



Submission to the House of Commons Standing
Committee on Finance

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Established in 2011, ACCRU brings together small- and medium-sized comprehensive universities from across Canada, aims to identify best practices, to encourage collaborative research and to act as a voice for communications on research and scholarly issues important to its members with research funding agencies, policy makers, and the public at large. ACCRU promotes, as a fundamental principle of research policy, the importance to support research in all Canadian universities irrespective of size or location.

The Alliance of Comprehensive Canadian Research Universities (ACCRU) welcomes the opportunity to contribute to the House of Commons Standing Committee on Finance's pre-budget consultations leading to Canada's 2018 budget.

ACCRU believes firmly that innovation is the main driver of long-term economic growth and productivity. In a knowledge-based economy, innovation is deeply rooted in research, both priority-driven and fundamental, and in the availability of highly qualified personnel (HQP).

1. An appropriate balance between priority-driven and fundamental research

Canada's Fundamental Science Review Committee (CFSRC)ⁱ commissioned by Minister Kristy Duncan, released their report in April 2017. It assessed the state of Canada's research ecosystem and underlined the slow erosion of Canada's fundamental research capacity due to an overemphasis over the past decade towards priority-driven research funding. New funding programs were launched that targeted specific areas with significant investments (eg. CERC and CFREF). These benefited few researchers in a small select group of universities, leading to a large concentration of research dollars in few hands and limited research areas. Contrary to the assumption that these large grants were a better strategy towards large discoveries, scientific impact does not increase as a function of grant size¹ In fact, the opposite proves true² "Impact is generally a decelerating function of funding. Impact per dollar was therefore lower for large grant-holders."³ Furthermore, this strategy penalizes younger researchers, women and those from less traditional pathways. The focus of Canada's innovation strategy requires a reorientation towards more fundamental research investments in order to support a

¹ Abt, H. (2007) 'The Publication rate of Scientific Papers Depends Only on the Number of Scientists', *Scientometrics*, 73/3: 281–8.

² Mongeon, P. Brodeur C., Beaudry, C. Larivière V. (2016) Concentration of research funding leads to decreasing marginal returns, *Research Evaluation*, 1–9.

³ Fortin J-M, Currie DJ (2013) Big Science vs. Little Science: How Scientific Impact Scales with Funding. *PLoS ONE* 8(6): e65263. doi:10.1371/ journal.pone.0065263;

large and diversified research portfolio that will be more equitable, inclusive and productive. In line with the recommendation found in the CFSRC report, ACCRU supports evaluating the outcomes of the CFREF and CERC programs before launching any other such initiatives.

A significant reinvestment in fundamental research will allow all universities to contribute fully to the economic, social and cultural enhancement of their community. Canada competes with jurisdictions of comparable geographic size with far more universities. In fact, Canada has to count on every researcher available to foster discovery. Increased fundamental research investments, accessible to all universities through peer-reviewed processes, ensure that all post-secondary institutions can offer a vibrant learning and research environment to their students – from the undergraduate level up to postdoctoral studies.

2. Providing the needed conditions to increase the number of HQP

The proportion of our young adult population⁴ holding a university degree determines our capacity to be responsive to innovation and adaptable to our ever-changing worldⁱⁱ. Moreover, each added year of education to the national average adds 4% to 7% to the GDPⁱⁱⁱ. Fundamental research investments play a crucial role in developing this capacity by devoting an average of 50% of all research grants to students. Learning and mastering research skills and techniques is a prerequisite for building the nation of creators and innovators that Canada needs in order to succeed in a global economy.

Canada's competitive advantage compared to other countries is eroding quickly in this regard. In 2014, 22% of the Canadian population aged between 55-64 years old held a university degree^{iv}. In this age group, Canada ranks 14 out of 35 OCDE countries; 5% above the OCDE average. In comparison, 34% of Canada's population aged between 25-34 years old holds a university degree. While the younger generation seems to have improved compared to the older one, this younger generation, ranks 21 out of 35 and lags the best performing OCDE countries by 14%. In the face of this challenge, developing the potential of young Canadians should be a top priority. With increased provincial investments in university education, the Canadian government must follow suit and support fundamental research in all universities in order to increase the capacity to educate more students at all levels.

ACCRU recommend restoring to 70:30 the ratio between fundamental and priority-driven research. A phased-in investment of \$485 million over a four-year period directed to funding investigator-led research across each granting council will achieve this goal.

⁴ Aged 25-34 years old.

3. Developing and maintaining research infrastructures in all institutions.

In order to attract and retain top faculty and researchers, to offer students the appropriate learning and research environments, each institution, independent of size and location, needs adequate research equipment and appropriate infrastructure. Maintaining a balance between funds available to acquire new infrastructure and operating funds to cover their ongoing use is crucial. Currently, several universities are struggling to cover the growing costs of their infrastructures.

ACCRU recommends providing CFI with a permanent budget, commensurate with its recent annual levels, to allow better planning between acquisition and maintenance.

In conclusion, in order to maintain its global competitiveness, to be more productive and to contribute towards its economy, Canada needs to increase its HQP and count on all its researchers and universities in order to reach its objectives. Canada benefits from research and research-led education arising from all its postsecondary institutions, a large ecosystem composed of small, primarily undergraduate institutions, specialized schools, mid-sized and large comprehensive institutions. Each of these institutions is an intrinsic part of its community and helps these communities partake in today's global world. Indeed, the capacity to support the ongoing development of research and to foster future innovations requires a significant investment in fundamental research accessible to all.

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ⁱ [http://www.examenscience.ca/eic/site/059.nsf/vwapj/ExamenDuSoutienScience_avril2017-rv.pdf/\\$file/ExamenDuSoutienScience_avril2017-rv.pdf](http://www.examenscience.ca/eic/site/059.nsf/vwapj/ExamenDuSoutienScience_avril2017-rv.pdf/$file/ExamenDuSoutienScience_avril2017-rv.pdf) (page xi)

ⁱⁱ <http://cpp.hec.ca/wp-content/uploads/2017/03/PP-2016-06.pdf> (page 19)

ⁱⁱⁱ LÉONARD, André (2014), « La productivité au Canada : Concepts et enjeux ». Bibliothèque du Parlement, Ottawa, Canada. <https://lop.parl.ca/Content/LOP/ResearchPublications/2014-84-f.html?cat=economics#a3> et NICHOLSON, Peter J. « De la Croissance : Rendement et perspectives économiques à long terme du Canada », Observatoire économique de la productivité, no 7, automne 2003, tableau 3.

^{iv} Diplôme de grade License (baccalauréat), Maîtrise ou Doctorat