Canadian Government Pre-Budget Consultation in Advance of the 2019 Budget

SUBMITTED TO THE STANDING COMMITTEE ON FINANCE OF THE HOUSE OF COMMONS

Alliance of Canadian Comprehensive Research Universities – ACCRU

List of recommendations

- **RECOMMENDATION #1: SUPPORT NEXT GENERATION IN ACQUIRING THE SKILLS REQUIRED BY THE KNOWLEDGE ECONOMY –** by providing Canada's granting Councils (SSHRC, CIHR and NSERC) with a budget to award or enhance Undergraduate Student Research Awards in all disciplines;
  AND
  - by providing MITACS with the necessary budget to open its Accelerate internships to applications from undergraduate students who are currently excluded from the program.
- **RECOMMENDATION #2: STIMULATE INNOVATION AND GROWTH ACROSS CANADA BY STRENGTHENING DIVERSITY, EQUITY AND INCLUSION –** by providing financial incentives and enhancing the federal government's requirements for equity, diversity and inclusion in the distribution of Canadian granting agency (SSHRC, NSERC, CIHR) award budgets to include, among the target groups, faculty and students and trainees working in small and medium-sized institutions or located in regions or communities outside major Canadian urban centres.
- **RECOMMENDATION #3: STRENGTHEN UNIVERSITY RESEARCH ENVIRONMENTS -** by increasing the amounts allocated to the Research Support Fund program to align with the Naylor report.

Budget 2018 is clear:

"Everyone—from junior researchers to veteran scientists to the CEOs of the companies whose businesses are leading the way in innovation— has a role to play in building Canada's future economy. So too does government. Investing in the people and projects that will change our world for the better is not just the right thing to do, it's the smart thing to do for Canada's economy"[1].

Canada's research and innovation ecosystem has benefited from recent historic investments that ACCRU, like the vast majority of players in higher education and research, have warmly welcomed. In this submission, ACCRU wishes to highlight some dimensions of Canada's training and research ecosystem for consideration in Budget 2018 that have tremendous potential for the country's competitiveness.

[1] https://www.budget.gc.ca/2018/docs/plan/budget-2018-en.pdf, page 82

1. Support the next generation in acquiring the skills required by the knowledge economy

« Skills have become the global currency of the 21st century"[2]

Today's and tomorrow's economy is based on knowledge. At the intersection of knowledge and productivity, highly skilled people are the most valuable resource in this economy. These people are expected to be creative, to approach currently unforeseen problems with confidence that we do not yet see, to base their decisions on evidence and to be able to discriminate between different sources of information. The next generation must not only be able to use existing global stocks of knowledge, but also be capable of generating new knowledge, new technologies or new processes that are an integral part of productive activities.

The skills that this implies are acquired through initiatives that place emphasis on student research and training, as well as efforts to place our students at the heart of complex research dialogues. The role of our universities in ongoig efforts to develop skills for the knowledge economy is therefore crucial. The higher education system must train all students (not just those destined for academic careers), to engage as much in the production of knowledge as well as in its acquisition[3] and use in the knowledge economy.

However, compared to OECD member countries, Canada's proportion of university degree holders (B, M, D) among persons from the 25-34 age bracket is only 34%, well below the OECD average and far from leaders (46%). Similarly, only 9% of Canadians in this age group have a master's or doctorate, a worrying gap compared to the OECD average of 14%[4]. As a result, the current pool of young Canadians capable of meeting the challenges of our knowledge economy is limited and we are producing less university training than competing economies.

To address these gaps and enhance Canada's competitiveness, there is an urgent need to renew our commitment to undergraduate students and, at the same time, raise the level and quality of university education. Placing increased and more pervasive emphasis on research at the undergraduate level has been identified as a high impact education practice. Research generates numerous positive outcomes for undergraduate students, which have been documented at length by the US-based Council for Undergraduate Research. It is one of the most effective means, moreover, for facilitating the inclusion of marginalized students within undergraduate programs. To this end, increasing our training/educating in - and through - undergraduate research is the way forward for Canada. It enhances the qualifications of bachelor's graduates by equipping them with the skills required by the knowledge economy and stimulates the desire to pursue scientific education and skill development in graduate research. It also provides an intimate linkage between universities and the communities and industries they serve. This is especially true for smaller communities where the university is frequently the hub of the knowledge economy. The data clearly identifies the importance of vibrant post-secondary institutions as a basis for the driver for small and large business ventures as well as the attraction and recruitment of new Canadians into these communities. While this is also true of our largest cities, it is more acute in our smaller centres.

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[2] http://www.oecd.org/fr/education/apprendre-au-dela-de-l-ecole/

[3] https://www.mq.edu.au/lih/altc/ug_research/why_engage.htm

[4] https://read.oecd-ilibrary.org/education/education-at-a-glance-2016/canada_eag-2016-45-en#page2

In Canada undergraduate students currently are provided with very limited opportunities to receive research training and participate meaningfully in the types of research that would allow them to contribute to the creation of knowledge, technologies or processes. Canada lags[5] considerably behind comparable countries, such as, Australia[6], the United States[7] or Great Britain[8] where many undergraduate programs are based in whole or in part on a research curriculum.

Recommendation #1 of the ACCRU is an essential initial step. In addition to contributing to Canada's economic interests, these investments would help offset two current inequities: one towards undergraduate students in general in the case of MITACS, and one towards undergraduate students in social sciences and humanities research, and the health sciences in the case of the granting councils.

