Standing Committee on Finance (FINA)

Pre-budget consultations 2012

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Responses

1. Economic Recovery and Growth

Given the current climate of federal and global fiscal restraint, what specific federal measures do you feel are needed for a sustained economic recovery and enhanced economic growth in Canada?

The long-term success of Canada's economy depends on a strong science and technology community that strongly supports basic research and is able to attract, train, and retain highly qualified people for knowledge-based careers in industry, government, and academia. Canada needs to sustain its basic and applied research capacity, which has long-term economic payoffs that are lost for lack of vision. Recommendation 1: Enhance and better coordinate funding for basic and applied research at universities. Science is not commercialization, and every discovery does not have a customer waiting for it. Without a culture of new theoretical and experimental advances, even without immediate commercialization opportunities, the next revolutionary invention will have no connection to Canada. Robert Birgeneau, former President of the University of Toronto, and current Chancellor of the University of California, Berkeley, spoke to the American Conference on Neutron Scattering in June; "The most interesting developments in solid state physics (ie. computer chips and memory) have originated from the discovery of new materials or discovery of new properties of old materials." Cutbacks at NSERC have left no clear means of obtaining equipment to stay at the fore-front of materials research. Most university researchers rely on Discovery Grants, whose real value, on average, have been dropping steadily over the last decade. Many laboratories now risk becoming completely idle. A mechanism is needed, perhaps through re-balancing funding, to support research infrastructure and equipment without negatively impacting the Discovery Grant program. Recommendation 2: Preserve the basic research capabilities currently housed in federal organizations. While the economy will benefit from industry-driven research at AECL and NRC, which are being restructured, these organizations also support basic research and access to large-scale research infrastructure. Dr. Birgeneau continues; "Virtually every time such a discovery is made, neutron scattering is required to elucidate the magnetic and structural properties." In 2016, Canada will no longer have this ability.

2. Job Creation

As Canadian companies face pressures resulting from such factors as uncertainty about the U.S. economic recovery, a sovereign debt crisis in Europe, and competition from a number of developed and developing countries, what specific federal actions do you believe should be taken to promote job creation in Canada, including that which occurs as a result of enhanced internal and international trade?

Currently, Canadian companies have piled up more than $525-billion in cash reserves; almost a third the size of the entire economy. Canadian bond yields are at least at 10 year lows. There is very little debt pressure against investment in R&D by corporations or the government. Here the axiom applies that a failure to plan is a plan to fail. Recommendation 3: Extend support for targeted programs such as the Networks of Centres of Excellence, which link universities and businesses together in research networks. Recommendation 4: Create vouchers for small and medium-sized businesses to create R&D alliances with university labs. One barrier to such alliances is the highly time-consuming process for a company to establish a relationship with a university, define a joint program, and write a proposal with no certainty that it will be funded. If a company could obtain a voucher for R&D funding in advance, the

barrier would be greatly reduced since both parties would be assured that a flexible source of funds is available. This program could be a natural expansion of the vouchers program suggested by the Jenkins report for connecting businesses to providers of commercialization support (Innovation Canada: A Call to Action.2011). Recommendation 5: Use federal procurement strategically to stimulate business innovation. Canada spends billions of dollars on procurement, which should be leveraged to create jobs through innovation. For example, the USA's Small Business Innovation and Research (SBIR) program helps businesses to grow through granting contracts for proof of principle studies and follow up R&D, and by being the first customer of innovative products and services. The SBIR program is funded by reserving 2.5% of a federal agency's external R&D budget to be used for contracts with small businesses. The SBIR has demonstrated high rates of commercialization of ideas developed under the program, and this success has inspired similar programs in several other developed countries. These measures could greatly assist promising technologies to cross the well-known 'valley of death' between research and commercialization, ultimately creating jobs in Canada.

3. Demographic Change

What specific federal measures do you think should be implemented to help the country address the consequences of, and challenges associated with, the aging of the Canadian population and of skills shortages?

