THE UNIVERSITY OF BRITISH COLUMBIA

Submission to the House of Commons Standing Committee on Finance

4 August 2016

The University of British Columbia

Introduction

The University of British Columbia welcomes the opportunity to take part in the Standing Committee on Finance's Pre-Budget Consultations in Advance of the 2017 Budget. The Committee has framed this year's consultations on growing an environmentally sustainable and socially equitable economy. UBC's submission asserts that to thrive in the global economy, Canada must continue to invest in education, research, and innovation. In doing so, government and its partners must be guided by the principles of access and excellence to ensure that investments provide all Canadians with the opportunity to thrive, and that they are made in areas that amplify Canada's strengths.

Successive federal and provincial investments in university learning, research, and infrastructure have transformed UBC from a small provincial institution into Canada's second-largest and second-highest ranked university. UBC stands among the world's best research institutions thanks to the federal government's support for the research granting councils, the Canada Foundation for Innovation, and important initiatives like the Canada First Research Excellence Fund and, most recently, the Post-Secondary Institutions Strategic Investment Fund. UBC is now ranked 6th among public universities in North America and carries out approximately $540 million in sponsored research per year. Spread over two large campuses in Vancouver and Kelowna and sites throughout British Columbia, UBC has a diverse and internationally-connected student population of 60,000, and our graduates join a 300,000-strong community of alumni located in 120 countries.

It is an exciting time to be part of the research and innovation sector in Canada. A renewed commitment to science and evidence-based policy-making has invigorated the research community. Announced in Budget 2016, the Review of Federal Support for Fundamental Science and consultations on a national Innovation Agenda have mobilized the full spectrum of the university enterprise including students, faculty, administrators, and our industry and community partners. These consultations build on a heightened focus on the Canadian innovation ecosystem by the federal government in recent years. The university, along with the post-secondary sector, has been actively engaged in these discussions and looks forward to informing and continuing to play a vital role in building a modern and competitive Canadian knowledge economy.

Recommendations

While UBC expects to work closely with government on new measures as part of the science review and development of the Innovation Agenda through the remainder of the year, the university puts forward the following recommendations for the Committee's consideration:

1. Continue to enhance the foundation of research and innovation in Canada by increasing support for unfettered fundamental and applied research under the granting councils.
2. Ensure international research funding forms a key pillar of Canada's global engagement by reviewing granting council policies as they relate to funding for international partnerships to introduce greater flexibility in cross-border research endeavours.
3. Support the development of innovative economic clusters by a) ensuring Canadian universities can carry out vital functions such as research commercialization by committing that no institution receives less than 25% from the Research Support Fund on top of research grants; and b) renewing funding programs, like CFREF, that provide critical support to globally competitive clusters.

Canada's three research granting councils form the backbone of the country's research ecosystem; they support a full range of research that is essential to economic prosperity, international competiveness, sustainability, and the capacity to address pressing issues facing society.

Federal investments in higher education research and development (R&D) are particularly important in Canada because the sector is responsible for more than 40 per cent of gross domestic expenditure on R&D (GERD), compared to an average of less than 18 per cent across OECD countries (2014).

Higher education expenditures on R&D (HERD) have helped to offset lacklustre business expenditure on R&D (BERD)—Canadian BERD falls well below the OECD average and lags major competitors such as the United States, the United Kingdom, Germany, and Australia. But even Canada's HERD intensity has stagnated while other countries have increased their spending significantly.

Overall, Canada's R&D intensity (GERD as percentage of GDP) has steadily declined from a high of 2.03 in 2001 to 1.61 in 2014, a 20 per cent decline and well behind the OECD average of 2.38. Meanwhile, comparator countries like Germany have pressed ahead, achieving intensities of 2.9 in 2014, and historically R&D-intensive countries like Korea, Israel, and Japan continue to lead with 4.29, 4.11, and 3.59, respectively.

In the absence of strong Canadian private sector spending on R&D, federal investments in the granting councils, as well as in other research granting bodies such as the Canada Foundation for Innovation and Genome Canada, have buoyed the Canadian research enterprise, positioning Canadian institutions among the world's best and enabling them to conduct vital R&D. While measures to increase private sector R&D will rightly be examined as part of the Innovation Agenda, Canada must continue to invest through the granting councils in its current strength, its world-class research university sector, or it risks a further decline in overall R&D intensity and a corresponding decline in Canada's economic competiveness.

Budget 2016 signalled a renewed dedication to research through a significant boost to Canadian research infrastructure and welcome relief from a prolonged period of sub-inflationary funding growth for the granting councils. Canada must maintain globally competitive levels of investment in university research to ensure that researchers can conduct the work that underpins Canadian innovation, and that Canada develops and attracts the early- and mid-career researchers who will sustain our national capacity to discover and innovate.

Recommendation #1

Continue to enhance the foundation of research and innovation in Canada by further increasing support for unfettered fundamental and applied research under the federal granting councils.

High-quality research is not an isolated endeavour. Our ability to address the most pressing challenges requires researchers to work together across disciplines and borders and beyond academia.

