



Canadian  
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Canada

# BUSINESS RESEARCH AND DEVELOPMENT INCENTIVES IN CANADA:

The impact of proposed changes to Canada's  
SR&ED tax credit

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## Introduction and Summary

Tax policies are a critical tool of governments to drive business investment, encourage research and development, and spur innovation, productivity improvements and product commercialization. Over the past decade, recognizing the global mobility of capital, Canada has become increasingly aggressive at all levels of government to implement policies and programs aimed at modernizing the tax system to make Canada more attractive to investment in order to drive long-term economic performance and job creation.

The changes to date in Canada's tax system, including the reduction in corporate income taxes and investment (such as the two-year write-off for capital investments through the Accelerated Cost of Capital Allowance) have been widely encouraged and supported by Canada's business community as key tools in driving innovation. At the same time, industry is deeply concerned about the changes proposed in the 2012 federal budget to Canada's Scientific Research and Experimental Development (SR&ED) program. We believe the proposed changes will undermine the important progress made on overall tax competitiveness and Canada's ability to attract foreign investment, especially in modern advanced manufacturing.

New business investments in industrialized countries, as well as in rapidly developing economies, are closely linked to the quality of incentives for innovation and productivity. In the last 10 years, the Canadian manufacturing sector has evolved rapidly, mainly due to external factors such as the rise of the Canadian currency, a greater exposure to international competition (especially from low-cost countries and emerging economies), and the US recession. One key element of that evolution has been the rise of advanced manufacturing in Canada, which is less labour-intensive, more productive and more R&D-oriented.

In a report published in 2011 entitled *The State of Advanced Manufacturing*, CME and Industry Canada found manufacturers are currently re-organizing their production and R&D activities around the world between low-cost and industrialized countries. Labour-intensive activities are being transferred to developing countries and while developed countries are gaining R&D focused facilities and advanced production. The findings of the report are clear in that Canada's capacity to support business R&D will directly affect the ability to attract new advanced manufacturing facilities. Specifically,

- Large manufacturers are more likely to leverage their global presence to perform R&D and production internally outside Canada compared to smaller firms;
- New investment in manufacturing facilities in Canada is driven by the need factors that are closely related to productivity and innovation, mainly: to increase agility, to expand mass customization capabilities, to optimize prototyping and new product introductions, and to capitalize market niches;

- Organizational, process, marketing and product innovation are critical for Canadian manufacturers to compete and participate in global value chains; and
- Production activity is an anchor for investments in other value-added business activities such as R&D, logistics, and provision of services.

This new context has, and will continue to, have major consequences on the kind of policy governments will need to put in place in order to retain and attract large R&D-intensive manufacturing companies. Since most industrialized countries are also facing the same challenges with the evolution of their respective manufacturing sectors, it is crucial for Canada to remain globally competitive in the R&D support provided to continue to attract investment.

The changes proposed in the 2012 budget to the SR&ED program must be analyzed within this global context. Canada's ability to retain and attract R&D intensive global manufacturing companies cannot be taken for granted. And given that Canada's manufacturing sector is the most R&D-intensive sector in Canada — accounting for more than 50 per cent of total R&D spending — its interests, and the impacts on the sector, must be highly considered when making any changes to government policies supporting R&D.

This paper evaluates the proposed changes to the SR&ED tax credit and its impact on Canadian business R&D expenditures, assesses the changes proposed to SR&ED in the 2012 federal budget in light of Canada's global attractiveness for R&D, and examines various tools other countries offer to provide direct R&D assistance that could be models for Canadian adaptation.

In short, CME believes the measures included in the 2012 budget will directly and negatively impact Canada's R&D performance, especially for large multinational manufacturers who are the largest contributors to Canada's R&D investment. Furthermore, even when including the recent corporate income tax rate reductions, Canada's global ranking as a location for R&D activities is dropping and will accelerate if the proposed changes are implemented as planned. Rather than the proposed changes, CME believes Canada should be making changes to the SR&ED program that will incentivize multinationals to invest in R&D in Canada, including introducing globally competitive support, such as refundable tax credits, accelerated depreciation rate for capital expenditures associated with R&D, and further simplify the calculation process for overhead expenses claimed in SR&ED.

