2751, also known as the “California Local Economies Securities Act” (CLESA), has the express goal of making it “easier for small businesses, farms, and renewable energy projects to raise money from local investors and to enable California residents to move their money from Wall Street to their local community.”\(^{42}\) In our view, the most valuable change the bill offers is to make it easier for citizens to invest in local start-ups. CLESA allows start-ups to sell equity stakes without permit requirements, provided they meet the following conditions: “The business provides basic offering and business information to the public, the total amount raised during the offering does not exceed $500,000, and no individual non-accredited investor invests more than $1,000. Accredited investors would be limited to investing no more than 5 per cent of their net worth.”\(^{43}\) The California state legislature has not passed CLESA, so there is no data on its effectiveness. We believe, however, it still provides a model worth investigating.

**Recommendation:** The Cooperative Capital Markets Regulatory System (CCMRS) or provincial governments should adopt the “small investments” exemption in the California Local Economies Securities Act (CLESA).

We recognize that many individuals would not have the ability to make direct investments in firms, but would appreciate the ability to invest in local businesses in a broad sense, which leads us to our final firm-financing recommendation:

**Recommendation:** The federal government should work with financial institutions such as credit unions and social finance organizations to create investment vehicles through which individuals could invest in funds that finance local businesses.

Next, we believe the federal government can improve how it finances infrastructure investments. The prime minister’s mandate letter to the minister of Infrastructure and Communities contains the following priority:\(^{44}\)

Work with the Minister of Finance to establish the Canada Infrastructure Bank to provide low-cost financing (including loan guarantees) for new municipal infrastructure projects in our priority investment areas. This new institution will work in partnership with other orders of governments and Canada’s financial community, so that the federal government can use its strong credit rating and lending authority to make it easier — and more affordable — for municipalities to finance the broad range of infrastructure projects their communities need. This should include preparing for the launch of a new Canadian Green Bond that can enable additional investments when a lack of capital represents a barrier to projects.

\(^{42}\) Sustainable Economies Law Centre. *California Local Economies Securities Act* (2016).


\(^{44}\) Office of the Prime Minister. *Minister of Infrastructure and Communities Mandate Letter* (2015).
We would expand this proposal and create a Canadian Infrastructure Investment Bank (CIIB) that would be responsible for federal funding of infrastructure projects. We would suggest that the U.S. model created by Korin Davis and William A. Galston in *Setting Priorities, Meeting Needs: The Case for a National Infrastructure Bank*, be adapted to Canada, with a focus on adapting the following items:

- Establish the bank as an independent government-owned corporation (GOC) outside of any governmental agency. This would endow the NIB with greater budgetary flexibility and not unnecessarily narrow the scope of infrastructure projects it could support.

- The bank’s leadership structure should feature a CEO and board of directors, some nominated by the president, others by the leaders of the two parties, confirmed by the Senate, serving staggered terms of about six years. Such a leadership model would give Congress some oversight authority but would sufficiently insulate its operations from political whims and create enough of a buffer so that elected officials would neither determine strategic choices or project selection nor be called on the carpet for unpopular or controversial decisions.

- Create a division of the bank responsible both for analyzing the viability of proposed projects and for advising those seeking support. A strong and permanent professional staff would provide financial and technical advice to further improve resource allocation.

- To achieve leverage, the new entity would have to attract private investor-depositors as well. Its authorizing legislation should be drafted to permit such offerings, subject to the bank’s meeting specific quantitative tests.

- Do not limit the bank’s lending to specific categories of infrastructure, such as transportation. Instead, the bank should be free to invest in a wide array of infrastructure projects, including technology, environmental and energy projects, public utilities, or the renovation of schools and hospitals.\(^{45}\)

**Recommendation:** Canada should create a “Canadian Infrastructure Investment Bank” (CIIB) tasked with providing financing for infrastructure projects.

**Recommendation:** Like the Bank of Canada, the CIIB should be at arms-length from the government. The CIIB should be given a five-year mandate by the government, but be free to pursue that mandate in the manner they best see fit, so that projects are chosen on their merits rather than on political considerations.

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5.4.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?

The FinMatch portals and Canadianized versions of CLESA will be created by the federal Cooperative Capital Markets Regulatory System (CCMRS) and by each province that is not a member of the CCMRS. The creation of the CIIB and increased funding for the Venture Capital Action Plan (VCAP) will come from the federal government.

5.4.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

**FinMatch:** One of the potential benefits of FinMatch is that it would allow the government to keep track of the performance of companies. This data could be incredibly useful for the designing of economic policy. As well, we would recommend that the government set goals for the performance of the portal (companies signed up, deals completed, etc.) and report once a year on the performance of the portal relative to those goals.

**VCAP:** We advise the government to put into place the three recommendations from the auditor general’s report.

**CLESA:** We would recommend that the program be examined once a year by provincial auditors general.

**CIIB:** We believe the Bank of Canada provides a useful framework that allows the CIIB to operate at arms-length but still be ultimately accountable to the federal government.
5.4.4 WHAT FAILURES IS
THE IDEA TRYING TO SOLVE?

Our re-invention of firm and infrastructure funding is attempting to solve some failures, including the following:

**Information Asymmetries:** An obvious question to ask about the creation of an online financing portal is, “If it’s such a good idea, why hasn’t the private sector done it already?” In some cases, they have, as for the buying and selling of companies at sites such as mybizon.com and successionmatching.com. Private-sector solutions, however, suffer from an information asymmetry problem, where the owners have a great deal of information about the value of the investment that the buyer does not. The buyer can obtain much of this information through the negotiation process, but this imposes significant transactions costs. The proposed portal’s listing and reporting requirements would ensure that potential investors quickly have access to the information they need to make an informed decision, similar to disclosure requirements for publicly traded companies. It is certainly possible that government could simply establish the reporting requirements and that private-sector companies would set up portals. While we prefer this option over nothing, we believe this is an appropriate area for government because of data security concerns and the fact that **network externalities and co-ordination effects** make having multiple portals inefficient.

**Externalities and Tech Spillovers:** Governments have a role to play in the financing of knowledge-creating companies, as these firms generate positive externalities through knowledge spillovers (and, as such, will be undersupplied by the market). FinMatch and increased VCAP assist in addressing this externality.

