

Opinion

Budget 2018: a litmus test for the future of Canadian research

Restoring Canada's international prominence in research will take several years of steadily increasing investment, ongoing improvements in governance, and steadfast leadership by the Government of Canada. But the rebuilding process must start now with the 2018 budget. The success of Canada's young researchers—vital to our country's future prosperity—depends upon it.

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Canada needs research and the people who practise it. From 2006 to 2015, however, federal government erosion of support for independent research nearly hamstrung the community's capacity to meet these needs. Research grants faded away. As Canada tries to build a knowledge-based economy, the demand for bright, creative minds with cutting-edge skills is growing rapidly. At the same time, early career researchers who have spent years honing those skills increasingly find that the only way for them to pursue their dreams is to take their ideas elsewhere.

Minister of Science Kirsty Duncan convened a panel of Canadian research leaders from every sector to assess this situation and suggest solutions. The Fundamental Science Review (FSR) is the first report of its kind in a generation and it urgently recommends reinvestment in academic research. An independent analysis of fundamental research released this summer by Canadian researchers and published by the Global Young Academy (GYA) drew a similar conclusion: over the Harper years, research support for social sciences and humanities declined by 30 per

cent and science, medical, and engineering research funding declined by 35 per cent.

If funding were to be restored, it makes sense that accountability must also be strengthened. Fortunately, since these reports were released, the government has been working actively to improve the administration and governance of Canada's research granting councils, the main conduits for research funding to researchers. The stage is set now for reinvestment, and hopes are high for budget 2018.

We bridge generations, disciplines, and perspectives from the FSR and GYA reports—and we too have high hopes. But hope reflects only the possibility of a good outcome, not a guarantee. Here's why we're still worried and why many of our younger colleagues are losing sleep.

1. The foundations have crumbled.

Investigator-led grants at Canada's health, natural sciences and engineering, and social sciences research councils are the foundation of Canadian discovery and future innovation. These grants—awarded only to excellent research proposals after rigorous peer review—fund discoveries in every kind of research endeavour and help train the next generation of Canadian innovators. In the natural sciences, engineering, social sciences and humanities, more than 50 per cent of these funds are used for small stipends that enable graduate students to get by as they complete their training. Since the average grant in these disciplines is less than \$40,000 a year, the remaining funds are often insufficient to cover the core operating costs of research, like equipment and materials.

Indeed, our reports show that the hole in science budgets from the Harper years for these core grants alone is around \$500-million per year. Canada's total investments in R&D now sit at just 1.6 per cent of our GDP, well below both the G7 and OECD averages. The U.S. is well above us at 2.8 per cent.

2. There's lots of good will, but nowhere near enough money. Canadians value scientific discovery and research in all its forms, as demonstrated in recent polling by Universities Canada. Our prime minister says that his is "a government of science," placing a premium on evidence for policy-making. We admire those sentiments. And we're grateful for the progress made in budget 2016, when \$76-million was reinvested in the research councils' annual budgets and another \$19-million for institutional research support. However, that down payment accounts for less than 15 per cent of the accumulated research deficit in core operating grants alone. As the FSR report showed, many other elements in the research ecosystem were flat-lined or cut during a decade of neglect.

The result has been a steady decline in the Government of Canada's share of research spending at universities, institutes, and academic hospitals. Less than \$1 out of \$4 spent comes from the federal government—making Canada a very low outlier in comparison to the vast majority of industrialized nations. Meanwhile, other governments are investing heavily in R&D, and Canada is falling further behind. It's essential and urgent for the federal government to back up their encouraging words with serious reinvestment in research. Only with several years of significant increases to the base budgets of the research councils can Canadian research become competitive again on the world-stage. Only then

will the up-and-coming generation of young researchers have a fair shot at succeeding.

3. Shoring up research councils isn't glamorous. Governments of all stripes love new initiatives—the shiny objects that generate media buzz and make it easier to distinguish their track records from the opposition. If governments flow enough money to a new research initiative, it will generate neat things that give governments brief bragging rights. But such "boutique" research programs funnel limited resources into a tiny number of star researchers and facilities embedded in research ecosystems that are still starving for support. The allure of spinning out new programs has distracted successive governments over the years from the less glamorous but vital task of making sure the foundations for Canadian research are sound.

When it comes to building foundations, there is no substitute for the core work of Canada's granting councils. The councils ensure funding is directed to excellent research programs and high-quality training of the next generation. They support the coal-face of research, education, and training, ensuring that hundreds of thousands of students at our universities graduate with an understanding of how scientific and scholarly methods are used to solve hard problems. That skill underpins innovation in every facet of our society.

4. Research is hard to do and harder to explain. We are fortunate on two counts. The Government appointed an outstanding researcher, Dr. Mona Nemer, as Canada's chief science adviser. And the cabinet includes ministers who have been leaders in research and scholarship, not least Minister of Science Duncan herself. However, decisions about reinvesting in science will require support from more than just a few cabinet champions. Most government decision-makers have never held a research grant, trained students, or published research.

Without first-hand experience in research, it's harder for ministers and MPs alike to understand the damage done by previous government decisions or the desperation that young researchers in particular are now feeling. Desperation is the operative word. For instance, success rates for open competitions at the Canadian Institutes of Health Research are now only 14 per cent, half what they were a decade ago. Among the CIHR grant proposals ranked as "excellent" by peer review panels, almost half go completely unfunded. Canada's best and brightest health researchers are left wondering whether they're writing research grants or buying lottery tickets.

The good news is that Canadian researchers are working harder than ever to help government decision-makers and the general public understand that research provides extraordinary benefits and inspiration for Canadians. Many Canadian researchers have turned out to be gifted communicators and passionate champions for their research missions. And Duncan and Nemer have been doing their part, taking Minister of Finance Bill Morneau on a tour of research labs at the University of Ottawa just this week.

In sum, the evidence for a massive and damaging shortfall in research funding is clear, and so is the way forward. The public believes in the value of research, and we have growing confidence that the challenges confronting researchers—and the benefits of restoring research funding—are being communicated with ever-greater effectiveness. All this suggests that Budget 2018 could be a watershed moment for researchers. Restoring Canada's international prominence in research will take several years of steadily increasing investment, ongoing improvements in governance, and steadfast leadership by the Government of Canada. But the rebuilding process must start now with the 2018 budget. The success of Canada's young researchers—vital to our country's future prosperity—depends upon it.

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