UNIVERSITY OF
TORONTO

Pre-Budget Submission to the House of Commons Standing Committee on Finance

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Executive Summary

Having weathered the global recession, Canada is now one of the top-performing economies in the G7. Forward-looking decisions made by the Government in response to the collapse have been key: both to follow a course of stimulus spending in solidarity with our peers globally, and to subsequently limit spending so that today the country is now on the verge of eliminating its deficit. Canada's long-term approach has fostered our national capacity to withstand adversity and to prosper even as we have adapted to a reconfigured world economy.

Canada's universities are essential partners in ensuring this prosperity continues. University graduates are not only job-ready, they are ready for life-long careers that can adapt to changing needs. University researchers are similarly creating the knowledge not only to address the immediate, specific technical challenges of industrial partners, but also the knowledge that will lead to whole new platforms upon which to build future industries.

The federal government has continued to recognize the role of Canada's universities even in times of spending restraint. The significant commitment to create the Canada First Research Excellence Fund in Budget 2014 is particularly noteworthy as it recognizes the unique potential of research excellence to create long-term economic advantages for Canada.

The University of Toronto recommends the Government of Canada continue to support the talent and innovation that will drive the future economy by:

- Funding growth in the **Granting Councils**' budgets at a rate in line with growth in GDP.
- Providing a multi-year re-investment in the **Canada Foundation for Innovation** at the historical level of the last five years.
- Supporting **experiential learning opportunities** for students and recent graduates.
- Expanding **scholarships for domestic and international graduate students**.

Economic Growth and Prosperity

Universities are creating and attracting the most skilled members of Canada's workforce and the innovations that will ensure the competitiveness of our industries. In today's global and knowledge-based economy, universities have become essential contributors to our prosperity and quality of life.

As Canada's leading research-intensive university, the University of Toronto's contribution to the economy is significant. U of T is a vibrant and diverse community of over 80,000 students and 10,000 faculty across three campuses and partner research hospitals.

The University of Toronto and its affiliated hospitals attract $1.2 billion in research funding annually--the largest amount of any university in Canada. Close to 10% of all R&D conducted by the Canadian higher education sector is performed at U of T. This immense concentration of research creates a critical mass that not only attracts talent, but also investment and high tech businesses. For instance, the University and its partner hospitals anchor Toronto's biomedical industry, which has over 700 companies that employ over 80,000 people, the 3rd largest life sciences cluster in North America.

The University of Toronto's 2015 Federal Budget recommendations directly address the priority themes outlined by the Finance Committee, including economic growth, support for new types of educational opportunities, research and innovation, infrastructure, and jobs.

Increasing Competitiveness Through Innovation and Infrastructure

Research and Innovation Funding

The federal government has consistently recognized the importance of universities to Canada's competitiveness, as demonstrated by the creation of a slate of valuable new programs, including the Knowledge Infrastructure Program, Vanier Graduate Scholarships and Banting Postdoctoral Fellowships. The Government's bold investment in research excellence through the Canada First Research Excellence Fund (CFREF) in Budget 2014 is further evidence of its commitment to innovation. U of T looks forward to working with the Government to ensure CFREF supports research excellence in areas that have long-term advantages for Canada.

In addition, Granting Council funding remains an essential underpinning for university research. Supporting both discovery-based and applied programs, the Granting Councils fund a vast range of research that will continue to have a significant impact on Canada's social and economic well-being and our place in the world.

For instance, the Natural Sciences and Engineering Research Council (NSERC) supports the work of Professor Deepa Kundur of U of T's Department of Electrical & Computer Engineering.

Professor Kundur is an expert in cyber-security who is studying how smarter infrastructure, like smart power grids, creates new vulnerabilities that may be exploited by vandals, local criminals, or even foreign agents. Professor Kundur's work can help ensure that the future exploitation of our highly connected cyber-enabled systems, from energy theft to intentional disruption of high-load transformers, can be avoided.

Similarly, the Social Sciences and Humanities Research Council supports the work of Professor Keren Rice, a Canada Research Chair in Linguistics and Aboriginal Studies and recent appointee to the Order of Canada. Professor Rice, whose scholarship focuses on the Athapaskan languages spoken in Northern Canada, has become one of Canada's foremost experts on language revitalization. Working with First Nations Communities, she pioneered an approach to linguistic research to ensure that scholarship not only documents, but helps to preserve these endangered languages and the values and cultures transmitted through them.

Ongoing investment in the Granting Councils is needed to ensure the momentum of this critical work. The University of Toronto recommends the Government of Canada continue to support essential research by:

- **Funding growth in the Granting Councils' budgets at a rate in line with growth in GDP.**

Research and Innovation Infrastructure

The University of Toronto welcomed the Government of Canada's decision to establish a distinct Innovation category in the new Building Canada Fund, which will support the construction of research laboratories and associated office and library space at post-secondary institutions. This support recognizes the fundamentally economic role of innovation infrastructure, and the pressing need for universities to modernize major science and technology buildings.

This funding, however, does not replicate the Canada Foundation for Innovation (CFI), a cornerstone of Canada's academic research landscape that serves the needs of individual researchers and their collaborators. Universities rely on programs such as the John R. Evans Leaders Fund, which helps cover the costs of foundational infrastructure to recruit and retain researchers with global profile. CFI also supports ambitious partnerships through the Innovation Fund.