**Risk Aversion:** Companies at Level 1 of FinMatch can enter the system and determine if there is an appetite for their ideas by potential sources of funding before they have committed too much of their own time and capital. We believe that if FinMatch leads to more high-growth firms in Canada, this will incent others to take the risks of entrepreneurship.

**Thin Markets:** Making it easier for firms to be matched with suppliers of funding should lead to the creation of more firms (and more opportunities for the creation of new firms), thus thickening markets.

**Regulatory Failure:** The CIIB is designed, in part, to address the issues of infrastructure projects being chosen on political considerations rather than on their merits. A successful CIIB creates experience in financing and evaluating infrastructure projects on which companies and other levels of government can draw.
5.4.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

**Benefits:** By making it easier to match sources of capital with investment opportunities (whether investments in firms or infrastructure), on both sides of the transaction, investors get more for their investments, and companies can grow faster and increase trade, benefitting the Canadian economy.

**Costs and Risks:** Any time individuals are granted more ways to invest their money, we risk opening them up to fraud. As well, government digital programs like FinMatch come with potentials for cost overruns and data breaches.

5.4.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** One of the goals of a reinvention of firm financing is to make it easier for people with great ideas but not a lot of capital to obtain funding. Obtaining superior value along with leveraging private-sector funds when financing infrastructure projects allows the government to build more infrastructure per dollar spent, benefitting all Canadians.

**Autonomy:** By allowing individuals to invest in their local communities, we are giving them the opportunity to regain economic autonomy. This increase in autonomy helps “solve” the ketchup problem, where individuals are desperately looking for an outlet to assist in the economic development of their communities. Furthermore, by making it easier for people to start new businesses, we are giving them additional options.
BEING INNOVATIVE

TEN BIG IDEAS TO DRIVE INNOVATION

5.5 BIG IDEA 5 - CREATE FINANCIAL REGULATORY SANDBOXES

5.5.1 WHAT IS THE IDEA?

A common theme that emerged during the roundtables was that Canada’s “one-size-fits-all” approach to financial regulations works reasonably well for large financial companies, but unnecessarily inhibits the creation of innovative fintech companies. We believe Canada needs to create safe spaces for businesses to test financial innovations without incurring regulatory consequences that are inappropriate for the scale at which those companies are operating.

**Recommendation:** The Office of the Superintendent of Financial Institutions (OSFI) should spearhead an initiative to create and administer the financial regulatory sandbox where eligible small and emerging companies can operate in a well-defined space and for a limited duration while offering financial products and services to Canadian consumers.

This financial regulatory sandbox would be similar to the regulatory sandboxes developed by the Financial Conduct Authority (FCA) in the United Kingdom, the Australian government and the Monetary Authority of Singapore (MAS). These financial regulatory sandboxes allow businesses to test their ideas and reduce the cost of getting innovative ideas to market, yet ensure that consumers are still protected. The sandbox would encourage and support the design and delivery of new financial products and services that benefit consumers and businesses.

The following criteria for choosing participating projects for the sandbox are developed from the frameworks developed by both the FCA and MAS:

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1. Is the new solution novel or significantly different from existing offerings?
2. Does the innovation offer an identifiable benefit to customers?
3. Does the business have a genuine need for testing within the sandbox framework?
4. Has the business invested appropriate resources in developing the new solutions, understanding the applicable regulations and mitigating the risks?
5. Does the business have the intention and ability to deploy the solution in Canada on a broader scale?

5.5.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?

Because of Canada’s complicated financial regulatory structure, federal and provincial regulators will have to work together to create and administer the financial regulatory sandbox.

5.5.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

The projects will be monitored throughout their time in the financial sandbox. While specific regulatory requirements will be relaxed in the financial sandbox, the regulators will work with innovators to ensure that appropriate safeguards are built into their new products and services before these reach a mass market. Firms participating in the sandbox will have to report on agreed milestones, findings and risk management.

5.5.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

**Regulatory Failure:** Typical financial regulations are designed, in part, to limit systemic risk. However, these regulations can also limit innovation. Thus, the overarching goal of the financial regulatory sandbox will be to ensure that regulations intended to protect Canadians from massive failures in the financial industry are not applied to smaller companies in a way that will needlessly stifle innovation.

**Inequality of Opportunity:** The financial regulatory sandbox will increase the economic inclusion of low-income households and under-serviced communities in Canada by providing them with financial products and services that the big banks may not consider valuable enough to create.

**Market Power:** Competition will be increased in a sector that is currently dominated by a few large players.
5.5.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

**Benefits:** Fintech focuses on creating technological innovation to make financial markets and systems more efficient and consumer focused. By reducing barriers, companies can create financial innovations that are smaller and can benefit communities, such as First Nations, the working poor and new Canadians, who often lack access to affordable financial tools.

**Costs and Risks:** There is an increased potential for fraud as well as failure of new products and services. Also, there is the potential risk, identified at the roundtables, that the financial regulatory sandbox will create a wall for firm growth. Firms may limit their growth so they can continue to operate without regulations, or potential funders may be reluctant to invest in companies if they are uncertain those companies will be able to exit the sandbox. Or as one roundtable participant described it, “We need to ensure the sandbox does not create walls to growth.”

5.5.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** By creating sandboxes and giving businesses a safe space to test innovative ideas without incurring all of the regulatory consequences, we can ensure that regulations are not stopping companies from taking advantage of economic opportunities because they lack the resources to meet regulatory requirements designed for large financial firms. The reduced set of requirements benefits small businesses that do not have the resources to navigate the financial regulatory environment. Furthermore, we expect many fintech start-ups will focus on providing enhanced access to lower-cost services, which disproportionately benefits Canadians of limited means.

**Autonomy:** Financial start-ups that make it easier for low-income individuals to obtain capital give them more options to start businesses, invest in skills training and fully participate in a modern economy.
5.6 BIG IDEA 6 – CREATE A SET OF "CANADA 150 GOALS" AND "CANADA 150 PRIZES"

5.6.1 WHAT IS THE IDEA?

Canada needs innovative thinking to solve some of the more difficult social and economic problems the country faces, such as:

- A lack of safe drinking water and substandard housing on First Nations reserves.
- A persistently large gender wage gap.
- Growing rates of fentanyl and other opioid addiction.

To tackle these problems, we recommend the use of goals and prizes, which we have adapted from both the XPrize Foundation and the United Nations Millennium Development Goals.