2. Stimulate innovation and growth across Canada by strengthening equity, diversity and inclusion.

The principles of equity, diversity and inclusion in Canada's research investments set out in the most recent federal budget are undeniably a step towards a research ecosystem that can draw on the full range of its talents. To achieve this objective, however, the ACCRU member universities continue to observe the persistence of significant imbalance with respect to the representation of small and medium-sized universities in the distribution of federal research funding. The Institutional Programs Secretariat has described the nature of institutional biases that can influence the judgement of peer review committees, a problem that has also been the focus of recent research[9].

Often affecting small- and medium-size or regionally located institutions, or institutions of perceived lower quality/reputation, these biases are also reflected in the very formulation of funding opportunities. Certain research program requirements can effectively exclude researchers or applications from many smaller or regionally located universities. As a result, the 85 or so Canadian universities that host **56% of students (including international students) at all university levels** receive only 26% of the total funding awarded by the three Tri-Agency funding Councils and the CFI, 15% of funding awarded from the Canada First Research Excellence Fund program and 8% of funding awarded from CERCs. This disparity obviously has not only an impact on individual institutions ability to compete in the domestic and global knowledge economies, to attract and retain excellent researchers capable of training diverse students across Canada, and it also has an impact on the communities in which our universities seek to be economic and multicultural drivers. New Canadians are attracted to vibrant universities with active research communities and outreach; enhanced investments will help make all of our universities attractive destinations for international students, their families, and their trade.

For the clear majority of these research funding awarded to universities, research teams or individual researchers, a significant portion (normally up to 50%) of the funds are earmarked for scholarships or salaries for students and postdoctoral fellows. Thus, the Canadian research funding

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[5] MIT has had an undergraduate research training program since 1969, and an American association (CUR.org) of over 300 higher education institutions offering undergraduate research training opportunities has existed since 1979.

[6] https://www.mq.edu.au/lih/altc/ug_research/index.htm

[7] https://www.cur.org/

[8] http://www.bcur.org/

[9] http://www.chairs-chaires.gc.ca/program-programme/equity-equite/bias/module-fra.pdf

system creates inequitable opportunities for research AND trainees depending on the institution where they are located, and as a consequence, Canada remains unable to mobilize its entire university research community in support of for innovation and the country's economic development.

Many OECD studies have shown that innovation is the main source of growth and specifics measures are required for reducing gaps between regions.[10]

Ongoing research inequities towards researchers from small- and medium-sized institutions, similarly to widly documented research inequities for women, persons of disability, Indigenous researchers, visible minorities, unduly penalize researchers and students who are fully able to contribute to the social, cultural and economic development of their communities.

ACCRU **Recommendation #2** will contribute to harnessing all of Canada's strengths for enhancing social and economic development across all regions of the country.

3. Strengthen university research environments by adjusting the thresholds for calculating the Research Support Fund grants

The funding of research infrastructure and administration costs – the so-called indirect costs of research, in addition to covering current expenditures, has the potential to generate a fundamental leveraging effect for the Canadian economy. "Without adequate funding for the indirect costs of research, efforts to maintain a competitive and high-quality research environment in Canada could be in vain, even as global competition becomes increasingly fierce. Universities would be forced to limit their investments, thereby reducing the productivity of their researchers..."[11]. In a context of transition to a knowledge-based economy, maintaining and developing research capacity across the country is a strategic economic issue. However, in all academic institutions in Canada, the gap is widening between the costs of facilities and administration on the one hand and the grant offered under the Research Support Fund (RSF) on the other.

Indeed, the university scientific research ecosystem has evolved significantly, resulting in continuous cost increases that are proportionally larger than increases in RSF grants. Among the factors contributing most to increases in infrastructure and administration costs:

- increased infrastructure operating costs;
- the need to continually upgrade the technology required to operate highly sophisticated facilities and equipment;
- tightening regulatory provisions in many areas inherent to research: reporting, ethics, laboratory safety, occupational health and safety guidelines, animal care protocols, etc.;
- varied and increasing requirements (financial management, ethics, electronic data warehousing), information technology and reporting costs, and overall research management costs;
- the increasing complexity of research structures funded by Canadian granting agencies, for example, team grants, which are costlier to manage[12].

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[10] http://www.oecd.org/regional/regional-policy/regionalinnovation.htm

[11] https://www.caubo.ca/wp-content/uploads/2016/03/Les-couts-indirects-de-la-recherche-FINAL-FR.pdf (p.3) – ACCRUS's translation.

[12] Same as above

In the case of several institutions whose direct eligible costs are very high (from $30M to $220M), it is generally possible - to a certain extent - to pool the human, material and financial resources covered by the RSF grant. At the other extreme, academic institutions with much lower direct eligible costs ($50K and $7M) have extremely limited capacity to pool grants to cover indirect costs.

Since 2000, the funding provided to institutions to cover these infrastructure and administrative indirect costs is based on a formula combining fixed thresholds and reimbursement rates covering the first $7 million of eligible direct research costs. Direct funding in excess of $7M is funded at a rate based on the balance of the RSF envelope.

This formula takes into consideration the limited capacity of small institutions in pooling resources and provides them with a minimum support for covering basic costs of a research environment. Like our income tax provisions, it is a progressive system. However, research infrastructure and administration costs have significantly increased since 2000, and these thresholds have not been adjusted consequently.

This is the reason why ACCRU's recommendation #3 proposes that the Federal Government increase the amounts allocated to the Research Support Fund program to reach levels supported by the Naylor report and Universities Canada as well as taking into consideration the cost of inflation since 2000. This investment will provide a high rate of return in skill development, international attractiveness, and engaged society.