## The Economic Impact of Proposed SR&ED Measures on Business R&D in Canada:

The Government of Canada recognizes the net economic value of the SR&ED program and its important spillovers in the field of science and technology. A 2007 Department of Finance working paper stated:

*"The positive economic benefits associated with the SR&ED tax credit are derived from the spillovers that occur when the benefits of SR&ED extend beyond the performers themselves to other firms and sectors of the economy. These spillovers amount to about 46 cents per dollar of tax expenditure and more than offset the costs of the credit, estimated to be 36 cents per dollar of tax expenditure. Thus the SR&ED tax credit creates a gross economic gain of \$1.11 for every dollar spent on it, and a net economic gain of 11 cents per dollar. These estimates are sensitive to the underlying assumptions used in the working paper, but the study shows that the SR&ED tax credit generates positive net economic benefits under a range of reasonable assumptions."*

**Department of Finance, 2007: An Evaluation of the Federal Tax Credit for Scientific Research and Experimental Development, p.8.**

The new measures proposed to the SR&ED program will clearly reduce business R&D expenditures in Canada, despite the fact that both the STIC and the Jenkins reports have identified low business R&D expenditures as the main important issue we are facing in Canada. The proposed

changes will reduce the federal government expenses on the program by \$750 million annually. The proposed changes can be summarized as:

- Reducing the general tax credit from 20 per cent to 15 per cent for larger firms;
- Eliminating capital expenditures as an eligible expenditure;
- Reducing overhead expenditures by lowering the rate used for eligible wages from 65 per cent to 55 per cent; and
- Reducing SR&ED contract payments.

Overall, according to the Department of Finance, these proposed measures will save the government \$500 million a year once fully implemented. However, CME believes this has underestimated both the direct and indirect impact of these proposed changes.

As outlined in *Table 1*, the impact of the proposed measures, once fully implemented, will represent a decrease of \$663 million a year in business R&D expenditures — \$163 million more than estimated by the government. When adding in the corresponding impact of the proposed changes on provincial R&D claims (\$84 million), the total impact of these changes on business expenditures in research and development (BERD) is almost \$750 million a year.

Table 1: Impact of Proposed Changes on Business R&D Incentives:

Budget 2012 Proposed Recommendations	Estimated Federal Annual Reduction (Department of Finance)	CME Estimated Federal Annual Reduction (2011 BERD)	CME Estimated Provincial Annual Reduction (2011 BERD)	Total Estimated Reduction (combined federal-provincial impact)
SR&ED ITC Rate (reduction of 5%)	\$295	\$356	\$0	\$356
SR&ED – Elimination Capital Expenditures	\$40	\$95	\$28	\$123
SR&ED Overhead Expenditures (reduction of the proxy from 65% to 55%)	\$100	\$116	\$32	\$148
SR&ED Contract Payments	\$65	\$96	\$24	\$120
<b>Total</b>	<b>\$500</b>	<b>\$663</b>	<b>\$84</b>	<b>\$747</b>



## The Impact of SR&ED Changes on BERD/GDP Ratio:

A commonly used indicator of a country's R&D intensity is the BERD/GDP ratio which measures the total business enterprise R&D expenditures divided by gross domestic product (GDP) and provides a simplified method to compare business invest in R&D. Global leaders in the BERD/GDP ratio in 2008 were Israel (2.88), Japan (2.90), Sweden (2.90), Finland (2.78) and Korea (2.51). By way of comparison, the United States' BERD ratio was 2.00 while Canada's was 1.00, falling from 1.06 in 1999.

Based on the historical changes to Canada's BERD between 1999 and 2008, CME estimates the \$663 million reduction in business R&D expenditures as a result of the proposed changes to the SR&ED program will further reduce Canada's BERD ratio by 0.03 per cent a year starting

in 2017. Furthermore, this estimate does not include the impact of the proposed changes on provincial SR&ED tax credits, meaning the impact of SR&ED changes on the BERD/GDP ratio would be even greater than stated in *Table 2*.

This reduction in the BERD/GDP ratio will mean Canada will continue to fall behind the research intensity seen in other jurisdictions globally, which will lead to greater gaps in productivity, innovation and product commercialization than already witnessed. Furthermore, it is critical to note that these calculations only look at the impact on businesses currently doing R&D in Canada and cannot contemplate the impact on global manufacturers that could establish new R&D facilities in Canada. While we don't know how many foreign-based firms would have come to Canada otherwise, the main point is that the reduced tax incentives will make Canada less attractive internationally.