Recommendation: The federal government should identify a set of measurable national goals, the Canada 150 Goals.\(^{51}\)

Canada has already set some of these goals. Canada’s commitment to reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030 certainly counts as a measurable national goal,\(^ {52}\) as does the prime minister’s commitment to “end boil-water advisories on First Nations reserves within five years.”\(^ {53}\) Canada’s goals should follow the SMART criteria:\(^ {54}\)

- **Specific**
- **Measurable**
- **Achievable**
- **Relevant**
- **Time-based**

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\(^{51}\) Canada 150 is in reference to 2017 being the 150\(^ \text{th}\) anniversary of Confederation.


\(^{53}\) "Justin Trudeau vows to end First Nations reserve boil-water advisories within 5 years,” Canadian Press, December 18, 2015.

Some of the UN Millennium Development Goals have been criticized for being unachievable or lacking measurability; the Canada 150 Goals must avoid such goals.

**Recommendation:** *The federal government should create a set of Canada 150 Prizes, with large cash prizes for projects that will help meet these goals.*

The prizes are different from the goals, but they should be related to them. One such example is Canada’s emissions goal, and the NRG COSIA Carbon XPRIZE:

**Goal:** Reduce greenhouse gas emissions by 30 per cent below 2005 levels by 2030.

**Prize:** “The $20M NRG COSIA Carbon XPRIZE will challenge the world to reimagine what we can do with CO2 emissions by incentivizing and accelerating the development of technologies that convert CO2 into valuable products. These technologies have the potential to transform how the world approaches CO2 mitigation, and reduce the cost of managing CO2.”

In this way, the prizes assist Canada in achieving the final goals. Canada’s boil-water advisory goal could be matched with a prize for new water-treatment technologies, and the goal of reducing opioid addiction could be matched with a prize for treatment programs that prove to reduce addictions by a measurable amount.

These prizes would encourage investment of time and capital in finding innovative solutions to our goals and would incentivize Canadians to use their skills and imagination to solve some of the more difficult social and economic problems the country faces.

**Recommendation:** *The federal government should ensure that Canada 150 Prize competitions are open to all Canadians.*

### 5.6.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?

The Minister of Innovation, Science and Economic Development will be responsible for administering the Canada 150 prizes and identifying the formidable problems to be solved.

**Recommendation:** *The federal government should hold open consultations with Canadians to determine the list of Canada 150 Goals and Canada 150 Prizes.*
5.6.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

One of the benefits of using a prize-based approach is that projects are only funded if they are successful, creating an automatic layer of accountability. The federal government must ensure that both the goals and the prizes have measurable criteria.

5.6.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

**Regulatory Failure:** A common theme that came up repeatedly in our roundtable was that governments were trying to do too much and were spreading innovation dollars around too thinly, rather than focusing on a few areas where it can realistically expect to succeed. There was a consensus that Canadian governments are too afraid to try to “pick winners,” and this aversion leads to a suboptimal use of resources. The Canada 150 Goals and Prizes are designed to “focus the mind” on a few key areas where Canada has the potential to be a world leader. By choosing specific problems to solve, we allow the government, firms and individuals to focus on developing and showcasing specific core competencies.

**Risk Aversion:** The Canadian government’s approach to risk aversion in the innovation sphere is to try to “de-risk” the space, by transferring risk from firms to governments. While appropriate in some circumstances, this approach does not teach Canadians how to take risks. Attaching large financial prizes to problems rewards risk-takers and creates an environment in which taking chances is more socially acceptable.

**Evangelism:** Canada currently has the world’s attention thanks, in part, to the international popularity of Prime Minister Justin Trudeau. By choosing specific problems to solve and by having large prizes attached to solving them, the prime minister can use his star power to highlight our innovative clusters to the world and make Canada “the place to be” for innovation.

**Inequality of Opportunity:** A large segment of Canada’s population is left out of government programs on innovation because they do not know how to navigate a complex regulatory environment. Using prizes that anyone can access opens up government-driven innovation to all Canadians.
5.6.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

**Benefits:** The approach of goals and prizes forces the government to focus on a few key priority areas. Furthermore, since prizes are only awarded for success, there is little financial risk for the government. If no innovation occurs, no prizes are awarded.

**Costs and Risks:** As with most, if not all, innovation programs, the government could end up paying for innovations that would have happened without the program. Furthermore, the government may choose the wrong areas as “winning” ones and fail to incent innovation in areas with a greater chance for success.

5.6.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** Since many of the goals will be around assisting vulnerable populations, successful completion of these goals will lead to an improved quality of life, a lower cost of living and higher incomes for those in need.

**Autonomy:** We would recommend that when choosing the Canada 150 Goals, the government try to have at least one or two that would be autonomy-increasing if successful.
5.7 BIG IDEA 7 - A CANADA-WIDE TRANSFORMATION OF NUMERACY SKILLS

5.7.1 WHAT IS THE IDEA?

Numeracy skills affect an individual’s economic and social well-being. Inadequate numeracy skills can negatively impact an individual’s ability to get a job and feel engaged and valued in society. Inadequate numeracy skills when possessed by larger groups can “hurt the economy through missed opportunities for innovation and productivity.”^56

In 2012, the Conference Board of Canada found that 55 per cent of Canadian adults had inadequate numeracy skills. Also, inadequate numeracy skills are higher in marginalized groups, such as Aboriginal people in Canada and immigrants. A person with inadequate numeracy skills may be unable to function well in an innovative Canada as low numeracy skills are linked to “unemployment, low wages and poor health.”^57 Thus, poor numeracy is a massive challenge for Canada’s innovation agenda and our goal of encouraging economically inclusive innovations.

The goal for this big idea is to build on measures proposed and/or put in place by other countries struggling with the same numeracy issues in order to eradicate inadequate numeracy among adults and children, and to create more positive attitudes towards numeracy in Canadian society.

**Part 1. Introduce numeracy skills in early childhood (before children are in formal education)**

Numeracy skills must be introduced early in childhood for two reasons. First, it is important to promote the development of numeracy skills in early childhood to naturalize mathematical thinking and to identify students that are struggling as early as possible so that their acquisition of mathematical knowledge in school is not hampered. According to the Encyclopedia on Early Childhood Development, “1 in 10 children will be diagnosed with a learning disorder related to mathematics during their education.”^58

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Just as language skills are stressed early in a child’s life and any struggles are quickly identified and interventions implemented, we must do the same for numeracy skills. This leads to a series of sub-recommendations:

**Recommendation:** Provincial governments should share best practices on effective early childhood numeracy curricula.

**Recommendation:** Where needed, provincial governments should create an effective early childhood numeracy curriculum.

To ensure a child has numeracy skills, early childhood professionals need to be provided with evidence-based effective numeracy strategies, curricula and assessment tools. While there are suitable numeracy techniques for teaching children of this age, early childhood educators do not universally use them.\(^{59}\) By creating a curriculum, and ensuring it is used in early childhood education, we can ensure that all children benefit from these techniques and are not left behind their peers.

