Scientific Research and Experimental Development: A Program in Crisis?

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PRÉCIS
Dans le cadre des efforts continus qu’ils consacrent à la promotion de dépenses additionnelles de recherche scientifique et de développement expérimental (R & D) au Canada, le gouvernement fédéral et divers gouvernements provinciaux offrent des encouragements fiscaux aux exécutants de R & D. L’auteur trace l’évolution historique de ces encouragements et examine les incertitudes actuelles auxquelles font face les programmes. Les modifications apportées dans les pratiques de vérification de Revenu Canada ainsi que des commentaires contenus dans certains documents d’étude publiés par le ministère des Finances et par Revenu Canada ont suscité des craintes quant à l’avenir des programmes. Au moment de la rédaction de cet article, ces documents d’étude n’avaient donné lieu à aucune modification.

ABSTRACT
As a part of their continuing efforts to promote additional spending on research and development (R & D) in Canada, the federal government and various provincial governments offer tax incentives to R & D performers. The author traces the history of the evolution of these incentives and examines the current uncertainties facing the programs. Fears for the future of the programs have been raised by changes in Revenue Canada’s audit practices, as well as by comments in recent discussion papers issued by both the Department of Finance and Revenue Canada. At the time of writing, no changes had resulted from those discussion papers.

INTRODUCTION
Over the years, the federal government has encouraged research and development (R & D) in the private sector through various income tax provisions. (For tax purposes, the definition of R & D is “scientific research and experimental development” [SR & ED].)1 Currently, Canadian

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1 Regulation 2900(1) of the Income Tax Act, RSC 1985, c. 1 (5th Supp.), as amended (herein referred to as “the Act”). Unless otherwise stated, statutory references in this article are to the Act.
companies are now claiming annually over $1 billion of federal investment tax credits.\textsuperscript{2} In addition, various provincial governments offer incentives for R & D performed in the province.\textsuperscript{3} For the most part, these provincial incentives are based on the federal definition of SR & ED and on the federal definition of qualifying expenditures for investment tax credit purposes. Therefore, any changes to the federal program also affect the provincial R & D incentives.

Industry’s attitude to the program has varied from frustration to acceptance and back to frustration. On the legislative front, a number of significant changes have been made to the program. Currently, both Revenue Canada and the Department of Finance are conducting separate reviews of the program which may result in additional changes in 1996 and 1997.

At present, industry faces significant uncertainty about the future viability of the SR & ED program. This uncertainty has been fuelled by the recent changes in Revenue Canada’s audit practices as they are applied to SR & ED claims, and by the radical changes currently under discussion in the reviews referred to above.

The purpose of this article is to offer a historical overview of the evolution of the federal R & D incentives, an assessment of their current status, and some comments and speculation about the future of the program.

**RATIONALE FOR THE PROGRAM**

The federal government has long recognized the importance of R & D to the economy. Historically, Canada’s spending on R & D as a percentage of GDP (0.8 percent) has lagged significantly behind that of industrialized countries such as Germany (1.8 percent), Japan (2.2 percent), Sweden (1.6 percent), and the United States (1.9 percent). Although Canada’s spending on R & D as measured against GDP increased between 1981 and 1991, other members of the Organisation for Economic Co-operation and Development (OECD) also experienced equal or greater increases.\textsuperscript{4}

Over the years, the various levels of Canadian government have used income tax incentives to support the growth in R & D in the private sector. The auditor general has stated:

> The most comprehensive statement of objectives for these incentives is found in the 1983 [Department of Finance] paper entitled *Research and Development Tax Policies*. In summary, these objectives are:
> * to encourage research and development by the private sector in Canada;
> * to promote research and development activities that conform to sound business practices;


\textsuperscript{3}Nova Scotia, New Brunswick, Quebec, Ontario, and Manitoba currently offer R & D incentives.

• to provide tax incentives for research and development that, as much as possible, are for immediate benefit to businesses; and
• to provide tax incentives for research and development that are as simple to understand and comply with and as certain in application as possible.5

THE INCENTIVES AND THEIR SIGNIFICANCE

At the federal level, the following tax incentives are available for qualifying SR & ED activities:

• Investment tax credits are earned at a rate of 20 or 35 percent on qualifying current and capital expenditures made in Canada. These tax credits can be used to offset federal taxes payable, or, in some cases, can be fully refunded to qualifying taxpayers even though they have no taxable income. These credits are effectively taxable in the year following the year in which they are used to offset taxes payable or are refunded.

• A deduction is offered for eligible current and capital expenditures in the year incurred or deferred, at the taxpayer’s option, to a subsequent year.