Canada's international competitors view research as an important tool in international engagement. And while Canada has taken initial steps in this regard through cross-border initiatives such as the Canada-China Joint Committee on Science, Technology and Innovation Cooperation, there is little to no funding available to properly advance this work. All too often, institutions are asked to redirect discretionary resources to these efforts, resulting in under-resourced and underdeveloped partnerships and a weakened international reputation for Canada and its institutions.

For example, UBC entered into a partnership with Germany's acclaimed Fraunhofer Society to advance clean energy research in 2013. Fraunhofer has more than 60 institutes and 21,000 employees across Germany and is well known for its extensive expertise in commercialization, industry partnerships and applied research. The three-year agreement with UBC supports collaboration on biomass-to-energy conversion, fuel cell and hydrogen technologies, wind turbine manufacturing, electrolysis, and industrial aspects of solar cell technology. Unfortunately, the partnership was significantly hampered by the lack of any government support.

Though the Fraunhofer partnership has ultimately succeeded, this collaboration could have been far more impactful with the additional support of the federal government. Moreover, numerous attempts at establishing international partnerships at UBC have floundered or failed completely without the necessary funding.

On many fronts—clean energy, HIV-AIDS, and sustainable agriculture, to name a few—Canada's international engagement requires a research component to truly effect change and bolster global cooperation in meaningful ways. To support global science excellence and build world-leading partnerships, the federal government should review its current approach to international research partnerships within the context of Canada's global affairs.

Recommendation #2

Ensure international research funding forms a key pillar of Canada's global engagement. Review granting council policies as they relate to funding for international partnerships to introduce greater flexibility in cross-border research endeavours.

UBC agrees with government's direction of supporting established and emerging clusters of excellence throughout the country to help drive economic growth. As the government develops its Innovation Agenda, we suggest that clusters not be defined strictly by geography, as many areas of Canada's global strength are based on networks of Canadian companies and research institutions in multiple locations, such as in quantum technologies and life sciences.

Canada's leading post-secondary institutions are integral components of successful innovation clusters. Such clusters form through symbiotic relationships between institutions, companies, non-profit agencies, and government partners. These various partners feed each other's needs and successes through a virtuous exchange of talent, new knowledge, innovations, and capital. Government's support for Canada's higher education R&D system allows universities to play essential roles in building innovation clusters.

To directly support clusters of excellence, UBC recommends Canada bolster two critical levers: the Research Support Fund (RSF) and the Canada First Research Excellence Fund.

The RSF helps Canadian research institutions cover expenses associated with research that are not paid by federal research grants—the administrative, regulatory and operational scaffolding without which cutting edge research could not take place. The RSF also supports technology transfer and commercialization activity such as patenting and intellectual property protection, technology licensing, industrial research partnerships, and supports for venture creation through entrepreneurship programs.

Currently, the RSF averages only approximately 20 per cent of direct costs beyond tri-council research grants. Counter-intuitively, the program provides much lower rates of funding to those universities with a successful track record in obtaining research funding; the universities that conduct the most research have the largest funding shortfalls.

By comparison, in the United States, universities work with the government to set an overall percentage of costs that can be reimbursed. Rates are often above 50 per cent and rise to as high as 63 per cent.

Agreeing to a base rate of support under the RSF would be an important first step in supporting cluster development, enabling universities to ramp up important knowledge mobilization functions and compete with leading institutions in nations that provide higher levels of support for these costs.

The second lever is the recently implemented Canada First Research Excellence Fund (CFREF)—a fund designed to propel globally significant Canadian research clusters. At UBC, the fund has required us to identify areas where we believe we can achieve a globally competitive advantage. CFREF has spurred UBC and other institutions to further improve the global standing and impact of their strongest research programs, as well as to develop relevant metrics to measure progress.

If the fund continues to be applied as initially designed, it will nurture high-impact research and innovation clusters across the country, benefitting not only recipient universities but also regional partners in academia and the private sector.

Finally, and specific to UBC and metropolitan Vancouver's economy, accelerating the completion of a rapid transit connection to the university, rather than building it in phases over decades, would help

deepen the connections between the university and Vancouver's technology and life sciences clusters while also helping address severe road and transit system congestion that costs the regional economy over $1 billion each year.

Recommendation #3

Support the development of innovative economic clusters by a) ensuring Canadian universities can compete with global competitors and carry out vital functions such as research commercialization by committing that no institution receives less than 25% from the Research Support Fund on top of research grants; and b) renewing CFREF which provides critical support to globally competitive clusters.

Conclusion

While UBC has focused on elements of federal support for research in this submission, the Government of Canada and the nation's post-secondary institutions also play the vital, broader role of educating and cultivating the talents of Canada's greatest resource, its people.

Working with government and post-secondary sector partners ahead of Budget 2017, we hope to develop programs that will increase Canadian students' international and global competencies by supporting their international mobility, and on means of significantly increasing work-integrated learning opportunities (such as co-op placements and internships) for Canadian students.

Finally, building on the Government of Canada's commitments to the educational success of indigenous peoples in Budget 2016, UBC is supporting the university sector's work with government on measures to vastly improve the accessibility of post-secondary education for indigenous students.