**Recommendation:** Provincial governments should work together to create numeracy tools for parents to encourage engagement.

National Numeracy, a not-for-profit organization in the U.K., created a parental tool kit and website to encourage parental engagement in numeracy.\(^{60}\) These brought together best practices and current materials for parents to use. Additionally, they created a tool kit that would help parents and schools provide positive messages about numeracy, opportunities and activities related to numeracy, and school tools to help schools develop parental engagement.

We propose developing a similar Canada-wide set of tools that can help break down the barriers to numeracy.

**Recommendation:** Provincial governments should fund research into early screening measures and interventions and supports for problems in numeracy.

Dr. Daniel Ansari, the Canada Research Chair in Developmental Cognitive Neuroscience, reported that one of the main concerns in math education is that while we have reliable and valid early childhood screening measures for problems in language development and effective interventions and supports to deal with these problems, we have not developed the same screening measures and interventions and supports for problems in numeracy. Screening tools for identifying foundational numeracy competencies in preschool and kindergarten need to be developed and validated for use in schools, clinics and other educational settings. Interventions for children with, or who are at risk of, mathematics learning difficulties should be devised and evaluated through randomized controlled studies.\(^{61}\)

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Part 2. Create a system-wide numeracy culture within the education system

Every teacher from early childhood educators to university lecturers must become a teacher of numeracy. That does not mean that every teacher must hold a math degree and be a math teacher but that numeracy — just like literacy — must be recognized as an intrinsic part of every subject. This goal will take ongoing work to ensure that education systems in Canada have a cross-curricular approach to numeracy. Many schools already recognize this and strive to achieve it, but the approach must become universal in Canada.

This leads to a series of sub-recommendations:

**Recommendation:** Expand the teaching of numeracy in bachelor of education programs

Researchers into math education have identified the need for more time to be spent in bachelor of education programs on numeracy teaching approaches, identification of children struggling and numeracy interventions. By including more work on numeracy, the programs will help new teachers incorporate numeracy into all subjects. This recommendation echoes a similar call for more teacher education in numeracy teaching approaches by the OECD in their 2004 report on the role of math education in innovative societies.

**Recommendation:** School boards should allocate more professional development time for practicing teachers to focus on numeracy teaching approaches, identification of children struggling and numeracy interventions.

Part 3. Create a new adult numeracy core curriculum

**Recommendation:** Provincial governments should create an adult numeracy curriculum that will be disseminated through local health units and other appropriate places such as public libraries and job placement offices.

The goal of this is to ensure that adults have opportunities to develop and refresh their numeracy skills.

It will include numeracy programs in: further and adult education; the workplace and programs for the unemployed; prisons; and community-based and family numeracy programs. It will assist teachers to meet the individual needs of adults through the selection and teaching of skills appropriate to those adults’ needs.

Good numeracy is essential for parents to help their children learn, to understand health information and to make informed decisions throughout our lives. Research in the U.K. has shown that improving adult numeracy directly contributes to an increase in the personal and social confidence of the people with improved numeracy.

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64 Zemira Mevarech and Bracha Kramarski, Critical Maths for Innovative Societies, OECD (2014).
65 National Numeracy, Why is numeracy important? (2016).
Part 4. Data collection and evaluating numeracy approaches

**Recommendation:** Provincial governments should require the collection and sharing of depersonalized data to evaluate testing, intervention and instruction approaches for numeracy education throughout childhood.

Given the decentralized nature of our education system, there is no single agency or institution responsible for evaluating instruction approaches. In most Canadian provinces and territories, schools can set their own policies for student assessment and most principals use student assessment data for making decisions about students, monitoring their school’s progress or identifying aspects of instruction or the curriculum that could be improved. With some variation across the provinces and territories, students in Canada take provincial or territorial standardized summative examinations at key stages of their education, especially at the end of secondary education. Different school boards and specialists use different measurement tools to identify children presenting numeracy problems and use different interventions based on these different tools.

Dr. Ansari noted in his interview that the schools are very good at collecting data, but the use of a large number of different instruments and a lack of access to the data means that researchers are unable to compare instruction and intervention approaches. This lack of standardization results in a lack of evidence-based interventions.

This lack of comprehensive and comparable data to evaluate instruction and intervention approaches can hinder policy development and analysis and is a barrier to improving Canadian students’ math skills. Using the data will help in three ways: to develop and identify appropriate measurement tools and interventions for numeracy problems, to measure the success rate of various interventions and to develop a consistent and evidence-driven program.

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5.7.2 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

In 2012, Canadian students did reasonably well on the Programme for International Student Assessment (PISA) math test. Students’ math skills were assessed on a six-level scale, with level 6 being the strongest skills and level 1 the weakest. In 2012, 35 per cent of Canadian 15-year-olds scored at a level 2 or lower. Based on the results, the Canadian Conference Board assigned Canada a grade of B with only four countries (Japan, Switzerland, the Netherlands and Finland) receiving an A grade.

However, when this data was broken down, researchers highlighted some concerning trends. First, there is a growing number of Canadian students with “inadequate” math skills. In 2012, this number was 34 per cent, up more than four per cent from three years previous. Second, there is a growing achievement gap, with more students scoring in the lowest levels and fewer students scoring in the top levels. Third, when this data is examined at the provincial level, there are alarming provincial differences. Quebec earned an A+, British Columbia earned an A, Ontario, Alberta and Saskatchewan earned a B, New Brunswick, Nova Scotia and Newfoundland earned a C and Manitoba and Prince Edward Island earned a D.”

Canada will continue to participate in these tests, and implementing our recommendations will help reverse these concerning trends.

Also, part of the mandate for this idea will be to create robust measurement tools for both early childhood numeracy and adult numeracy.
5.7.3 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

**Thin Markets:** By ensuring that Canadian adults have “the ability to access, use, interpret and communicate mathematical information and ideas to engage in and manage the mathematical demands of a range of situations in adult life,” this big idea will ensure that there is more talent available to the cluster. The increased pool of talent will make each cluster both stronger and bigger.

