Investing for Canada's Future Prosperity

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

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Overview

Over the past several years, our country has fared relatively well despite the tumultuous economic times. While the upcoming years must, and will be, a time for fiscal prudence, we nevertheless need to ensure that we continue to fund and to support the institutions and programs that contribute to Canada's prosperity, well-being and competitiveness. Peer countries and emerging economies are investing heavily in education and research, and in order to remain competitive and relevant, Canada must continue to back its top performers and its "stars".

As hubs for research, talent and networks, universities are important contributors to Canadians' economic, health and social well-being. Universities are educating and training students, providing high-quality jobs, and leading in top-flight research and development. Working with colleagues within their institutions, from other universities, and from industry, in Canada and internationally, researchers and students are making amazing discoveries in health, the environment, management, law – the list goes on. These discoveries positively impact of the lives of Canadians every day.

The knowledge economy is the economy of the future, and universities are both employing workers in, and training the future talent necessary for, this economy. Support for university research and training is not an expenditure; it is an investment in Canada's future.

Recommendations:

- ✓ **Providing Opportunities for Talented People**
  - Build on and expand successful internship programs, and create complementary programs to ensure that talented people have access to high quality jobs.
- ✓ **Investing in the Knowledge Economy**
  - Continue to invest in, in a sustained and predictable fashion, the bedrock of research and development in Canada: the federal research granting agencies (SSHRC, NSERC, CIHR), Genome Canada, and the Indirect Costs Program.
- ✓ **Leveraging Investments in Innovation**
  - Continue to support programs, such as the Canada Foundation for Innovation, that have demonstrated added-value and that support Canada's innovation ecosystem.

Providing Opportunities for Talented People

Canada faces a demographic challenge in the years to come; an aging population, combined with a low birth rate, poses a serious challenge to Canadians' quality of life, as our economy struggles to pay for increased demands on health care and social services, with a labour force that is shrinking relative to the our overall population.

In order to maintain, and improve upon, Canadians' quality of life, we must find the means of increasing Canada's prosperity. One way to achieve this is by bolstering the knowledge economy, and increasing the quality of jobs available.

Universities are uniquely placed to contribute to the creation of quality jobs, both as **educators** and as **employers**.

In a recent study, it was estimated that in 2008, McGill University contributed an estimated $924M, annually, towards increased productivity in Quebec through the enhancement of human capital.[1] That is to say, by educating and training students at the undergraduate and graduate levels, McGill increased the value of these students' earning power, which increased their overall productivity. As an employer, the University generated some 13,448 job-years and $59M in Federal Government revenue (through income, sales and other taxes).[2]

Despite these contributions, we can still do better. The Council of Canadian Academies notes that the U.S. economy employs a significantly higher proportion of workers with advanced university degrees, demonstrating the U.S. demand for the most technically advanced skills, and the commitment of U.S. businesses to innovation based on science and technology.[3] In 2006, Canada had higher levels of unemployment rates of doctorate holders by field of science when compared to other countries.[4] A recent Statistic Canada publication concluded that within two years of graduating, "the skill set of doctorate graduates is not being fully utilized as nearly one third of graduates did not require a doctoral degree for the job they were currently doing."[5]

Canada is underutilizing one of its most precious assets – talent. One means of addressing this shortfall is to build on and to expand successful programs – such as the NSERC Industrial Post-Graduate Program – that promote the integration of undergraduate and graduate students, postdoctoral fellows, and even faculty into business and industry. Increasing the flow of people between industry and academe will benefit both sectors – providing university students and researchers with valuable experience and opportunities, and providing companies with increased R&D capacity, access to international research networks, and access to a talented labour pool.

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[1] *McGill University: Driving Excellence and Prosperity in Quebec* (SECOR, 2010), p. 36. http://www.mcgill.ca/community/impact

[2] Ibid., pp. 35-36.

[3] *Innovation and Business Strategy: Why Canada Falls Short* (Council of Canadian Academies, 2009), pp. 60, 62.

[4] *Imagination to Innovation: State of the Nation 2010,* (Science, Technology and Innovation Council, 2011), p. 64.

[5] Desjardins, Louise and Darren King, "Expectations and Labour Market Outcomes of Doctoral Graduates from Canadian Universities," (Statistics Canada, 2011), p. 34.

To further strengthen the opportunities for high quality employment, the Government of Canada could develop new programs that complement existing programs, for example:

- ✓ **Industry Fellowships** (industry coming to work in university labs, providing students with greater opportunities to work closely with corporate partners, leading to entrepreneurship and knowledge transfer on what industry needs and what universities can offer)
- ✓ **Two-year entrepreneurial post doctoral internships** (based on the current post doctoral fellowships)
- ✓ **Internships for undergraduate and graduate students** (that are geared to enhancing R&D in businesses, especially SMEs)

Recommendation:

- ✓ Build on and expand successful internship programs, and create complementary programs – such as internships, industry fellowships and exchanges, for undergraduate and graduate students, post-doctoral fellows and faculty – to ensure that highly qualified personnel have access to high quality jobs.

Investing in the Knowledge Economy

While the Government of Canada must be fiscally prudent, particularly until the national deficit is addressed, we should nonetheless ensure that our country is well placed to respond to opportunities that promote Canada's international competitiveness. To this end, it is important that we continue to support the many elements of the knowledge economy – such as competitively allocated research funding – that are the foundations of Canada's innovation ecosystem.