For instance, CFI is supporting significant collaboration between U of T and Hitachi High Technology through the Ontario Centre for Characterization of Advanced Materials (OCCAM). Led by Professors Charles Mims and Doug Perovic, the OCCAM project will investigate how researchers can manipulate the atomic and molecular structure and chemistry of materials. The range of potential applications include the development of stronger materials that might one day be used in aircraft and nuclear power plants, and biomedical implants that speed healing without

irritating the wound. As an open access user facility, over 350 different research programs are expected to use OCCAM every year, from both academia and industry, including entrepreneurial spin-offs as well as larger established companies.

The Government's past commitments to CFI will sustain research facilities for the next few years, as competitions unfold and funding is disbursed. However, without an additional commitment in Budget 2015, this funding will soon start to dwindle, particularly after 2017-18 when disbursements will fall by almost $340 million to just 24% of the five-year (2009-2014) historical average. CFI is a pillar of Canadian research, and uncertainty about its long-term funding is a growing concern. A stable funding horizon would help universities to plan better for renewal, to build new capacity, and to retain faculty who are potentially mobile globally.

The University of Toronto recommends that the Government of Canada signal its long-term commitment to state-of-the-art research infrastructure by:

- **Providing a multi-year re-investment in the Canada Foundation for Innovation at the historical level of the last five years.**

Maximizing Opportunities Through Education

New Educational Opportunities

In line with many of the strategies explored in the Standing Committee on Finance's recent report on youth unemployment, the University of Toronto is preparing young adults for lifelong careers, with the skills and hands-on experiences that will allow them to excel in a rapidly changing economy. This includes entrepreneurship training, service learning, co-op and internship placements, and other experiential learning opportunities.

For those students interested in one day starting their own business, the University is expanding its ecosystem of on-campus accelerators and course offerings to introduce increasing numbers of students to the principles of entrepreneurship. U of T now offers over 40 courses with entrepreneurial content, and over 80 new start-up companies have been created in the past five years. In addition, U of T now provides over 100 internship and practicum programs, and funds work-study positions for 2000+ students. Over 50 percent of second and third year students in disciplines such as engineering, computer science and pharmacy participate in project-based professional internships lasting 12-16 months.

These efforts are yielding impressive results. Christina Mueller, who graduated with a PhD in Chemistry this past spring, received extensive business mentorship through U of T's Impact Centre, one of the University's on-campus accelerators. She is now building her company Insight NanoFluidics. Her startup is centred on a plug and play technology that promises to

revolutionize how researchers visualize nanotechnology. For instance, with this technology, researchers will be able to watch a drug interact with a cell in real life, in real time.

Another student who has benefited from experiential learning is Bushra Joarder, a recent graduate of the Human Biology program. She found a co-curricular opportunity to mentor local youth from underprivileged communities, while also serving on the board of directors of the University of Toronto Scarborough (UTSC) Women's Centre and as Vice-President of UNICEF UTSC. Ms. Joarder is enrolling in medical school this fall.

To help students capture and document their non-academic skills and experiences, the University introduced the Co-Curricular Record in 2013. Developed in tandem with a searchable database that helps students find experiential learning opportunities beyond the classroom, the Co-Curricular Record functions as a companion to a student's official transcript, documenting their participation in non-curricular activities, recording how these develop specific competencies, and allowing students to showcase their potential contributions and skills to employers. It also helps students see how they can use these activities to their advantage in the job market.

Student demand for these new types of educational opportunities will continue to grow, and U of T will continue to expand its range of programs. The University of Toronto recommends the Government of Canada help young Canadians get a head start on their careers by:

- **Supporting experiential learning opportunities for students and recent graduates through:**
  - **Funding to support co-curricular and work placement opportunities.**
  - **Funding to support research and entrepreneurship internships and fellowships.**

International Opportunities

The Government's recent International Education Strategy clearly outlines the economic and social benefits of increasing support for international education. The University of Toronto applauds the recently announced Canadian Queen Elizabeth II Diamond Jubilee Scholarships. This is a terrific program of support for student mobility within the Commonwealth, for both outbound Canadians and inbound international students, that deserves to be expanded.

Universities play an important role in attracting talent to Canada. Research-intensive universities in particular have the potential to attract and develop the world's very best and brightest graduate students—exactly those individuals Canada needs to build globally connected industries that will thrive in the twenty-first century.

International students earning Canadian credentials will encounter far fewer labour market barriers to gainful employment in Canada than would be the case if they were to immigrate to

Canada following completion of their degrees. As for those students who return home after their studies, they bring with them lifelong connections that bind them to Canada. As noted recently by the Canadian Council of Chief Executives, "international education is fast becoming a valuable tool in trade, development aid, and diplomacy."

Canadian students likewise greatly benefit from international experiences over the course of their studies. This early international experience instils a more sophisticated understanding of foreign milieus in these young Canadians, which over the longer term will allow them to operate more effectively in a global business environment.

The University of Toronto recommends the Government of Canada broaden its support for internationally outbound and inbound students by:

- **Expanding scholarships for domestic and international graduate students**.