



McGill

**Fostering Invention and
Creativity for a Smarter
Canada**

*Submission made to the House of Commons
Standing Committee on Finance from McGill
University*

Overview

Universities are important contributors to the economic and social well-being of Canadians, driving inquiry and innovation. Universities educate and train the leaders of tomorrow, preparing millions of Canadians for high-quality, high-impact jobs, and build diversity by attracting talent and resources from all around the world. Working with colleagues from academic and research institutions, as well as from industry at home and abroad, university researchers and students make critical discoveries across all sectors of knowledge. These scientific discoveries, new technologies and social innovations are steadily improving the lives of Canadians each day. The talent and knowledge fostered in universities will be the foundation of a more sustainable and resilient economy: one that will strengthen the middle class and provide lower-income Canadians with more opportunities.

McGill University would like to thank the new Government of Canada for recognizing the vital role universities play in creating a skilled and diverse population for Canada. The ingenuity and creativity of these highly educated people will be essential to allow our country to play a leading role in the Fourth Industrial Revolution.

In this submission, we strongly recommend that the Government maintain this momentum by sustaining support to the three federal granting councils and making targeted investments in complementary areas, including university infrastructure, research, innovation and entrepreneurship.

Recommendations:

- ✓ **Strengthen university infrastructure**
 - Create a dedicated envelope for universities within stimulus funding for infrastructure, which includes not only physical but also digital infrastructure.
- ✓ **Increase investments in research**
 - Increase the budgets for the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC).
 - Commit to continuing annual funding for the Canada Foundation for Innovation (CFI) in order to create more predictability and stability for research infrastructure investment.
 - Expand the Research Support Fund to cover the full costs of research by funding a minimum of 25 per cent of the direct costs for all universities, and increase the percentage over the years to eventually reach 40 per cent.
- ✓ **Leverage investments in innovation**
 - Stimulate international partnerships by investing in programs that allow Canadian research groups to participate in international consortia.
 - Increase investment in successful research training and internship initiatives through existing programs such as NSERC's Collaborative Research and Training Experience and Mitacs.
 - Expand funding for entrepreneurship and university-community partnerships through new micro-funding programs for student ventures and support for innovation districts where the business and university sectors can interact.

Strengthen university infrastructure

Universities in Canada welcome the newly elected government's proposal to stimulate this nation's economy through investment in infrastructure. Targeted, smart expenditures will increase Canada's productivity and prosperity over the long term.

The education sector is vital for innovation. It has one of the highest rates of multifactor productivity growth of any national sector.¹ Spending on education infrastructure also provides substantial economic impact and a higher return in productivity than many other types of public investments.

- Finance Canada estimated that **expenditure of \$1 billion in public infrastructure had a short-term economic impact of \$1.6 billion**, and created between 8,000 and 36,000 person-years of employment, depending on the project.²
- A recent study analyzed the returns on various types of infrastructure in terms of improved labour productivity for Canada. In the building category, it found that only investment in health, social services and education buildings improved labour productivity. Each dollar invested in educational buildings results in a \$0.56 increase in short-term productivity, with gains being larger over the longer term.³

In addition to physical infrastructure, digital technologies bring enormous opportunities to strengthen learning and research, and to make the delivery of services more efficient and effective. Physical and digital infrastructure are also converging, with the rise of smart buildings, smart campuses and smart cities. Tight budgets and growing demands have made it difficult for higher education to take advantage of these advances, however.

Recommendation:

- Create a dedicated envelope for universities within stimulus funding for infrastructure, which includes not only physical but also digital infrastructure.

¹ <http://www.statcan.gc.ca/pub/11-626-x/2013031/tbl/tbl02-eng.htm>

² *Driving Public Infrastructure, Jobs and Economic Growth*; Canada's Premiers: The Council of the Federation, 2014

³ http://www.competeprosper.ca/work/working_papers/working_paper_22

Increase investments in research

Discovery-driven research is the cornerstone of innovation, and Canada's three federal research-granting councils are the major sources of funding for this crucial research. We recommend increased, untargeted support in the CIHR, NSERC and SSHRC.

At the same time, we recognize the investments made in other programs such as the CFI and the Canada First Research Excellence Fund. The CFI has proven to be a vital asset in attracting and retaining talent in Canada, and in allowing Canadian researchers to lead multinational collaborations. The Foundation, while well supported, has not benefited from a commitment of on-going annual funding, which would allow for predictability and better planning within the research community. We encourage the Government to change the funding model of the CFI to ensure a stable, annual budget to support research infrastructure.

The institutional cost of sustaining high-quality research support – administration and infrastructure – remains a concern for research-intensive universities.

Although Tri-Council funding supports university-based research projects, there is limited federal support for maintaining labs and equipment, as well as paying the administrators needed to support those research projects. The Research Support Fund provides some funding, but the program's current funding level and formula leaves institutions to cover significant costs associated with federal research grants. New investments in the Tri-Council must take steps to close this gap.

Recommendations:

- Increase the budgets for the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC).
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- Expand the Research Support Fund to cover the full costs of research by funding a minimum of 25 per cent of the direct costs for all universities, and increase the percentage over the years to eventually reach 40 per cent.



Leverage Investments in Innovation

Support for Canadian researchers to engage with and participate in international consortia will advance Canada's international influence and effectiveness. The current lack of targeted programs for research activities conducted outside Canada creates barriers to embarking on large-scale, and often game-changing, research initiatives. Breakthrough discoveries in many areas, such as neuroscience and astrophysics, are happening beyond and across national borders and it is essential for Canadian researchers to participate on equal terms 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, the potential of Canadian researchers is not fully realized.

Training and education, while central to the mission of universities, also shape our contributions to society. 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 NSERC's CREATE program, are highly effective in preparing personnel for a full spectrum of jobs across key economic sectors. Students of the "Innovation Generation" crave hands-on work experience. Increased opportunities for internships with industry and community organizations, in particular small and medium enterprises (SMEs), are crucial.

Universities also have an important role in stimulating entrepreneurship and the creation of new enterprises. Incubators and research parks linked to university campuses are recognized components of the innovation ecosystem. More and more, community-based initiatives, or "zones of interaction" are becoming important drivers of knowledge exchange with the community. Students also boost innovation and, when surrounded by adequate support structures, can successfully pursue start-up ventures. One cost-efficient mechanism to support their future endeavours is to fund university-based seed programs that dispense micro-grants for student start-ups.

Recommendations:

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- Increase investment in successful research training and internship initiatives through existing programs such as NSERC CREATE and Mitacs.
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