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FEDERAL INVESTMENTS IN RESEARCH AND DEVELOPMENT AND CAPACITY BUILDING IN THE HIGHER EDUCATION SECTOR

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INTRODUCTION

Capacity building in Canada's higher learning institutions, developing and maintaining a highly skilled workforce, and raising the quality of research and development (R&D) in our post-secondary institutions have been concerns of federal policy makers for the last decade. The federal government recognizes that Canada's ability to generate research and development and apply new knowledge is crucial to the quality of life enjoyed by Canadians and to this country's success in a globally competitive economy.

Federal investments in R&D were significantly reduced in the early to mid-1990s as the Government of Canada struggled with a growing deficit and public debt. The 1997-1998 fiscal year, however, marked the beginning of federal reinvestment in research and development. The federal government's role in financing R&D was clarified and given momentum in 2002 with the launch of Canada's Innovation Strategy.(1)

CANADA'S INNOVATION STRATEGY

Achieving Excellence: Investing in People, Knowledge and Opportunity,(2) one of two documents outlining Canada's Innovation Strategy, proposed a series of national goals and milestones to ensure that Canada's performance in research and development would be among the best in the world:

- By 2010, Canada is to rank among the top five countries in the world in terms of R&D performance.

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(1) Association of Universities and Colleges of Canada, *Momentum: The 2005 report on university research and knowledge transfer*, 2005, pp. 5 and 22, http://www.aucc.ca/momentum/en/report/.

(2) Government of Canada, *Achieving Excellence: Investing in People, Knowledge and Opportunity*, Canada's Innovation Strategy, http://innovationstrategy.gc.ca/gol/innovation/site.nsf/en/in04135.html.

- By 2010, Canada is to rank among world leaders in the share of private-sector sales attributable to new innovations.
- By 2010, current federal investments in R&D should at least double.
- By 2010, the per capita value of venture capital investments in Canada should rise to prevailing levels in the United States.(3)

To reach the goals and milestones set in its Innovation Strategy, the Government of Canada recognized that university research(4) would have to play a strategic role and that it needed the collaboration of the higher education sector.(5) In November 2002, the federal government and the Association of Universities and Colleges of Canada (AUCC) signed a Framework of Agreed Principles on Federally Funded University Research.(6) The document outlines "how they will work together to advance research, knowledge transfer including commercialization, and innovation for the benefit of Canadians." The federal government agreed to double funding for university research over the next eight years while Canadian universities made a commitment "to double the amount of research they perform and triple their commercialization performance, as well as to increase the training of graduate researchers, and contribute to the economic and social development of their communities, subject to the necessary government investments and complementary contributions from other sectors."(7)

In 2004, the Government of Canada spent about $2.3 billion on university-based research, representing 24.5% of the total direct and indirect research investments in that sector ($9.3 billion) that year.(8) According to Statistics Canada, the estimated costs of R&D in the higher education sector covered by the federal government increased from $809 million in 1996-1997 to $2,181 million in 2003-2004 (see Table 1). It is estimated that by 2006-2007

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(3) *Ibid*., Executive Summary, 2001, p. 6, http://innovationstrategy.gc.ca/gol/innovation/site.nsf/vDown load/Page_PDF/$file/summary_e.pdf.

(4) As of 2004, 38% of all research in Canada was performed in universities.

(5) The higher education sector includes all universities, colleges and institutes of post-secondary education, and all research institutes and clinics operating under the control of, or administered by, or associated with, the higher education establishments. See Gisèle Bellefeuille, *Estimation of Research and Development Expenditures in the Higher Education Sector, 2003-2004*, Science, Innovation and Electronic Information Division, Statistics Canada, Working Paper No. 019, Cat. No. 88F0006XIE, December 2005, p. 7, http://www.statcan.ca/cgi-bin/downpub/listpub.cgi?catno=88F0006XIE2005019.

(6) Association of Universities and Colleges of Canada, *Framework of Agreed Principles on Federally Funded University Research Between the Government of Canada and the Association of Universities and Colleges of Canada*, 18 November 2002, http://www.aucc.ca/_pdf/english/reports/2002/frame_cadre_e.pdf.