Table 2: Impact of SR&ED Changes on BERD/GDP Ratio:

Year	GDP (in \$ Billions)	BERD (in \$ Billions)	BERD (as % of GDP)
1999	\$982	\$10.4	1.06%
2008	\$1,602	\$13.0	1.00%
2017 Forecast without Proposed Changes to SR&ED	\$2,612	\$16.25	0.62%
2017 Forecast with Proposed Changes to SR&ED (\$663 million a year starting in 2017 — CME Estimates)	\$2,612	\$15.58	0.59%

## Proposed SR&ED Measures and the Impact on Canada's International Tax Competitiveness:

In recent years, both federal and provincial governments have made efforts to make Canada's business tax system more globally competitive. One very important measure introduced by the federal government was the reduction of the Corporate Income Tax (CIT) rate, from 22.12 per cent in 2007 to 15 per cent in 2012. The current CIT rate in Canada (combined with the provinces) is roughly 26 per cent.

As *Table 3* shows, despite the aggressive reduction of the CIT rate in recent years, Canada still ranks 13th out of

22 countries examined. This places Canada at an average CIT rate across these countries. While Canada has been catching up with other countries in recent years, it is still not part of the most competitive CIT rates among the industrialized and emerging economies, mainly because other countries have also reduced their respective CIT rates in the last decade. Table 3 compares Canada's current CIT rate with select OECD countries and several key emerging economies, including Brazil, India, China and Turkey.

Table 3: International Comparison of Combined National and Sub-National CIT Rates — Ratio:

Country	Combined CIT Rate	Global Ranking
Ireland	12.50%	1
Iceland	20%	2
Turkey	20%	3
Switzerland	21.17%	4
Republic of Korea	24.20%	5
Finland	24.50%	6
Israel	25%	7
Denmark	25%	8
Austria	25%	9
China	25%	10
Netherlands	25%	11
United Kingdom	26%	12
<b>Canada</b>	<b>26%</b>	<b>13</b>
Sweden	26.30%	14
Germany	29.48%	15
Australia	30%	16
India	32.45%	17
France	33.33%	18
Belgium	33.39%	19
Brazil	34%	20
Japan	38.01%	21
United States	40%	22

## CIT and R&D Tax Credits: An International Comparison

A common method to assess the comparative support offered by R&D tax credits is to look at the rate to which each dollar spent by business in R&D is “supported” by government tax incentives. It is also important to include the CIT rate in any analysis comparing the net result of conducting tax credits in one given country. While many models can be used to conduct this comparative analysis, the OECD uses the “B-Index” as an indicator of the relative generosity of tax credits for R&D activities. The B-Index is the present value of before-tax income necessary to cover the initial cost of R&D investment and to pay corporate tax.

Using this calculation method, *Table 4* provides an overview of Canada's SR&ED tax credit support compared to other countries for large firms. While the SR&ED tax credit is often referred to as the world's third most generous tax credit for R&D, this is only accurate when including the 35 per cent tax credit provided to small Canadian-controlled private companies (CCPC's). Given the importance of large firms in boosting business expenditures in R&D in Canada and around the world, and the ability of those companies to move capital to the jurisdictions with the best returns on investment, this analysis only compares the tax credits provided to large firms.

In 2008, when Canada had a higher CIT rate, combined with a 20 per cent SR&ED tax credit for large firms, the

“rate of support” (1 minus the B-Index) for every dollar spent by large companies in R&D was about 18 cents. That made Canada the ninth most generous tax credit for large companies' R&D globally. The CIT rate reductions, as the Department of Finance has stated, have made the SR&ED tax credit slightly more generous today (an increase of 0.4 cents for every dollar spent in R&D), with an overall “rate of support” of 18.4 cents for every dollar spent by large businesses in R&D. Despite this, Canada's global competitiveness ranking dropped from ninth to 13th since 2008 as other countries have also either reduced their CIT rates or increased their supporting R&D tax credits. Denmark, Malaysia, Norway, South Africa and Hungary have all taken an even more aggressive approach than Canada in order to make their country more attractive to large companies conducting R&D.

With the rate change proposed in the 2012 budget, Canada's support rate for every dollar spent by large businesses on R&D will decrease to 13.6 cents per dollar. Assuming that other countries do not change their R&D supports, Canada will rank as the 17th most attractive country to conduct R&D activities for large corporations globally. As it stands, by just calculating Canada's proposed changes, China, Netherlands, Belgium and Taiwan will become more attractive than Canada for R&D investments. If we included the changes to the definition of eligible expenditures as proposed by the budget, Canada's subsidy rate would further decline.