**Inequality of Opportunity:** Large groups of Canadians are being denied opportunities because they do not have the math skills needed to compete in the 21st-century economy. Specifically, this idea will help to address the inequality of opportunity for marginalized groups, such as new immigrants and Aboriginal Canadians. Both groups have been identified specifically by the Conference Board of Canada as having inadequate numeracy skills, which may negatively impact their participation in innovation.

5.7.4 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

**Benefits:** In its 2004 report on the role of math education in innovative societies, the OECD notes that one of the main goals of math education is to empower people with the ability to “pose, solve and interpret mathematical problems in a variety of situations,” with the goal of applying these skills in innovation. Without citizens with strong math skills, the OECD argues that innovation will lag behind as people struggle to understand and incorporate numerical information. These strong math skills start with a strong numeracy foundation.

Transforming Canada’s numeracy skills will help to solve the labour shortage failure Canada is experiencing. At the moment there are jobs that need to be filled and people who need jobs, but the people don’t have the right skills. By transforming Canada’s numeracy skills, we can fill these jobs and have people ready to fill new jobs as they are created.

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Costs and Risks: There is a risk that the provinces and school boards do not participate in the goal to transform numeracy. A lack of political support for this goal would make the goal much more challenging to achieve.

5.7.5 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

Economic Inclusion: The Conference Board of Canada reports that “Inadequate numeracy skills hurt individuals’ potential for landing jobs and promotions and hurt the economy through missed opportunities for innovation and productivity.” By transforming Canada’s numeracy skills, individuals will be able to participate in the economy.

Autonomy: Low levels of numeracy are linked to unemployment, lower wages and poor health. By transforming Canada’s numeracy skills, individuals will be able to improve their quality of life and make well-informed personal choices.

Conference Board of Canada, Adults with Inadequate Numeracy Skills (2014).
5.8 BIG IDEA 8 - CREATION OF A NETWORK OF CLUSTER RESEARCH CENTRES

5.8.1 WHAT IS THE IDEA?

Clusters are beneficial because they allow for economies of scale, and access to skilled labour and innovation largely happens in geographic clusters of interrelated companies and institutions. In his 2014 report, Spencer identified 230 separate geographic clusters in 21 different industries in Canada. This included a higher education cluster in Charlottetown that employed 2,066 people in 2011, the aluminum cluster in Saguenay that employed 3,687 people and the food and beverage cluster in London that employed 6,972 people. Firms in these clusters benefit from being in the same geographic region with shared local knowledge and a shared pool of talented workers.

However, there are large information gaps at the local cluster level, as clusters have very different needs and are facing very different challenges regarding innovation. Through the creation of cluster research centres, gaps in the cluster’s ecosystem will be identified, idea sharing will be increased, data will be collected and shared and regulatory failures will be identified.

**Recommendation:** The federal government should fund the creation of a network of cluster research centres across the country at universities within the geographic area of the cluster that would be required to provide a yearly set of deliverables to maintain their funding.

The deliverables for each cluster research centre would include the following:

**Recommendation:** Each cluster research centre must convene a minimum of one meeting per year with local stakeholders, including industry, academia and government, to network and share information and aid in the creation of reports and white papers on the challenges the cluster is facing.

**Recommendation:** Each cluster research centre must ensure they collect data, both qualitative and quantitative, about the cluster.
Recommendation: Each cluster research centre must, once per year, update (or create) a publicly available map of their local cluster ecosystem.

Recommendation: Each cluster research centre must, once per year, release a white paper with policy recommendations for governments.

Recommendation: Each cluster research centre must, once per year, report on the state of the cluster and identify possible gaps in the local ecosystem.

Recommendation: Each cluster research centre must, once per year, report on the local cluster’s best practices and those from other clusters.

Recommendation: Each cluster research centre must, once per year, report on what initiatives, if any, companies in the cluster have undertaken to increase the hiring of underrepresented groups, including women, visible minorities and Aboriginal Canadians.

Recommendation: Each cluster research centre must, once per year, report on the labour needs of the cluster, identify any skills training gaps in the sector and provide curriculum and co-operative education recommendations to universities, colleges and other educational institutions.

Recommendation: Each cluster research centre must, once per year, award up-and-coming young innovators in the local ecosystem.

5.8.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?

The development and ongoing administration of the cluster research centres will be the responsibility of the Minister of Innovation, Science and Economic Development and the universities and colleges where the centres are located. In his 2015 mandate letter to the Minister of Innovation, Science and Economic Development, the prime minister mandated the development of an Innovation Agenda that included expanding effective support for “the emerging national network for business innovation and cluster support.”

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5.8.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

The requirement for a yearly set of deliverables to maintain funding provides accountability. Checks and balances must be put in place by the ministry to ensure the delivered materials are of acceptable quality. These deliverables will be made public to disseminate information and to ensure quality.

5.8.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

The cluster research centres are designed to address, either directly or indirectly, a wide array of market and regulatory failures that can occur in a cluster.

**Thin Markets:** Cluster markets are thickened by more workers and more firms. The research centres help increase the supply of labour through their recommendations to address skills training gaps, as well as sharing of best practices to tap into historically excluded sources of labour. More firms can be created through the centres better matching start-ups with sources of capital to obtain funding. Both sides of the market can also be thickened through the advice the centers provide to governments on skills and funding gaps.

**Externalities and Knowledge Spillovers:** Knowledge spillovers will be created through the meetings assembled by the centre and by increasing “collisions” through the other activities of the centres. The centres will disseminate best practices and other forms of knowledge that can be adopted by other firms.

**Network Externalities and Co-ordination Failures:** The cluster research centres create a geographic space for people in the cluster to meet, share ideas and develop new approaches.\(^{74}\)

**Evangelism Externalities:** The cluster research centres act, in part, as a champion for the local cluster and should serve to promote the values of the cluster to other Canadians, enhancing the reputation of the cluster.

\(^{74}\) This is referred to in economics literature on co-ordination failures as a “Schelling point.”
**Regulatory Failure:** One of the responsibilities of the centres is to address regulatory failures by providing regulators and lawmakers more local knowledge of and feedback about the cluster. A common complaint we heard from regulators in our roundtable was this: “We hear from 40 different cluster stakeholders about 40 different issues; we don’t know which problems are the most important.” Cluster research centres can provide “triage” guidance to regulators, so the most pressing priorities are addressed first.