(7) *Ibid*.

(8) Association of Universities and Colleges of Canada (2005), p. 15.

"annual federal support for research in the higher education sector will be almost $2 billion more than in 1997-1998, representing a cumulative incremental investment of more than $11 billion over that period."[9] Over two-thirds of federal investments in post-secondary education institutions support research performed in universities.

Table 1

Estimated Cost of Federally Funded R&D in the Higher Education Sector, 1996-1997 to 2003-2004 ($ millions)

1996-1997	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004
$809	$792.7	$862.9	$1,084.6	$1,292.8	$1,586.8	$1,816.7	$2,181.7

Source: Bellefeuille (2005).

Federal dollars invested in university-based research and development are channelled through the three federal granting councils – the Canadian Institutes of Health Research (CIHR),[10] the Natural Sciences and Engineering Research Council of Canada (NSERC)[11] and the Social Sciences and Humanities Research Council of Canada (SSHRC)[12] – and through the Canada Foundation for Innovation[13] and other programs established since 1997. The latter include the Canada Research Chairs Program[14] launched in 2002, and the Indirect Costs Program[15] introduced in 2001 and renewed in 2003.[16] The federal government

(9) *Budget 2005 – Budget Plan*, Chapter 4, "A Productive, Growing and Sustainable Economy: Investing in Ideas and Enabling Technologies," http://www.fin.gc.ca/budget05/bp/bpc4be.htm.

(10) The CIHR is organized around 13 virtual institutes that form a national research network linking researchers and stakeholders across the country and internationally. The institutes are: Aboriginal Peoples' Health; Aging; Cancer Research; Circulatory and Respiratory Health; Gender and Health; Genetics; Health Services and Policy Research; Human Development, Child and Youth Health; Infection and Immunity; Musculoskeletal Health and Arthritis; Neurosciences, Mental Health and Addiction; Nutrition, Metabolism and Diabetes; and Population and Public Health, http://www.cihr-irsc.gc.ca/e/193.html.

(11) Natural Sciences and Engineering Research Council of Canada, http://www.nserc.gc.ca/index.htm.

(12) Social Sciences and Humanities Research Council of Canada, http://www.sshrc.ca/web/home_e.asp.

(13) Canada Foundation for Innovation, http://www.innovation.ca/index.cfm.

(14) Canada Research Chairs Program, http://www.chairs.gc.ca/web/home_e.asp.

(15) Indirect Costs Program, http://www.indirectcosts.gc.ca/home_e.asp.

(16) The Government of Canada also announced in 2003 the launch of the Canada Graduate Scholarships Program. For more information on this program, see Kevin Kerr and Chantal Collin, *Recent Federal Investments in Post-Secondary Education and Training*, PRB 06-25E, Parliamentary Information and Research Service, Library of Parliament, 2006.

also supports the higher education sector indirectly through cash transfer payments (Canada Social Transfer) to the provinces and territories. This paper will outline recent federal investments in each of these programs.

FEDERAL GRANTING COUNCILS

The federal granting councils have played a key role in research and development since their creation (SSHRC in 1977, NSERC in 1978, and the CIHR in 2000 replacing the Medical Research Council created in 1965).(17) These arm's-length federal agencies support the production and dissemination of new scientific knowledge and the training of highly qualified people in their respective fields, and they promote collaboration between universities, industry and governments to ensure that new innovations contribute to the Canadian economy. Grants, scholarships and fellowships are awarded through an independent, national, peer-review process. In 1998, when the federal government began to reinvest in research and development, one of its first initiatives was to increase the budgets of the three councils, restoring them to their 1994-1995 levels. The government also made a commitment to invest another $400 million in the granting councils over the next three years.(18) Between 1997-1998 and 2004-2005, the federal government allocated $9.4 billion to the federal granting councils.(19) Budget 2005 committed an additional $11 million per year to SSHRC, and $32 million each to NSERC and the CIHR.(20)

Since 1998, the Government of Canada has allocated significant new resources each year to the granting councils. These investments contributed to the improvement in Canada's R&D performance. However, the granting councils warn that to maintain this momentum and ensure that Canada does not fall behind other countries that are also enhancing

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(17) University-based research had been previously supported through the National Research Council (NRC), which is considered to be the Government of Canada's premier organization for research and development since 1916. The decision to separate support for university research grants and support for national laboratories followed a recommendation made by the Senate Special Committee on Science Policy in 1973.