A failure to invest in science condemns Canada to forever be a consumer of foreign-invented technology and foreign-discovered knowledge. Likewise, without a healthy scientific enterprise, Canada will never attract knowledgeable and visionary people from outside the country or retain those born within it. This will challenge the long term prosperity of the country. Recommendation 6: Encourage people to enter science, technology, engineering, and mathematics programs and support them from undergraduate through graduate school, post-doc fellowships and early career research, by creating Canada Student Grants specifically for students in these fields and increasing the numbers of Postgraduate Scholarships and of Postdoctoral Fellowships. Many studies have shown that persons with more advanced degrees are significantly more likely to innovate and lead to productivity advances. "Well-educated and skilled people make important contributions to business innovation, productivity, and national economic performance. In an interconnected global economy, countries with more highly skilled workers have a distinct competitive advantage." (Conference Board of Canada, 2010). Although recently introduced prestigious scholarships give a lot of support to a few outstanding individuals, better support for a greater number of students is still needed. The demand for regular graduate scholarships and fellowships is great, illustrated by very low success rates for applicants. For example, the success rate for NSERC Postdoctoral Fellowships dropped from 34.9% in 2002 to a shocking 9.3% in 2011.
Recommendation 7: Attract and retain scientists, engineers and students with a promise of a bright future by demonstrating commitments to providing large-scale scientific infrastructure and maintaining other federal research programs. For example, begin planning for new world-class research facilities to replace aged infrastructure at Chalk River Laboratories that supports a spectrum of research. Similarly, creating a coherent planning process for life-cycle management of funding for large-scale scientific facilities (including for example, the Canadian Light Source, TRIUMF, the NRU reactor, SNOLAB, Ocean Networks Canada, and Compute Canada) will provide greater stability to retain people than the current patch-work of short term funding cycles. Maintaining other research programs at NRC, CSA, and the science-based departments and agencies also helps to retain people with needed skills.

4. Productivity

With labour market challenges arising in part as a result of the aging of Canada's population and an ongoing focus on the actions needed for competitiveness, what specific federal initiatives are needed in order to increase productivity in Canada?

Technological advance is a key driver of productivity, and such advances require a large pool of highly qualified people working in knowledge-based careers in industry, government, and academia. In addition to the foregoing recommendations to attract, train, and retain such people, the following recommendation will encourage Canadian students and researchers to gain valuable experience abroad, while foreign students and researchers would bring innovative ideas to Canada. Recommendation 8: Support research exchanges with universities and industries around the world for a limited period of time, such as six months to two years. These exchanges will create international linkages, which can stimulate future interactions and trade opportunities; given attractive opportunities in Canada, some foreign researchers will eventually relocate here. Comparable programs are the Humboldt and Helmholtz-DAAD Fellowship programs in Germany and the Marie Curie Fellowship Program in Europe. New research funds over the past several years have typically been used to add specialized funding programs, but these ultimately create a piecemeal system with gaps and inefficiencies. For example, funds are granted for purchases of equipment or construction of facilities without funds to operate them effectively, or funds are provided for a research program without a means to purchase or repair the equipment needed to perform the research. Consolidation of research funding into more comprehensive programs would directly increase the productivity of the research community by reducing the administrative burden on researchers to secure funding in addition to removing some of these inefficiencies. For example, there should be one federal program that funds both the capital and operating costs of research infrastructure. Recommendations 1 and 7 address these needs. Recommendation 9: Create a Minister of Science, Technology and Innovation (STI). In the 21st century, government needs a cabinet position for science. Science now informs nearly every role of a modern, western democratic government; health, defence, resources, environment. Canada needs a Minister that can give full attention to the entire STI spectrum because of the critical importance of STI to the modern state, and because technological innovation cannot be separated from the research that makes it possible.

5. Other Challenges

With some Canadian individuals, businesses and communities facing particular challenges at this time, in your view, who is facing the most challenges, what are the challenges that are being faced and what specific federal actions are needed to address these challenges?

Recommendation 10: Maintain a high level of capability for "public good" research within federal departments, because public confidence in the research that underpins public policy and government programs is important to the economy and wellbeing of Canadians. Recommendation 11: More funding should be extended to the Council of Canadian Academies (CCA) to enable it to produce scientific assessments of more issues.