



**McGill**

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**Growing Canada's  
Innovation Driven  
Economy**

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*Submitted by McGill University to the House of  
Commons Standing Committee on Finance*

*August 5, 2016*

## **Overview**

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Universities are important contributors to the health, economic and social well-being of Canadians. They educate and train the leaders of tomorrow, preparing millions of Canadians for high-quality jobs. They attract talent and resources from around the world, providing a new talent pool to revitalize Canada's aging population while also boosting the economy. Working with colleagues from other institutions, as well as from industry locally and abroad, university researchers and students are making critical discoveries across all sectors of knowledge, which improve the lives of Canadians each day.

In this submission, we strongly recommend that the federal Government recognize and promote the post-secondary sector as a significant component of Canada's export economy. We encourage the government to maintain its critical support to the three federal granting councils and make targeted investments in complementary areas, including support for early-career researchers, institutional costs of research, knowledge infrastructure and indigenous access to higher education. By investing in individuals, institutions and ideas, Canada can reap the benefits of social and economic prosperity and set a course for long term growth.

### **Recommendations:**

#### **Support a solid and predictable foundation for investments in research**

- Increase investment in the federal research granting councils, ensuring that funding for discovery research is strengthened.
- Develop stronger support for early-career researchers to help spur the careers of university research faculty who are rising stars.
- Expand the Indirect Costs Program to cover the full costs of research by raising the federal formula to a minimum of 40 percent of the direct costs for all institutions.

#### **Leverage investments in innovation and entrepreneurship**

- Stimulate international partnerships by investing in programs that provide Canadian research groups with the funding needed to participate in international consortia.
- Expand entrepreneurship, university-community, and university-industry partnerships through new directed funding programs for student/researcher ventures and support zones of interaction.

#### **Increase Canada's pool of highly skilled innovators to strengthen the middle class**

- Create a strategy to attract and retain international students in Canada and recognize international education as one of Canada's top export sectors.
- Grow the next generation of highly skilled innovators by expanding successful research training and internship initiatives such as NSERC CREATE and Mitacs.
- Increase indigenous student access through sustained support of direct student financial assistance and enhanced institutional programming in higher education.

#### **Strengthen knowledge and Innovation infrastructure**

- Ensure Canada is equipped with the necessary infrastructure for cutting edge research and innovation, for instance through a second phase to the Strategic Investment Fund (SFI).
- Provide support for digital infrastructure for university research and training, as well as entrepreneurship and innovation support services.

**Support a Solid and Predictable Foundation for Investments in Research**

In the 2016 Budget, the Government defined a new vision for Canada's economy: to build Canada as a centre for global innovation. Canada will be propelled by its creative and entrepreneurial citizens; its leading science and technology; its innovation potential; and its globally competitive companies, thriving within a business environment that supports commercialization and growth. Through 2016 and 2017, we will help the Government define a bold new plan through its Innovation Agenda, to achieve this vision.

The new Liberal government recognizes that discovery research is the cornerstone of innovation. We welcomed last Budget's additional \$95 million per year to the budgets of the research granting councils starting in 2016–17, the largest amount of new annual funding for discovery research in more than a decade. With the CIHR, NSERC and SSHRC remaining very important sources of research funding, we encourage the government to continue to increase investment.

Unfortunately, many of Canada's most promising young faculty members face significant obstacles in their research careers and may not be realizing their full potential. Existing support for unestablished researchers, such as the NSERC Discovery Grants, is to be commended, but does not generally provide sufficient funding to build truly robust research programs. Grants are typically not large enough to support more than one graduate student researcher, which reduces the number of students trained as highly skilled and innovative personnel.

The institutional cost of sustaining high-quality research support – administration and infrastructure – remains an ongoing concern for research-intensive universities. These indirect costs are estimated to be between 40 and 65 percent of direct research costs. This year, the Government's contribution to indirect costs was 21.4% of direct costs on Tri-Council research grants, and less for the most research-intensive institutions. In spite of the positive impact of the program, the federal indirect costs grant falls short of appropriate levels of funding. As a result, the universities that conduct the most research have the largest financial shortfalls.

***Recommendations:***

- Increase investment in the federal research granting councils, ensuring that funding for discovery research is strengthened.
- Develop stronger support for early-career researchers to help spur the careers of university research faculty who are rising stars.
- Expand the Indirect Costs Program to cover the full costs of research by raising the federal formula to a minimum of 40 percent of the direct costs for all institutions.

### ***Leveraging Investments in Innovation***

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A lack of funding for international R&D collaborations has created significant barriers to embarking on large-scale initiatives and grand challenges spanning a multitude of research fields. Game-changing discoveries in areas such as neuroscience and astrophysics span national borders and Canadian researchers must be able to participate as leaders and/or equal partners with their global colleagues. Grant amounts available through existing programs are typically not large enough to support this level of engagement and as a result, Canada's role and participation in rapidly converging global innovation and discovery ecosystem remains limited.