(18) Association of Universities and Colleges of Canada (2005), p. 9.

(19) *Ibid*., p. 21. For more information on the actual spending of the three federal granting councils on grants, scholarships and awards in support of post-secondary education, see Kerr and Collin (2006).

(20) It should be noted that in 2004-2005 SSHRC and NSERC had absorbed cuts to their budgets as a result of the reallocation process undertaken at Industry Canada.

their R&D performance, increased investments are needed. They note that there is a widening gap between the number of excellent proposals they receive and the number that they are able to fund. There is a concern that this situation may deter some individuals from participating in competitions in the future.

As well, Canadian researchers need more funding to participate in international R&D projects and to benefit from the knowledge they can gain from engaging in world-class research projects. The benefit is obviously not limited to the researchers, as their participation will also increase Canada's science and technology presence internationally. The granting councils believe that with the right investments Canada will be able to respond to future challenges, ensuring its continued progress in building an innovative and productive knowledge-based and technology-oriented economy that will make it a world leader in research and development.

CANADA FOUNDATION FOR INNOVATION[21]

In April 1997, the Government of Canada created the Canada Foundation for Innovation (CFI) as an arm's-length independent organization with a mandate to invest in Canada's research infrastructure. These investments were to finance leading-edge equipment and facilities, to support mechanisms to facilitate the commercialization of research discoveries and other enabling technologies needed to conduct world-class research, and to attract and retain highly qualified researchers. The foundation received an initial lump-sum endowment of $800 million. Subsequently the Government of Canada amended its funding agreement with the CFI several times for a total investment of $3.65 billion as of 2005.[22] The total investment, with compounded interest, is expected to grow to nearly $4.85 billion by 2010.[23]

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(21) Information provided in this section is based on various publications and data available on the Web site of the Canada Foundation for Innovation, http://www.innovation.ca/index.cfm, as well as in Charles M. Beach, Robin W. Boadway and R. Marvin McInnis, eds., *Higher Education in Canada*, Queen's University Press, Kingston, 2005, pp. 213-215.

(22) In its November 2005 Economic Update, the federal government promised to invest another $500 million in the Canada Foundation for Innovation to sustain its activities over the next five years. The amount was to be received in 2005-2006. However, an election was called in late November and a new government was elected on 23 January 2006. Given the change in government, the status of this commitment is uncertain.

(23) Canada Foundation for Innovation, *2004-2005 Annual Report*, 2005, http://www.innovation.ca/publications/ annual/annual05_e.pdf.

As of 31 March 2005, commitments of $2.93 billion had been made in more than 4,000 innovative projects undertaken at 127 universities, colleges, non-profit research institutes, and research hospitals in 62 municipalities across Canada.(24) Since 1997, the rate of return on the invested amount has averaged 5.71% per annum. The foundation funds up to 40% of a project's infrastructure costs. Recipients of its grants must obtain matching funds from provincial or private agencies or corporations. As of 2005, close to $3.9 billion in additional funding had been leveraged from provincial governments, the private sector and other partners.(25) Based on this 40/60 funding formula, the total capital investment by the CFI, the research institutions and their partners should exceed $11 billion by 2010.(26) Table 2 shows the CFI's total expenditures from 1997 to 2005.

Table 2

Canada Foundation for Innovation – Expenditures, 1997-2005
($ millions)

1997-1998	1998-1999	1999-2000	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
$1.6*	$30.7	$118.3	$188.2	$239.1	$332.4	$358.9	$271.3

* No grants were paid to recipients that initial year. Expenditures include only general expenses and administration costs as well as amortization of capital assets.