**Risk Aversion:** One of the tasks of the centre is to provide awards to innovators and other successful risk takers, thereby creating role models and encouraging others to do the same.

**Inequality of Opportunity:** The cluster research centres will directly reduce inequality of opportunity by looking for bottlenecks that are excluding people from the local market. Additionally, these centres will look for ways to promote companies that seek ways to diversify their hiring.

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**5.8.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?**

**Benefits:** These centres will help address skills shortages, and gets universities and the private sector used to working with each other. If these centres create stronger clusters, it not only benefits the workers and companies within the cluster but creates spin-off employment and prosperity in other local industries.

**Costs and Risks:** There is a financial cost to setting up and running these centres will cost money. Industry Canada recently funded a similar research centre at Western University with $1 million a year for five years. We estimate that each cluster research centre would cost between $500,000 and $1 million a year to run.

Firms may resist participating in centres or may see them as a way to ensure the government enacts policies and approaches that benefit the industry but not the overall goal of the research centre. There is also the possibility of political interference with the work of the cluster research centres or in choosing which research centres get funded. The centres will need to have a level of independence to ensure this does not happen.
5.8.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** Economic inclusion is a primary goal of the research centres as they focus on increasing inclusion in the cluster. Many of the clusters face skills shortages, yet many people in excluded groups are unable to participate in the cluster.

**Autonomy:** These research centres will help entrepreneurs start new businesses within the cluster. By helping match people with good ideas to sources of funds, individuals are given more options in how to participate in the local economy.
5.9 BIG IDEA 9 - REFORM IMMIGRATION WITH A FOCUS ON TRADABLE SECTORS

5.9.1 WHAT IS THE IDEA?

Canada’s immigration system is incredibly complex, with more than 60 different programs that admit non-Canadians to the country. A detailed description of each is well beyond the scope of this report, so our recommendations will be at a high level. Our immigration recommendations revolve around one core point: the system as a whole needs to make a larger distinction between tradable and non-tradable sectors of the economy, and focus on bringing in workers with skills valued in tradable sectors.

**Recommendation:** Canada’s economic immigrant programs, for both permanent and non-permanent immigrants, should have the expressed mandate of raising wages and economic opportunities for Canadians, which they can accomplish through a focus on tradable sectors.

To explain the idea, we first need to understand what tradable sectors are and, secondly, we need to understand why the distinction matters. To address the first issue, we will use the Australian Bureau of Statistics definition of tradable sectors.

** Tradable sector:** “A domestically produced good or service is defined as tradable if it is actually traded internationally, or it could be traded at some plausible variation in relative prices — this includes domestically produced goods and services which replace imports in the domestic market.”

Illustrating the importance of the distinction between tradable and non-tradable when examining employment dynamics in a local economy is best done through the use of examples from the services industry.

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First, consider Saskatoon’s technology sector, specifically companies that program applications or design video games. Because their products are purchased by users all over the world, these companies are competing against companies from Bangalore to Helsinki; their competition is not other companies in Saskatoon. As such, the size of Saskatoon’s tech cluster can grow arbitrarily large because the market is worldwide and the success of one local company does not come at the expense of another. Because the industry can grow arbitrarily large, it can absorb additional workers without any downward pressure on wages, and may even raise wages in the sector as a thicker labour market attracts tech companies to Saskatoon. Furthermore, the success of a local tech company brings in outside capital and creates employment opportunities in other industries. In *The New Geography of Jobs*, economist Enrico Moretti found that one additional job in the tech sector creates five additional jobs in the economy at a variety of different skill levels. Moretti defended the five-to-one ratio in an interview with Stanford’s Kathleen O’Toole:

> The way to interpret the multiplier is to imagine dropping 1,000 innovation jobs in one city but not in another, and then going back 10 years later to measure how many additional local service jobs there are in the city that experienced that innovation-sector drop of jobs. So it’s a long-run effect, but it’s not impossible for three reasons.

> One is that the average high-tech worker tends to do very, very well, and people who are wealthy tend to spend a large fraction of their salary on personal and local services. They tend to go to restaurants and movies, and to use taxis and therapists and doctors on average more than people who are paid less.

> The second reason is high-tech companies themselves employ a lot of local services; everything from security guards to IP lawyers, from the janitor to the very specialized consultant. High-tech companies tend to use more services than manufacturing companies.

> The third reason is the clustering effect. Once you attract one of those high-tech workers, then in the medium to long run, you’re going to be attracting even more of those high-tech workers and companies, which will further increase your multiplier. So it’s a long-run number, measured over a 10-year period.

Contrast this with the market for brick-and-mortar drugstore pharmacists in Saskatoon. Pharmacists at brick-and-mortar drugstores provide a non-tradable service, as their customers are local in nature.

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While the number of pharmacists in Saskatoon is not fixed, it can only grow so large, as there is a limit to how many pharmacists the local market can reasonably absorb. As such, firms in the market grow and increase revenue more by seizing market share from their competitors than from growing the overall size of the local market. Due to these constraints, a sudden and significant influx of pharmacists to the Saskatoon market would drive down wages and increase unemployment as the local market would not be able to fully absorb the increase due to the non-tradable nature of brick-and-mortar pharmacy services.

Beyond Moretti’s findings, there is empirical evidence to support the wage effects of immigration on tradable and non-tradable sectors. While there is a substantial body of literature showing that, in many cases, higher levels of immigration do not lead to lower wages on average,\footnote{A useful discussion of the literature appears in “Immigration, Wages and Compositional Amenities,” David Card, Christian Dustmann and Ian Preston, \textit{Journal of European Economic Association} (2011).} this does not necessarily mean that the effect of higher levels of immigration is identical across industries. A recent study by the Bank of England found that the impact of immigration differs across industries, and that “the biggest effect is in the semi/unskilled services sector, where a 10 percentage point rise in the proportion of immigrants is associated with a 2 percent reduction in pay.”\footnote{Stephen Nickell and Jumana Saleheen, “The impact of immigration on occupational wages: evidence from Britain,” Bank of England: Staff Working Paper No. 574 (2015).} The fact that these people disproportionately work in non-tradable sectors supports the theory of the differing effect of immigration on employment and wages between the sectors.\footnote{For the purposes of their paper, Nickell & Saleheen, (2015) define the semi/unskilled services sector as including child-minders, early childhood educators, animal care assistants, housekeepers, travel agents/assistants, caretakers, sales assistants, check-out staff, call centre staff, postmen, shelf fillers, car park attenders, cleaners, road sweepers, bar staff, porters and waiters. These jobs are largely non-tradable in nature, with some exceptions such as call centre staff.}

Canada requires high levels of immigration to address demographic challenges and ensure that it has the skilled workers necessary to compete globally in tradable sectors. If it brings in too many workers from non-tradable sectors and drives down wages and opportunities in some industries, it risks a public backlash that puts Canada’s immigration goals in jeopardy. We need only look at Brexit and the backlash against “Polish plumbers” to see how antipathy towards immigration is often related to employment in non-tradable sectors.