Table 4: International Competitiveness of R&D Tax Credits (Tax Support Rate)

2008		2012 pre-budget		2012 post-budget		GlobalRanking
France	0.425	India	0.440	India	0.440	1
Spain	0.349	Portugal	0.410	Portugal	0.410	2
Portugal	0.281	Spain	0.350	Spain	0.350	3
Czech Republic	0.271	France	0.340	France	0.340	4
India	0.269	Denmark	0.290	Denmark	0.290	5
Brazil	0.254	Malaysia	0.290	Malaysia	0.290	6
Turkey	0.219	Brazil	0.260	Brazil	0.260	7
Norway	0.206	Norway	0.220	Norway	0.220	8
<b>Canada</b>	<b>0.180</b>	Turkey	0.220	Turkey	0.220	9
Korea	0.180	South Africa	0.220	South Africa	0.220	10

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Table 4: International Competitiveness of R&D Tax Credits (Tax Support Rate)

Table 4 Cont.

2008		2012 pre-budget		2012 post-budget		GlobalRanking
South Africa	0.163	Hungary	0.220	Hungary	0.220	11
Hungary	0.162	Czech Republic	0.200	Czech Republic	0.200	12
Denmark	0.138	<b>Canada</b>	<b>0.184</b>	Taiwan	0.150	13
China	0.138	Taiwan	0.150	Netherlands	0.140	14
Japan	0.116	Netherlands	0.140	China	0.140	15
Italy	0.117	China	0.140	Belgium	0.140	16
Australia	0.117	Belgium	0.140	<b>Canada</b>	<b>0.136</b>	<b>17</b>
Ireland	0.109	Japan	0.130	Japan	0.130	18
UK	0.105	Ireland	0.130	Ireland	0.130	19
Singapore	0.094	Italy	0.120	Italy	0.120	20
Belgium	0.089	Austria	0.120	Austria	0.120	21
Netherlands	0.071	UK	0.110	UK	0.110	22
Austria	0.088	Australia	0.110	Australia	0.110	23
United States	0.066	Korea	0.100	Korea	0.100	24
Greece	0.010	Russia	0.100	Russia	0.100	25
Poland	0.010	Singapore	0.090	Singapore	0.090	26
Chile	-0.006	United States	0.060	United States	0.060	27
Switzerland	-0.008	Slovenia	0.050	Slovenia	0.050	28
Finland	-0.008	Greece	0.010	Greece	0.010	29

Details of the B-Index calculation: [http://www.oecd-ilibrary.org/sites/sti\\_scoreboard-2009-en/02/14/index.html?contentType=&itemId=/content/chapter/sti\\_scoreboard-2009-31-en&containerItemId=/content/serial/20725345&accessItemIds=/content/book/sti\\_scoreboard-2009-en&mimeType=text/html](http://www.oecd-ilibrary.org/sites/sti_scoreboard-2009-en/02/14/index.html?contentType=&itemId=/content/chapter/sti_scoreboard-2009-31-en&containerItemId=/content/serial/20725345&accessItemIds=/content/book/sti_scoreboard-2009-en&mimeType=text/html)

The federal government argues that the SR&ED tax credit had to be reduced to reflect the generous decrease of the CIT rate in recent years. On one hand, it is true that the rate of support for every dollar spent in business R&D that went from 0.180 to 0.184 when the CIT reductions took place in Canada in recent years are included in the analysis (column “pre-budget” in Table 4). However, the five per cent reduction in the SR&ED rate for large corporate by far exceeds the CIT reduction implemented in recent years.

As such, the combined CIT reductions and the changes proposed in the 2012 budget will bring the rate of support for large firms' R&D expenditures in Canada to 0.136, lower than what it was in 2008, when CIT rates were higher than today. The net result for large companies is a reduced rate of support for R&D, even when the CIT reductions are included, making Canada less attractive for these large firms in which to conduct R&D.



## Capital Expenditures Related to R&D Activities:

One proposed measure in the 2012 budget that will have the most negative impact on Canadian manufacturers, after the reduction of the CIT rate, is the complete elimination of capital expenditures. Since manufacturing is highly dependent on investments in machinery and equipment to increase innovation and productivity, this measure will diminish the value of the SR&ED tax credit for manufacturers.