The 40/60 formula, however, did not work in Atlantic Canada, where a weak private sector made it difficult for universities and colleges to obtain the matching funds required to access CFI funding. The Government of Canada remedied this situation by creating the Atlantic Innovation Fund,(27) within the Atlantic Canada Opportunities Agency. This fund provides an additional $300 million over five years (fiscal years 2001-2002 to 2005-2006) for strategic investments aimed at increasing Atlantic Canada's innovation capacity through research and development, supporting the commercialization of its scientific discoveries, and ensuring

(24) The Canada Foundation for Innovation shares the success of these projects with Canadians in its on-line magazine, http://innovationcanada.ca/20/en/.

(25) Association of Universities and Colleges of Canada (2005), p. 25.

(26) Canada Foundation for Innovation (2005), p. 15.

(27) Atlantic Canada Opportunities Agency, Atlantic Innovation Fund, http://www.acoa.ca/e/financial/aif/ index.shtml.

that Atlantic Canada is given a more equitable access to national R&D programs.[28] Budget 2005 confirmed the renewal of the Atlantic Innovation Fund with $300 million in funding to support university research, commercialization, and innovative companies in the region.

A third-party evaluation of the CFI's programs (the Innovation Fund, the University Research Development Fund and the College Research Development Fund) was conducted in 2002. The evaluation found that participation from researchers in the social sciences and humanities was low, and that "implementing the projects and finding financial resources for operations and maintenance has been problematical in many institutions."[29] Nonetheless, the overall results were very positive, showing that these programs have been successful in building Canada's capacity for innovation and in leveraging matching funds, and that they are likely to significantly improve Canada's economic and social well-being.

CANADA RESEARCH CHAIRS PROGRAM

In 2000, the Government of Canada invested an initial $900 million to create the Canada Research Chairs Program, an initiative designed to help Canadian universities attract and retain the best researchers. The objective was to establish 2,000 research professorships across the country by 2008. To fund research infrastructure, an additional $250 million was allocated to Chairholders through the Canada Foundation Innovation.[30] Chairs are allocated by tier level and discipline. Tier 1 Chairs are awarded to experienced researchers acknowledged by their peers as world leaders in their field, while Tier 2 positions are intended for emerging researchers acknowledged by their peers as having the potential to lead in their field. Tier 1 Chairs are funded at $200,000 annually for seven years and are renewable. Funding for Tier 2 Chairs is set at $100,000 annually for five years and can be renewed once. Universities are also expected to contribute financially to support the Chairs. Chairs are allocated among disciplines as follows:

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(28) It should be noted that the use of federal dollars to compensate for a weakness of the private sector in a particular region of Canada is unique.

(29) Canada Foundation for Innovation, *Key Findings, Independent Third-Party Evaluation of the Innovation Fund, the University Research Development Fund, and the College Research Development Fund*, May 2003, p. 2, http://www.innovation.ca/evaluation/2003/Bearing_key_e.pdf.

(30) On 29 September 2005 the Canada Research Chairs Program launched its new Leaders Opportunity Fund, which enables institutions to access additional infrastructure funds. The Canada Research Chairs Program will continue to use its peer-review process to assess requests for CFI infrastructure support associated with Chair nominations.

20% to social sciences and humanities, 35% to health sciences, and 45% to natural sciences and engineering.(31) Table 3 outlines the program's actual spending channelled through the three granting councils for the period 2000-2005.

Table 3

Canada Research Chairs Program – Actual Spending, 2000-2005
($ millions)

Agency	2000-2001	2001-2002	2002-2003	2003-2004	2004-2005
CIHR	$5.9	$21.2	$34.2	$46.3	$60.6
NSERC	$5.0	$27.0	$47.4	$67.6	$86.4
SSHRC	$2.3	$11.1	$21.1	$32.0	$41.0
Total	**$13.2**	**$59.3**	**$102.7**	**$145.9**	**$188.0**

Source: Information provided by the Secretariat of the Canada Research Chairs Program.

As of November 2005, 1,577 Canada Research Chairs had been awarded (755 Tier 1 Chairs and 822 Tier 2 Chairs). Nearly one-third of Chairholders (32%) had been recruited from outside of Canada (235 expatriates and 266 international recruits) and 79% of Chairholders were male.(32) Of all appointments, 53 Chairholders had been renewed for a second term.(33)

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(31) The program allows for some flexibility in the distribution of Chairs. For example, universities with 6 or fewer Chairs can decide how they will distribute their allocation of Chairs. Universities with 7 to 19 Chairs may now distribute up to 4 of their Chairs differently than originally allocated, in addition to their special allocations. For others, the Secretariat of the program has the flexibility to respond to requests for redistribution on an ad hoc basis. See Canada Research Chairs, *Response to the Fifth-Year Evaluation of the Canada Research Chairs Program*, p. 4, http://www.chairs.gc.ca/web/about/publications/fifth_year_response_e.pdf.