There are Canadian examples of the immigration system being used to prevent wages from rising in non-tradable sectors. The Temporary Foreign Worker program is a prime example. Through an Access to Information request, the Alberta Federation of Labour found that “between April 25 and December 18, 2012, more than 2,400 ALMO [Accelerated Labour Market Opinion] guest-worker permits — which are supposed to be reserved for highly skilled employment — have been granted to fast-food restaurants, convenience stores and gas stations.”\footnote{Alberta Federation of Labour, \textit{List of ‘accelerated’ TFW approvals reveals widespread abuse of program} (2013).} By bringing in these workers, Canada is holding down wage increases to low-income workers. While it is possible that some of these jobs could be uneconomical at higher wages, these are not the type of jobs that create spin-off jobs through increased flows of foreign capital.
In a 2014 Toronto Star editorial, Liberal Leader Justin Trudeau suggested some reforms to the Temporary Foreign Worker Program to deal with the economic effects it has on Canadian workers as well as the possibility of exploitation of guest workers; two of those recommendations continue to have value today.

**Recommendation:** The auditor general should conduct a full review of the Temporary Foreign Worker Program.

**Recommendation:** Transparency of the Temporary Foreign Worker Program should be increased, with public disclosure of applications and approval data.

When implementing policy, one must worry about unintended consequences. One way firms could deal with restrictions on temporary foreign workers is to turn those positions into unpaid internships. These internships are problematic from an equality of opportunity perspective, as the opportunities created can only be obtained by those who can afford to work for free. Because of this, unpaid internships are illegal in Ontario unless a very restrictive set of conditions is met. In some other provinces, regulations are vague about the legality of unpaid internships. This leads us to the following recommendation:

**Recommendation:** Provincial governments should explicitly ban unpaid internships and increase their enforcement of existing regulations in the area. The federal government should do likewise for federally regulated industries.

Meanwhile, while fast-food companies and gas stations were able to bring in temporary foreign workers, export-oriented high-growth companies were unable to obtain and retain the workers they needed. Companies that have hired foreign graduates of Canadian schools under the Post Graduation Work Permit Program are seeing these workers deported as companies struggle to navigate a byzantine set of rules. Tech companies in London, Ont., report they have opened offices in the United States since they have found regulatory barriers make it too difficult to bring talent north of the border. Other companies at our tech roundtable have moved operations outside of Canada, and taken Canadian workers with them, to be able to access the talent they need. The tax revenue these companies generate and the spin-off jobs they create could be going to Ontario but are instead going to California, simply for regulatory reasons. This needs to stop.

**Recommendation:** Immigration, Refugees and Citizenship Canada should streamline the process for companies in export-oriented goods and service industries wishing to recruit or retain skilled workers.

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By focusing our immigration system on tradable sectors and away from non-tradable sectors, we can attract and retain talent in Canada, increase the competitiveness of our export industries and increase wages and job opportunities for Canadians.

Although our focus to this point has been on wages, reforming our immigration system with a focus on tradable sectors creates an environment for innovation, as described by the Expert Panel on Business Innovation in 2009:

- Canada’s domestic market is relatively small and geographically fragmented. Small markets are less conducive to innovation than large markets (like the United States) because
  i. they offer lower potential reward for undertaking the risk of innovation, and
  ii. they tend to attract fewer competitors and thus provide less incentive for a business to innovate in order to survive. (The Canadian domestic market is relatively “cushioned” and pre-tax business profitability, as a percentage of GDP, has exceeded that of the United States in most years since 1961.)

- The innovation success of countries like Finland and Sweden shows, on the other hand, that the disadvantage of a small domestic market can be offset by a strong orientation toward innovation-intensive exports.\(^{87}\)

Canadians need higher wages and more opportunities and Canada needs to be more innovative. Through restructuring Canadian immigration programs, we can simultaneously accomplish both.

5.9.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?

Immigration is a federal responsibility, with the exception of Provincial Nominee Programs and the Canada-Quebec accord. Immigration falls under the jurisdiction of Immigration, Refugees and Citizenship Canada with some exceptions, such as the Temporary Foreign Worker Program, which is jointly administered by Immigration, Refugees and Citizenship Canada and Employment and Social Development Canada..

5.9.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

Beyond the recommendations given earlier on accountability measures that should be put in place for the Temporary Foreign Worker Program, we recommend the following:

**Recommendation:**The federal government should conduct a study on the impact of immigration on Canadian occupational wages, similar to the Bank of England study.

**Recommendation:**The Office of the Parliamentary Coherence Officer, after it is created, should conduct a thorough review of the coherence of Canada’s immigration sector as it relates to the mandate of raising wages and economic opportunities for Canadians.

**Recommendation:**Statistics Canada should strengthen its collection of labour market data, with a focus on labour market outcomes by industry for immigrants and non-immigrants.

5.9.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

**Thin Markets:** A shortage of skilled workers limits the growth of innovative companies in fast-growing clusters such as the Kitchener-Waterloo tech sector. The complexity of regulations along with processing times cause issues for companies, a point Immigration Minister John McCallum recognized in a *Globe and Mail* interview when he stated: “Tech firms’ idea of a quick immigration processing time is more like six days rather than six months ... for us six days would be a stretch... but at the same time ... we want to open our doors to the best and the brightest ... so, obviously, I will be working very hard to try to accommodate their needs as best I can.”