Not all innovation is the result of R&D, but process innovation and incremental innovation are strong contributors to industrial productivity. This is especially true in the manufacturing sector, where important gains in productivity are achieved through the acquisition of machinery and equipment. It is important to note that machinery and equipment acquired for R&D purposes can also be used for manufacturing and processing. Therefore, the elimination of all capital expenditures from the SR&ED tax credit will not only have a negative effect in company's R&D expenditures, but also indirectly on overall productivity.

When a company makes significant investments in machinery and equipment, the company also hires scientists or employees with scientific and/or technical training background to operate this equipment. In most cases, companies will also invest in a pilot plant or a laboratory in order to run these R&D activities. In addition, machinery and equipment acquired for R&D purposes will, in many cases, eventually end up in an enhanced manufacturing process, therefore closing that gap between invention and innovation. While the financial impact may seem modest, the estimates on the

financial impact on eliminating capital expenditures does not take into account this multiplier effect and the broader impact on Canadian productivity.

Globally, this will also make Canada's treatment of capital expenditures related to R&D less attractive. When examining international competitiveness in this area we can group countries into three categories: those providing a tax credit for capital expenditures related to R&D activities, those providing an accelerated depreciation rate for capital expenditures related to R&D, and, of course, those countries not providing any incentive for capital expenditures.

As *Table 5* shows, the most popular incentive is the inclusion of capital expenditures in the R&D tax credit, or to allow companies to claim the depreciation and/or amortization of tangible and/or intangible assets within their R&D tax credit claims (as Canada before proposed changes). The eligibility varies from one country to another, some only allowing expenses related to machinery and equipment, others only to lands and buildings, or both. Another mechanism is to provide a rapid depreciation rate for machinery and equipment, lands and buildings used for R&D purpose, outside the R&D tax credit. The depreciation is usually over one year (companies can deduct 100 per cent of capital expenditures the same year the expense took place) or over 2.5 years in the case of South Africa. In another but related area, the Canadian government has used this model recently with the Accelerated Capital Cost Allowance (ACCA) that allow companies to deduct 100 per cent of the acquisition of M&E used in manufacturing and processing over 2.5 years. The ACCA, however, does not include capital equipment used for R&D purpose.

Table 5: International comparison of tax incentives for capital expenditures related to R&D:

Treatment of capital expenditures	Countries
Capital expenditures not eligible under the R&D tax credit but equipment, machinery, and tools exclusively dedicated to R&D can be fully deducted the same year the expense is paid or incurred (or over 2.5 years in South Africa)	Brazil, United Kingdom, South Africa, Denmark
Building and land and/or M&E are eligible under the R&D tax credit. Some countries in this list allow businesses to claim only the depreciation of capital used for R&D under the R&D tax credit.	China, Czech Republic, France, Belgium, India, Japan, Australia, Austria, Hungary, Ireland, Israel, Poland, Portugal, South Korea, Spain, Turkey, Canada (pre-budget 2012)
No incentives for capital expenditures	Malaysia, Singapore, United States, Netherlands, Canada (post budget 2012)
Not applicable	Germany*, Mexico

*\*While Germany does not offer an R&D tax incentive, their direct funding programs such as the ones managed by the Fraunhofer Institutes allow companies to include some capital expenditures in their applications.*

By completely eliminating capital expenditures from the SR&ED tax credit, Canada will join the group of countries that do not offer any favourable tax treatment for capital expenditures related to R&D. The decision of the federal government to completely eliminate capital expenditures from the SR&ED tax credit without providing an alternative fiscal incentive will definitely put Canada at a disadvantage to most other industrialized and emerging nations, especially with regards to companies with high capital expenditures, such as companies in the manufacturing and natural resources sectors.

### **Overhead Costs:**

Under the proxy method, firms forgo claiming their actual overhead costs, but instead gross up their wage costs by 65 per cent. The Jenkins Panel in its 2011 report on SR&ED for the federal government noted that most firms use the proxy method, and mentioned that one of the potential reasons could be the increased compliance costs associated with claiming the actual overhead costs through the traditional or itemized method, even in cases where the overheads are actually higher than 65 per cent of wage costs. In other cases, firms may find their overhead costs are less than 65 per cent and so the proxy method provides a “net benefit.” Jenkins concludes by “advising the government to undertake a review of the true overhead costs borne by firms for their eligible R&D activities and to establish the proxy rate that best reflects these costs.”

By proposing to reduce the proxy from 65 per cent to 55 per cent, the government estimates that the proxy is too generous and that reducing it would best reflect the overhead costs. We have not seen, however, any evidence or analysis provided by the Department of Finance that suggests this is really the case. We, rather, believe the use of the proxy has to do with the simplification of the claim process, as suggested by the Jenkins Panel.