(32) A group of female professors filed a complaint with the Human Rights Commission in 2003 alleging that the Canada Research Chairs Program discriminates against women and other minority groups. According to the *Fifth-Year Evaluation of the Canada Research Chairs Program: Final Evaluation Report*, prepared by Malatest & Associates Ltd. (p. vi), to attain gender parity, 161 CIHR Tier 1 Chairs would need to be awarded to women between 2003 and 2006, Tier 2 female nominations from the CIHR would have to quadruple, and Tier 2 female nominations from SSHRC and NSERC would have to double. A number of steps have been taken to remedy the situation, with some success as attested in the November 2004 round of appointments when 35% of the Chairs were awarded to women. More improvement is expected as universities are required, since August 2005, to submit targets for female Canada Research Chair nominations.

(33) Program statistics are available on the Web site of the Canada Research Chairs Program, http://www.chairs.gc.ca/web/about/statistics_e.asp.

A summative evaluation, completed in 2004, confirmed that the Canada Research Chairs Program was on track to reach its target of research Chairs and that it "has helped create a research environment that is conducive to the long-term attraction and retention of top researchers."(34) Participants in this evaluation indicated that the CFI component of the Canada Research Chairs Program played a key role in the program's success and the attraction of top researchers from outside Canada. Universities and Chairholders indicated that the program had "leveraged between $218 million and $343 million in additional research funding."(35) A number of positive research results were reported, such as patent applications, patents, inventions, and potential new treatments for diseases.(36) Unintended negative effects of the program included a "negative impact on faculty due to greater concentration of university resources with Chairs" and "decreased morale among faculty due to greater segmentation of the faculty corps."(37) In addition, "most universities interviewed reported that the lower allocation given to SSHRC Chairs had impacted their research and hiring plans."(38) The issue of the program's sustainability was also a source of concern for some participants in the evaluation. As with the federal granting councils, people surveyed in the course of this fifth-year evaluation agreed that increased and sustained funding, including CFI funding, will be critical to the long-term success of the program.

INDIRECT COSTS PROGRAM

Increased federal investments in research and development meant that universities and affiliated research hospitals were called on to perform more and more research without additional financial support to cover some of the indirect costs of sponsored research, estimated

(34) Malatest & Associates Ltd., *Fifth-Year Evaluation of the Canada Research Chairs Program: Final Evaluation Report*, report prepared for the Canada Research Chairs Evaluation Steering Committee, 2 December 2004, p. vii, http://www.chairs.gc.ca/web/about/publications/fifth_year_review_e.pdf.

(35) Multiple factors influence the amount of research funding leveraged, and not all the increase in funding can be attributed to the Canada Research Chairs Program. However, Chairholders reported significantly larger increases in funding since the Chair award compared to other researchers over the same period. See Malatest & Associates Ltd. (2004), executive summary, p. vii.

(36) It should be noted, however, that research impacts result from multiple factors and cannot be attributed only to the Canada Research Chairs Program.

(37) Malatest & Associates Ltd. (2004), p. iii.

(38) *Ibid*., p. 49.

to be at least 40% of the direct costs of research. These costs are related to setting up facilities, buying computer equipment and other essential technologies, and increased demands on libraries and on financial, custodial and human resources services, etc. The Government of Canada recognized that additional support was justified in its December 2001 budget when it set aside a one-time allocation of $200 million to help alleviate the financial pressures associated with federally supported research.(39) This payment was approved in February 2002 and was allocated by the end of that fiscal year to universities and their affiliated research hospitals (a total of 79 degree-granting institutions) for costs they had already incurred.(40)

The Indirect Costs Program was renewed and secured in 2003, as the federal budget included a promise to invest $225 million annually in it. Eligible expenditures under this program fall into five categories: facilities, resources, management and administration, regulatory requirements and accreditation, and intellectual property. The program began to allocate grants in 2003-2004 through the three granting councils. Additional funding was promised in the 2004 and 2005 budgets ($20 million and $15 million respectively), bringing the total annual funding of the program to $260 million in 2005-2006.(41) According to the Secretariat of the Canada Research Chairs Program, which administers the Indirect Costs Program, grants were allocated as follows: $224.4 million in 2003-2004, $244.5 million in 2004-2005, and $259 million in 2005-2006.