88 These problems hit clusters in small and mid-sized cities particularly hard, as they do not have large local networks of immigration lawyers and experts from which to draw experience. One advantage that clusters in mid-sized Canadian cities should have is the significant number of international students that study in their colleges and universities. However, companies report that it is difficult to retain these individuals after the expiry of their Post-Graduation Work Permits.89


89 This is discussed in detail in “Canada’s hardest-hit economies need immigration to thrive again,” Mike Moffatt, *Canadian Business*, February 16, 2016.
Inequality of Opportunity: The poor design of some immigration programs, most notably the Temporary Foreign Worker Program, prevents wages from rising in non-tradable sectors and limits job opportunities for low-income Canadians. Well-designed immigration reforms will disproportionately benefit workers who are the most marginally attached to the labour force.

5.9.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

Benefits: A successful reform of Canada’s immigration systems to focus on tradable sectors has three big benefits:

1. Industry clusters that grow faster export more and create additional wealth.
2. Spin-off wealth and prosperity in non-tradable sectors that support those clusters.
3. Increased wages and job opportunities for Canadians in non-tradable sectors due to reduced competition for these positions.

Costs and Risks: If the plan works as intended, wages should increase in the non-tradable sector. Of course, this also likely means that the price of goods and services will rise accordingly. Furthermore, it could cause skills shortages in certain non-tradable sectors.

The largest issue is that this plan could fail or have unintended consequences for a variety of different reasons. Changes to immigration policies are tricky, and there is no guarantee that governments get it right. The biggest potential roadblock is that the plan requires governments to be able to distinguish between job types that are largely in the tradable sector and those that are not.
5.9.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** By refocusing our immigration policies to tradable sectors, we can ensure that government policies are not reducing wages and limiting economic opportunities for Canadians. Furthermore, due to the positive employment spillovers created by high-skilled immigrants in tradable sectors, wages and employment opportunities are increased for everyone from lawyers to barbers to construction workers. Our immigration system should have as an explicitly stated core goal of increasing wages and job opportunities for Canadians.

**Autonomy:** At first glance, there appears to be little relationship between the proposed immigration changes and the level of personal autonomy for Canadians. However, a booming tradables sector creates job opportunities and business opportunities for current Canadians in non-tradable sectors. These opportunities could be amplified with enhanced non-tradable sector skills training for individuals that are unemployed or out of the labour force.
5.10 BIG IDEA 10 - CREATION OF SECTOR SPECIFIC INNOVATION ACCORDS

5.10.1 WHAT IS THE IDEA?

The goal for this big idea is to ensure each sector in Canada has a coherent strategy to support innovation and that the federal government supports and participates in this strategy.

Recommendation: An innovation accord for key sectors of the Canadian economy should be created. These accords would promote a new relationship with the federal government and the particular sector and would facilitate policy coherence between levels of government and across departments, convening diverse stakeholders and leveraging funding. Additionally, an innovation accord would provide priorities, goals and measurements to determine sector success in innovation that results in economic inclusion and an enhancement of autonomy.

These innovation accords will focus on outcomes and practical commitments and consider areas such as policy design, funding arrangements and strengthening innovation within the sector. The implementation of the innovation accords will be overseen by Innovation, Science and Economic Development Canada (ISED).

Each innovation accord will:

1. Identify common objectives in an innovation strategy.
2. Develop action-oriented plans for both parties to the accord.
3. Measure progress appropriately for both parties to the accord.
4. Leverage funding from all levels of government to maximize support.
5. Foster healthy competition among provinces while being flexible/asymmetrical to fit provincial innovation strengths and needs.
6. Accelerate the federal goal of driving inclusive innovation.
At a minimum, we would recommend that the following sectors work with the federal government to create innovation accords:

- Life Sciences and Health Care
- Arts and Culture
- Manufacturing
- Agri-Food
- Finance
- Oil and Gas

Each accord represents a public commitment to be more open, transparent, consistent and collaborative in innovation. We believe that these accords will move the government and the sector towards greater mutual understanding and provide a framework within which innovation can be developed.

**Recommendation:** A working group should write each innovation accord with individuals from the Government of Canada and the sector. The members should be selected to reflect a cross-section of federal government departments and the sector. To ensure that a broad range of viewpoints within the sector are heard, consultations should be held.

These innovation accords will not compel the Government of Canada or the associated sector to work together; rather, they outline the values and principles that will govern the relationship when they choose to work together.

**5.10.2 WHO WILL BE RESPONSIBLE FOR ADMINISTERING THE IDEA?**

The implementation of the innovation accords will be overseen by Innovation, Science and Economic Development Canada (ISED).
5.10.3 WHAT MECHANISMS FOR ACCOUNTABILITY OR MEASUREMENT CAN BE PUT IN PLACE FOR THE IDEA?

These innovation accords will focus on measurable outcomes and practical commitments and consider areas such as policy design, funding arrangements and strengthening innovation within the sector. The development of measurements and accountability mechanisms will be a part of each accord.

5.10.4 WHAT FAILURES IS THE IDEA TRYING TO SOLVE?

**Regulatory Failure:** From an innovation perspective, the overarching goal of the innovation accords is to ensure that policy objectives of both the government and the industry sectors avoid conflicting priorities as much as possible and encourage the design of policies that encourage positive consequences for innovation. These accords will allow stakeholders in each sector and the government to work through regulatory failures stemming from a lack of coherence.

5.10.5 WHAT ARE THE POTENTIAL BENEFITS OF THE IDEA AND WHAT ARE THE COSTS?

**Benefits:** Coherence would be created in Canada’s overall approach to innovation within each sector. This increased coherence allows Canada to compete globally in innovation in key sectors by creating a sense of stability and attainable goals.

**Costs and Risks:** A risk with these innovation accords is that industries could see them as a way to ensure the government enacts policies and approaches that allow the industry to make more profits without actually creating innovations, or creating innovation that decreases economic inclusion and autonomy. These risks can be avoided if there is careful consideration in the creation of the responsibilities for both sides of the accord and that overall progress is measured. Another risk is that these accords are simply words on a piece of paper and never meaningfully put into practice.
5.10.6 WILL THE IDEA INCREASE ECONOMIC INCLUSION AND/OR ENHANCE AUTONOMY? IF SO, HOW?

**Economic Inclusion:** Economic inclusion should be an expressed goal of each accord. The accords should contain a section on how both the government and the industry will create wealth and employment opportunities for marginalized Canadians.

**Autonomy:** Where possible, the accords should consider finding ways to increase the control individuals and communities have over their economic outcomes, though in most cases we anticipate there is little the accords can do to address the issue.