Universities also have an important role in stimulating entrepreneurship and the creation of new enterprises. In addition to incubators and research parks linked to university campuses, community-based initiatives, or "zones of interaction," are becoming important drivers of knowledge exchange among the community, industry and universities. Students, too, when given the right support, are eager to pursue start-up ventures. University-based seed programs that provide grants to develop their business concepts, are a cost-effective means to promote the founding of start-ups by students and researchers. With the benefit of early seed money and the complementary supports available in the campus environment, these start-ups enter the market as robust and competitive ventures able to attract capital, create jobs and wealth for the Canadian economy.

#### ***Recommendations:***

- Stimulate international partnerships by investing in programs that provide Canadian research groups with the funding needed to participate in international consortia.
- Expand entrepreneurship, university-community, and university-industry partnerships through new directed funding programs for student/researcher ventures and support zones of interaction.

**Increase Canada's pool of highly skilled innovators to strengthen the middle class**

Like other industrialized countries, Canada faces a growing proportion of citizens above 65 years of age, and a declining proportion of working-age citizens. Canada also has unique challenges relating to business innovation, a lack of SMEs focused on export markets and a lower percentage of university graduates compared to OECD peer countries. The factors are threatening to hollow out well-paying jobs for Canada's middle class.

International students who become permanent residents are perhaps the most valuable immigrants in terms of strengthening Canada's economic prosperity. They help to quickly boost the percentage of its population holding university degrees to meet the demands of the current and future labour markets, and make for a more diverse and innovative business environment. According to Statistics Canada, the owners of SMEs focused on innovation largely share certain characteristics: they are young, have a university degree and are not born in Canada. As well, international students add billions each year to Canada's economy while study: higher education and research is Canada's third-largest export cluster and had the third-largest increase in job creation over the past decade (Institute for Competitiveness and Prosperity).

Training and education shape our society and define our economic future. Canada needs leaders, entrepreneurs, and workers with a balance of technical and intellectual skills to address market needs in the short-run and to adapt to longer term market and socio-economic changes. Student training programs, like the NSERC Collaborative Research and Training Experience (CREATE) program, and internships with industry and community organizations, have proven to be highly effective in preparing the "Innovation Generation" for a changing workforce.

Launched in 2015 and composed of leaders from the private sector, universities, colleges and polytechnics, the Business/Higher Education Roundtable has notably been supporting young Canadians as they transition from education to the workplace, strengthening research collaboration between industry and institutions, and helping Canadian employers as they adapt to the economy of the future. Roundtable members have also encouraged the growth and development of work-integrated learning programs beyond traditional co-ops and internships, such as capstone projects, hackathons, industry challenges, mentorship programs and boot camps.

We applaud the Liberal government's commitment to a renewed relationship with Indigenous peoples and to ensuring First Nations youth receive quality education. With the last budget, indigenous youth will benefit from substantial investments in primary and secondary education on their reservations, totalling \$2.6 billion over five years. That being said, only 9.8 percent of Aboriginal people between the ages of 25 and 64 in Canada have a university degree compared to 26.5 percent of non-Aboriginals of the same age group. We therefore think it is important for the government to commit to increased funding to student financial assistance for Indigenous post-secondary students to enhance educational opportunities and academic success for Indigenous students.

- Create a strategy to attract and retain international students in Canada and recognize international education as one of Canada's top export sectors.
- Grow the next generation of highly skilled innovators by expanding successful research training and internship initiatives such as NSERC CREATE and Mitacs.
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### ***Strengthen knowledge infrastructure***

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Infrastructure is the backbone of innovative research and development and is crucial to training the next generation of researchers and innovators. We were particularly pleased by the Liberal government's new \$2 billion investment over three years in a new Post-Secondary Institutions Strategic Investment Fund (SIF), aimed at modernizing research and commercialization facilities on Canadian campuses, and improving their environmental sustainability. This initiative will allow Canadian students to learn in cutting-edge facilities, where researchers will perform transformative, original research that will lead the economy of the future.

Beyond academia, infrastructure investment provides economic stimulus to communities across Canada. Improving spaces for discovery and innovation will not only create jobs in the months to come, it will fuel prosperity for years to follow. As such, McGill University recommends that the federal Government introduce another phase of SIF to build on its initial success, making Canada's universities more competitive and more sustainable, while strengthening the country's innovation performance.

Physical and digital infrastructure are converging, with the rise of smart buildings, smart campuses and smart cities. Through the Government of Canada's "Digital Canada 150" strategy, researchers have been able to take advantage of opportunities in the digital economy. To further strengthen digital research, Canadian researchers need a network infrastructure to store, share, and analyse digital research data more easily and ensure publicly funded knowledge supports the broader innovation ecosystem in Canada. This digital infrastructure has to go beyond big data to include robotics, simulation and means of communication. Our universities must notably be able to prepare to the 4<sup>th</sup> Industrial Revolution, where the numerical fuses with the physical and the biological, by having the means to give our students such experiences. Digital technologies bring enormous opportunities not just for research, but also to strengthen learning, training and entrepreneurship, and to improve the efficiency of university services, if resources are available to adapt and support these new technologies on Canadian campuses.

#### ***Recommendations:***

- Ensure Canada is equipped with the necessary infrastructure for cutting edge research and innovation, for instance through a second phase to the Strategic Investment Fund (SIF).
- Develop a long-term plan and provide support for digital infrastructure for university research and training, as well as entrepreneurship and innovation support services.