A mid-term review of the program was conducted in 2004-2005 with a mandate to look at alternative delivery models and design issues as well as to evaluate the program's success. Results of this review and the management response are expected to be released in the spring of 2006.

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(39) See the Web site of the Indirect Costs Program, http://www.indirectcosts.gc.ca (accessed on 15 February 2006).

(40) Payments were based on research grants received in the past three years from the three federal granting councils. Information provided by the Secretariat of the Canada Research Chairs Program.

(41) Indirect Costs Program, *Briefing Report to the Minister*, April 2003 to March 2004, http://www.indirectcosts.gc.ca/publications/Brief04_e.pdf.

CANADA SOCIAL TRANSFER

From 1996-1997 to 2003-2004, federal financial support for health, post-secondary education and social assistance was consolidated into one block grant to the provinces and territories – the Canada Health and Social Transfer (CHST). As of 1 April 2004, the CHST was divided into two transfers: the Canada Health Transfer (CHT) and the Canada Social Transfer (CST). The CHT was apportioned 62% of the federal block transfer and the CST was to receive the remaining 38%.

The CST supports post-secondary education, social assistance and social services, including early childhood development and early learning and childcare. It is made up of tax point transfers, as well as a cash transfer allocated on a per capita basis.(42) Since provinces and territories are able to spend whatever portion of the CST they wish on post-secondary education, and since they use a portion of equalization dollars to finance post-secondary expenditures, it is not possible to specify the federal government's indirect contribution in the area of post-secondary education.(43)

Nonetheless, based on provincial spending patterns, it is estimated that the provinces spent $4.5 billion of the Canada Social Transfer on core funding for universities and colleges in 2004-2005.(44) According to the *Public Accounts of Canada 2004-2005*, provinces and territories received $7.9 billion through the CST cash transfers in 2004-2005, up from $7.5 billion in 2003-2004. In accordance with legislation, these cash transfers will reach $8.4 billion in 2005-2006 and $8.8 billion in 2007-2008.(45)

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(42) In 1977, the federal government reduced its personal and corporate income tax rates (13.5 percentage points and 1 percentage point, respectively), thereby allowing the provinces to raise their tax rates by the same amount. Since then, the value of tax points transferred has been a long-standing source of friction between the provincial and federal governments. From the federal perspective, a calculation of its support to the provinces and territories should take into account the value of transferred tax points as well as cash payments. From a provincial perspective, once the taxing capacity was transferred, the federal government no longer controlled this spending.

(43) However, it is possible to estimate notional expenditures for this purpose. See "Estimated Federal Cash Transfers in Support of Post-Secondary Education, Selected Years" for the period 1997-1998 to 2004-2005 in Kerr and Collin (2006), p. 25.

(44) This information is taken from the Canadian Association of University Teachers' April 2005 *Bulletin Online*, which attributes it to a briefing note to the Minister of Human Resources and Skills Development obtained under access to information legislation. According to this internal document, the federal government spends about $1.7 billion less on annual transfer payments for post-secondary education today than it did a decade ago; see http://www.caut.ca/en/bulletin/issues/2005_apr/news_feds.asp.

(45) CST amounts are currently legislated until 2007-2008.