Canada's three federal granting agencies – **the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC)** – as well as funding organizations such as **Genome Canada**, provide the funding crucial to supporting Canadian research. The importance of basic research cannot be overestimated – it is the fundamental element of discovery and innovation. Among our peer countries, there is general agreement on the need to fund research using the 70-30 ration; that is, 70% funding for basic research, and 30% to applied (or "targeted") research.

The costs of research are multi-layered. In addition to the direct costs of research (e.g. salaries and stipends for research assistants, equipment, supplies, travel, publishing), there are also institutional costs of research, often called indirect costs, which include the costs of maintaining critical supports to research (libraries, computer networks, financial administration); managing the research process (grant applications, administration); maximizing the impact of research (intellectual property management, technology transfer); and ensuring regulatory and safety compliance (ethical review, reporting).

In Canada, the **Indirect Costs Program** provides block funding of the indirect costs of research. Indirect costs are reimbursed at an average rate of 22%[6] of the direct costs of the funding provided through the federal research granting councils. International and domestic studies demonstrate that true indirect costs rates fall in the range of 45% to 60% of direct costs. The shortfall in Canadian funding of the indirect costs of research is approximately $375M per year; universities are using operational funding, intended for supporting teaching, to subsidize the shortfall. While it is unlikely that this deficit can be addressed in the upcoming, restrained budget, the importance of this underfunding, for researchers and students alike, must be noted.

Recommendation:

- ✓ Continue to invest in, in a sustained and predictable fashion, the bedrock of innovation and R&D in Canada: the federal research granting agencies (SSHRC, NSERC, CIHR), Genome Canada, and the Indirect Costs Program.

Leveraging Investments in Innovation

Over the past 15 years, the Government of Canada has invested in numerous seminal and transformative programs, which are uniquely Canadian, and which, separately and collectively, have provided innovative and effective means of supporting cutting-edge research. Such extraordinary programs include the:

- ✓ Canada Foundation for Innovation
- ✓ Canada Research Chairs
- ✓ Vanier Graduate Scholarships
- ✓ Canada Excellence Research Chairs
- ✓ Banting Postdoctoral Fellowships

The **Canada Foundation for Innovation (CFI),** created in 1997, has been crucial in building and supporting the infrastructure necessary for innovative research and development, and for training the next generation of scientists and researchers. Because of the structure of the program, which requires that each dollar from the CFI is matched by other institutions (e.g. provincial governments, universities, private sector), $1.00 invested by the Government of Canada through the CFI has resulted in a net investment of $2.86 in top-flight research infrastructure. The CFI model has been a success. However, as with all infrastructure and technologies, the investment must be constant and sustained.

The CFI is also leveraged against other programs: it is a key component for attracting talent, playing a crucial role on its own, through programs such as the Leaders Opportunity Fund, which allows universities to create competitive packages of research support for existing faculty and incoming faculty (an important recruitment incentive), and in conjunction with the Canada Research Chairs (CRCs) and the Canada Excellence Research Chairs (CERCs).

[6] For 2010-11.

The CRCs, in their own right, have played an important role in attracting international faculty, as well as repatriating Canadian faculty, to Canada's universities. At McGill, since the inception of the CRCs, the University has attracted 586 new professors from outside of Canada, of which 175 are repatriated Canadians. Similarly, the CERCs have allowed universities to recruit 19 internationally renowned researchers to Canada. Without the competitive and cutting-edge infrastructure provided through the CFI, it would not be possible to attract these stellar researchers. To this end, the CFI is an integral part in creating the state of the art infrastructure as well as performing a valuable role in the recruitment and retention of talent to Canada.

Conversely, it is clear that Canada can ill afford to, and should not continue to, support underperforming programs. Reviews, such as the Review of Federal Support to R&D, provide an opportunity to consider the performance of programs, within the context of international benchmarking and best practices. The Report of the Review of Federal Support to R&D is greatly anticipated, and will provide evidence-based guidance that will inform Canada's policies and programs going forward.

Certain programs, such as the Scientific Research and Experimental Development (SR&ED) tax credit, have had their effectiveness questioned in the past years. Canada provides a disproportionate amount of indirect business R&D support, through the SR&ED tax credit, in comparison with peer countries, leading the recent *State of the Nation Report* to conclude that, "although Canada has one of the most generous R&D tax credit programs in the world, Canada is below the OECD average in terms of business expenditures on research and development."[7] An alternative type of support to industry, possibly a business R&D vouchers (such as the Alberta Innovation Voucher Program), could address concerns relating to cash flow issues, innovation incentives and leveraging of funds, especially for SMEs.

Recommendation:

- ✓ Continue to support programs that have demonstrated value and that support Canada's innovation ecosystem, such as the Canada Foundation for Innovation, in a sustained, predictable, and meaningful way; and ensure that under-performing programs and ineffective policies are reviewed and revised as necessary.

In Closing

We must take pride in recognizing and supporting Canada's distinctive strengths, and ensure that we invest in our country's competitive advantages. Our economy cannot afford to support ineffectual programs, but neither can we allow our "winners" to languish, as we risk falling behind other countries – peer and emerging economies – that are expanding their funding to education, science, technology and innovation. Funding for successful programs and models – even in times of economic distress – is not an expenditure but an investment, for today and tomorrow.

[7] *Imagination to Innovation: State of the Nation 2010,* p. 18.