The most important point in regard to the proxy is that it was designed to reduce the complexity of the SR&ED claims and therefore reduce compliance costs. By reducing the proxy, there will clearly be more companies using the traditional method, mainly the ones for which overhead expenditures are more than 65 per cent of the salaries. By using the traditional method, companies have to track their actual overhead expenditures, adding significant administrative burden to the process. In addition, this will create additional burden on Canada Revenue Agency (CRA), since it will be required to verify the accuracy of documentation provided by companies. These additional resources required at CRA might actually offset any saving provided by the reducing of the proxy. To date, no analysis has been conducted, that CME is aware of, regarding the costs of compliance that will occur as a result of having more companies using the traditional method.

CME strongly believes the proxy must be used with the objective of simplifying the claim process. Therefore, a 10 per cent drop will add unnecessary administrative burden on both companies and the CRA.

## Direct and Indirect Support to R&D: New Direct Assistance Measures in Budget 2012:

**B**udget 2012 proposed new measures to provide businesses with more direct assistance for their R&D activities in order to offset the loss incurred with the proposed changes to the SR&ED program. ( *Table 6* )

Of the total new direct support measures of \$537 million announced in the federal budget, not all will be available for direct assistance to businesses, especially the large corporations. In fact, based on the breakdown in Table 7, CME estimates that of the total, only \$333 million will be directed to businesses of all sizes. Furthermore, there will be administrative fees associated with the management of these new funds, which will further reduce the total supports available to business. It can also be argued that only part of these funds will be accessed by the manufacturing sector (for example, a very low percentage of the VC funds will presumably end up in new manufacturing start-ups). There is also a possibility that these new funds might not be renewed after they expire, while losses incurred by changes to SR&ED are permanent.

As such, the new measures of direct assistance announced by the government in Budget 2012 will amount to a significant reduction in private sector support, especially in the manufacturing sector and for the larger firms, which are the ones the most impacted by the proposed changes to the SR&ED program.

In order to understand the impact on the proposed changes on Canadian competitiveness in supporting investment in R&D in a global context, CME conducted a preliminary analysis of direct assistance models used by other nations. They have been grouped into three categories below:

- Direct support based on a refundable tax credit for R&D;
- Direct subsidies to businesses to perform R&D projects; and
- Royalty repayment system.

Table 6: New measures of direct support announced in 2012 budget

Program (money accessible to private companies)	Additional Annual investment
NRC-IRAP	\$110 million
Business-led Centres of excellence	\$123 million
Venture capital high-risk firms	\$100 million/year (over four years)*
Western Economic Diversification Innovation Fund	No money announced yet
<b>Sub-Total:</b>	<b>\$333 million/year</b>
<b>Programs not accessible to private companies (academic focus exclusively)</b>	
Granting councils support to industry-academic research	\$37 million
Canada Foundation for innovation	\$100 million (over 5 years only)
National Research Council (NRC)	\$67 million
<b>Sub-Total:</b>	<b>\$204 million/year</b>
<b>Grand Total of New Direct Support Measures</b>	<b>\$537 million/year</b>

*\*The budget does not define how the \$400 million new funds for VC in high-risk firms will be structured. Therefore, for the purpose of this analysis, we presume that the \$400 million will be divided in four years. In addition, we excluded the \$100 million announced for the BDC's venture capital funds since this was an announcement made earlier by the government.*

### **Direct support through refundable R&D tax credit:**

In general, refundable tax credits are seen as the best tool to provide direct support without having to “pick winners.” They are based on actual R&D activities that have been performed and audited by government officials, and governments can restrict eligibility only to projects that meet pre-established criteria. Refundable tax credits are also seen as more market-driven than other types of direct assistance where governments actually decide the direction business research and R&D expenditures should take.