Many observers and interested parties from a wide spectrum of Canadian society[46] have argued that the CST should be separated into a social transfer and a post-secondary education transfer for the same reasons as those behind the restructuring of the CHST – to improve transparency and accountability as to where the money is actually spent, to increase the visibility of federal support, and to enhance outcomes. The House of Commons Standing Committee on Finance also favoured two separate transfers in its December 2004 report. In the Committee's view, such a "change would enhance outcomes with respect to each of the two components."[47]

THE ECONOMIC AND FISCAL UPDATE (NOVEMBER 2005)

In its November 2005 Economic and Fiscal Update,[48] the federal government promised significant investments in university-based research and in Canada's post-secondary infrastructure. These may not materialize with the change of government that followed the 2006 federal election. One such investment, however, the establishment of a Post-Secondary Innovation Fund in support of spending by the provinces and territories to improve Canada's post-secondary infrastructure, had received a funding commitment under Bill C-48. That bill, which authorized a payment of $1 billion for post-secondary infrastructure to be notionally allocated over two years (2006-2007 and 2007-2008), received Royal Assent on 20 July 2005.[49]

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(46) Among others, the Canadian Council on Social Development, the Canadian Federation for the Humanities and Social Sciences, the Canadian Association for Student Assistance, United Way and the Federation of Canadian Municipalities all agree that the CST should be restructured into two transfer payments (post-secondary education and social programs). Stephen Kerstetter of the Canadian Centre for Policy Research has suggested an even split into three separate transfers (post-secondary education, social assistance and early childhood education).

(47) House of Commons Standing Committee on Finance, *Moving Forward: Balancing Priorities and Making Choices for the Economy of the Twenty-First Century*, December 2004, p. 152, http://www.parl.gc.ca/infocomdoc/Documents/38/1/parlbus/commbus/house/reports/finarp03/finarp03-e.pdf.

(48) Department of Finance Canada, *The Economic and Fiscal Update*, November 2005, http://www.fin.gc.ca/budtoce/2005/ ec05_e.html.

(49) Other commitments proposed in the 2005 Economic and Fiscal Update included: $1.2 billion in additional funding over the next five years for the Indirect Costs Program; $85 million in additional funding to the granting councils ($35 million each for the CIHR and NSERC, and $15 million for SSHRC); $500 million to the CFI to sustain its activities over the next five years; $21 million over the next five years for master's students in engineering and natural and health sciences to acquire research experience in the private sector, and $18 million to help master's graduates in engineering and the natural and health sciences pursue MBA studies at Canadian institutions; and $160 million over the next five years to support the creation of large-scale integrated facilities that bring together university and private-sector researchers and accelerate the commercialization of university-based discoveries. Given the change of government following the 2006 federal election, the status of these commitments is uncertain.

CONCLUSION

Since 1998, the federal government has increased its investments in research and development and in R&D infrastructure. These investments have already produced significant results, as Canada's R&D capacity and performance in the higher education sector have made some important gains. Canada is now internationally recognized as a country providing excellent training and producing world-class research. On 25 October 2005, the Association of Universities and Colleges of Canada released *Momentum: The 2005 report on university research and knowledge transfer*,(50) chronicling the progress universities have made in helping Canada meet the challenging goals set out in Canada's Innovation Strategy. According to this report, universities are on track to meet their collective target to triple commercialization performance by 2010.(51) Furthermore, "universities and their affiliated institutions have increased their research activities, as measured in dollars invested in research, from $5.8 billion to $9.3 billion in 2004. This represents an increase of 61% in four years. Thus, universities are currently on track to double their overall research activities."(52)

According to the AUCC and other Canadian stakeholders involved in research and development, if Canada is to meet its goal of ranking among the top five countries in the world in terms of research and development performance by 2010, the challenge in the very near future is not only to maintain the momentum created by these important federal investments in R&D but also to build on it with new research funding. Advocates further argue that a sustained financial commitment to research and development is needed if Canadians are to continue to get the most benefit from Canada's research enterprise.

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(50) Association of Universities and Colleges of Canada (2005).

(51) Statistics Canada conducts a survey of intellectual property (IP) commercialization in the higher education sector every two years. Data from the 2003 and 2004 surveys confirm the findings of the AUCC. See the results of the 2003 survey at http://www.statcan.ca/english/research/88F0006XIE/88F0006XIE2005018.pdf, and the preliminary results of the 2004 survey at http://www.statcan.ca/Daily/English/060127/d060127.pdf.

(52) Association of Universities and Colleges of Canada (2005), p. 32.