Five countries are currently using this system to support large corporations' R&D:

- Austria offers a 10 per cent cash-back premium for qualified expenditures in R&D. The credit is refundable to the extent the credit exceeds the amount of the tax liabilities.
- Belgium and France allow tax credits to be carried forward and after a certain amount of time the corporation may apply for a tax refund.
  - In Belgium, excess deductions may be carried forward indefinitely or converted into a refundable tax credit if credits are not utilized after five years.
  - In France, companies can carry forward their R&D tax credit for three years and in the event these credits are not claimed the company may apply for a tax refund.
- Ireland allows companies to choose between three options: 1) claim a refund on unused credits, which will be paid over three years; 2) carry back their unused credits to reduce the tax liability of the preceding accounting period; or 3) to carry forward indefinitely.
- The United Kingdom is currently consulting businesses to implement a refundable tax credit program to their R&D tax credit. The British government is proposing that its R&D tax credit should be taxable and a minimum rate before tax has been set at 9.1 per cent of eligible expenditures. Companies with tax liabilities will obtain a relief by off-setting their credits against their tax liability. Companies without tax liabilities will be able to receive cash, possibly at a discount. This model is to be implemented for the accounting periods beginning after the 1st of April 2013.

### **Direct subsidies to businesses to perform R&D projects:**

Cash grants are another type of direct support, which are not repayable and cover a certain percentage of a company's specific project. They can be made available directly to businesses, or to a consortium of business and academic institutions to conduct joint R&D projects. Cash grants are less market-driven than refundable tax credits, and sometimes pose a problem with rules governing international trade. They can also be expensive for governments since they are not repayable. In opposition to refundable tax credits, cash grants include a selection of “winners and losers” which mean a screening or selection has to be made within a pool of applicants, increasing the administration cost of a cash grant program.

Some countries have been using this system efficiently over the years. Two countries, Germany and Finland, have put together cash grant programs that are considered very successful.

- **Fraunhofer Institute (Germany):**

As of 2012, the Fraunhofer-Gesellschaft institute maintained more than 80 research units in Germany, including 60 Fraunhofer institutes. Fraunhofer employs more than 18,000 people who work with an annual budget of €1.66 billion (\$2.01 billion CAN).

One particularity of this model is that Fraunhofer generates more than €1.4 billion (\$1.75 billion CAN) through contract research. About 70 per cent of Fraunhofer's revenue derives from contract research within the industry. The remaining 30 per cent is obtained via application-oriented basic research which is funded by the German federal ministry of education and research which enables Fraunhofer to conduct non-contract advanced research into technological fields which hold high promise for the future.

- **Funding Agency for Technology and Innovation (Finland)**

In 2011, the Finnish Funding Agency for Technology and Innovation (Tekes) provided €610 million (\$760 million CAN) in R&D funding. Of the total €349 million (\$435 million CAN) was invested in enterprise projects (total of 1240 projects last year), while the remaining of the €261 million (\$325 million CAN) was allocated to universities, research institutes, polytechnics, municipalities, cooperatives, societies and associations. Last year, 27 per cent or €87 million (\$108 million CAN) allocated to enterprises was targeted at large companies with more than 500 employees. Tekes offers services comparable to the NRC-IRAP program offered in Canada, but is not limiting the funds only to SMEs. Tekes also encourages foreign companies (small and large) to conduct R&D in Finland by providing expertise and information about research and development networks in Finland, gives contacts and assistance to establish a business, provides funding for development projects (for companies registered in Finland) and provides funding for research mobility all of which are free of charge for companies who qualify.

While this system is obviously advantageous for many companies, given that the grants are not repayable, the main issue with this model is that it cannot be accessible to a large pool of companies. Funds are obviously limited. The

selection process is restricted to a limited number of companies. The fact that the subsidies are not repayable could also become a problem with international trade rules governing state aid to businesses, in certain industry sectors.

- **Israel:**

The Office of the Chief Scientist (OCS) of the Ministry of Trade and Labour in Israel offers, on average, US \$300 million annually for cash grants. The biggest program offered is the R&D Fund, which offers R&D grants up to 40 per cent of approved R&D program. The standard rate is 20 to 40 per cent, but biotechnology or nanotechnology companies may receive funding up to 50 per cent of approved projects. Furthermore, companies located in selected priority regions are entitled to an additional 10 per cent funding. Israel also has a Global Enterprise R&D Cooperation Framework, where joint projects between multinational companies and Israeli companies, authorized by the OCS, could be entitled to financial assistance of 50 per cent of the Israeli company's R&D approval costs. Direct investments in joint R&D project with Israeli companies will be credited with 150 per cent of the value of such investments for "Buy-back" liabilities.

### **Royalty repayment system:**

Royalty repayment systems, or refundable loans, operate in many countries, including Canada and Israel. These programs essentially offer a risk-sharing arrangement between the government and the industrial sector when companies seek to conduct R&D with a specific goal of product commercialization. Repayments occur when the company commercializes the product through a royalty arrangement.

- **Canada:**

Canada has a longstanding and successful experience of using repayable contributions for R&D projects through the Strategic Aerospace and Defence



Initiative (SADI), the Defence Industries Productivity Program (DIPP) and Technology Partnerships Canada (TPC).

TPC was founded on the principals of its predecessor the DIPP. The TPC program was also interlinked with the IRAP program, which allowed SMEs to receive funding for R&D projects. The TPC Repayment Status Report from the Industrial Technologies Office (ITO) indicates that 198 projects are still active today and eight per cent of them haven't started the repayment phase yet. In 2011-2012 the ITO collected \$93.4 million, bringing the cumulative repayments collected to date to \$767.2 million (TPC Repayment Status, 2012: TPC Program). TPC projects are long-term projects (up to 30 years) which begin with an R&D phase followed by a repayment phase and the final TPC repayments are not expected until 2035, which will allow more money to be recovered from these projects. As of May 1, 2012, the TPC repayments are in line with forecasts and are continuing to increase. The final report of the Valuation of Technology Partnerships Canada Benefits estimates that the TPC derived products will generate \$5.7 billion to Canadian users with a net impact of \$32.3 billion, which represents 8.6 times the program expenditure.

The Strategic Aerospace and Defence Initiative (SADI), created to support Canada's Aerospace and Defence industry, uses a similar model of repayable loans.

The TPC program was cancelled in 2004 due to concerns with the repayment status and selection criteria, which was widely seen to favour certain companies over others (the "picking winners" approach).

These global examples of direct R&D support should provide a template for successful programs that could be implemented in Canada. Most importantly, unlike the proposals in Budget 2012, CME does not agree that direct support programs should at the expense of the SR&ED tax credit. In all countries noted above, direct assistance programs are used as a complement to indirect assistance, whether to support certain types of companies or certain strategic sectors. Direct support to business R&D is selective – governments have to pick the winners and large numbers of companies cannot access to the funds. Direct support is non-market driven, while companies are usually better positioned to make decisions regarding their innovation activities. As such, direct support cannot replace indirect support, however, it can complement it. Among the three categories of direct support analyzed in this paper, the refundable tax credits system is the most market-driven and less subject to the 'picking winners' issue. Canada should seriously consider a refundable tax credit for larger corporations as the best way to retain and attract more R&D budgets from large multinationals.

## Summary Recommendations:

Given the significant role that manufacturing plays in the Canadian economy, and the reality that manufacturing accounts for more than 50 per cent of R&D activity in Canada, this study was designed to understand the full impact of the changes proposed to Canada's SR&ED program in Budget 2012 and to set out options for government to strategically improve Canada's R&D support mechanisms within an international context. The focus was aimed primarily at the role of large firms in R&D and the government support for those companies because the proposed changes are directly aimed at larger firms, and those companies are more R&D-intensive and have more mobile capital than small business.

Canada has focused its recent tax policies on reductions in the corporate income tax rate with a goal of becoming an internationally competitive location for business investment, which has been applauded by CME and other business groups across Canada. However, despite these CIT reductions, when taking into consideration the proposed changes in SR&ED support, Canada will become less globally competitive as a place to attract critically important global R&D activities. In fact, the impact of proposed SR&ED changes will have a direct impact on large companies' incentives to conduct R&D in Canada of roughly \$750 million a year by 2017 and drop our global competitiveness ranking of R&D tax support from 9th in 2008 to 17th.

In order to minimize the impacts of the proposals made in Budget 2012 and support Canada's global competitiveness for attracting R&D and increase business expenditure in R&D in Canada, the government must put in place incentives and programs that will attract multinationals to invest in Canada. Specifically, CME recommends governments:

1. Provide a partial tax refund to large companies to offset the proposed five per cent reduction of the ITC rate. This would not only be the most efficient way to provide more direct support to business R&D; it would also address other issues with the current SR&ED tax credit, such as the multi-billion dollar pool of unused tax credits that could and should be re-invested in future R&D projects by large companies.
2. Provide an accelerated depreciation rate for capital expenditures (M&E) associated with R&D, using the current accelerated cost of capital allowance (ACCA) model used for machinery and equipment in manufacturing and processing.
3. Further study the impact of the reduction of the proxy used for overhead costs in light of its impact on large companies and the need to simplify the SR&ED claim process and reduce paperwork.
4. Conduct further consultations with industry and provinces before implementing proposed changes.