At the provincial level, the incentives include:

• tax credits that can be used to offset provincial taxes payable (Manitoba, Nova Scotia, and New Brunswick);
• tax credits that are refundable (Nova Scotia and Quebec);
• in Quebec, a tax credit of 20 or 40 percent, based on the salaries of SR & ED personnel and the non-taxability of the federal investment tax credits; and
• in Ontario, an additional deduction (the superallowance) and a tax credit (the Ontario innovation tax credit). (Note that the Ontario innovation tax credit, although applicable since January 1, 1995, had not been passed into law at the time of writing.)

A unique feature of the Canadian program is the refundability of the investment tax credits for Canadian-controlled private corporations that meet certain taxable income and asset size tests. For many firms, these refundable credits are an important source of cash flow. The appendices to this article set out examples of the benefits of the SR & ED incentives to various types of SR & ED performers. These incentives result in after-tax reductions in taxpayer’s SR & ED costs ranging from 15.6 to 41.8 percent in Ontario and Quebec.

From 1989 to 1992, an average of 6,250 taxpayers claimed the incentives.6 It is of interest to note that R & D in Canada is dominated by a few very large firms. A study by Robert Squires for the Conference Board of

5 Supra footnote 2, at 32-7.
Canada indicates that about 50 percent of Canada’s R & D is performed by 1 percent of the R & D-performing companies in Canada.7

Canada’s tax incentives make it cheaper to perform R & D on an after-tax basis in Canada than in the United States. This finding, reported in a recent study prepared for Industry Canada, is based on the assumption that the costs of performing R & D in the two countries are equal.8 In addition, Canada’s tax incentives are richer than those in most industrialized countries.9 (One exception is Ireland, where the incentives can include a lifetime tax exemption for the income earned from the results of R & D performed there.)

EFFECTIVENESS OF THE PROGRAM

The first major review of the SR & ED program was carried out recently by the auditor general.10 Two of its major findings concern the flood of taxpayer-requested adjustments in 1994 (to be discussed later) and the need for the Department of Finance to monitor the tax incentives for R & D more thoroughly and systematically in order to “control [its] costs in forgone revenue and to ensure that the types of activities that qualify under the definitions and rules [in the Act] are those that the government intends to encourage.”11

The auditor general stated that no formal evaluation of the tax incentives for research and development had been done.12 This induced the Department of Finance to conduct a two-part review of the SR & ED program. (The Department of Finance does conduct regular program reviews; however, the auditor general’s report provided the impetus to do the review at this time.)

The first part of the review concerns the tax incentives for performing R & D in connection with information technology. This review was announced in the February 1995 budget, and is to be completed in time for any legislative changes, if required, to be made in the 1996 budget. The second part of the review is currently under way and encompasses the remainder of the areas in which R & D is performed, and should be completed in time for any legislative changes, if required, to be made in the 1997 budget.

In my view, and in the view of organizations such as the Canadian Advanced Technology Association, the SR & ED program has had some notable successes. This conclusion is based on anecdotal evidence and

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7 Supra footnote 4, at 2.
9 Supra footnote 4.
10 Supra footnote 2, chapter 32.
11 Ibid., at 32-16 to 32-17.
12 Ibid., at 32-17.

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some surveys. Companies “have successfully used the SR & ED incentive to offset many of the negative Canadian financial factors that would make them otherwise globally uncompetitive,”¹³ and there have been other benefits:

• the program has been a key factor in the survival of many Canadian-controlled private corporations, in that it has provided the companies with cash flow;

• the program has allowed many companies to remain in Canada after they have been purchased by offshore organizations; and

• the program has a proven record of successfully attracting multinational organizations to Canada.¹⁴

HISTORICAL OVERVIEW

Without a specific reference to R & D expenditures in the Income Tax Act, R & D expenditures might be considered non-deductible as not having been laid out for the purpose of earning income, or as capital in nature.¹⁵ Certain outlays with respect to intangibles might be classified as eligible capital expenditures, and therefore might be only partially deductible and only over time. Other costs might be capital outlays with respect to depreciable property subject to capital cost allowances. Therefore, as far back as the 1948 Income Tax Act, provisions were made to allow current R & D expenditures to be fully deductible in the year incurred.

The following is a summary of the evolution of the federal R & D incentives.

Pre-1961

Current expenditures were deducted in the year incurred or not at all; capital R & D expenditures were deductible at the rate of 33 percent per annum.

1961

Capital expenditures were made fully deductible in determining income in the year incurred, or, at the taxpayer’s option, the expenditures could be carried forward indefinitely and deducted in any subsequent year. The carryforward feature was applicable with respect to capital expenditures incurred in taxation years ending after 1958.


¹⁴ Ibid.

1962-66
An additional tax deduction of 50 percent of the current and capital expenditures in excess of the base levels prevailing in 1961 was made available.

1966-75
The additional 50 percent deductible was replaced by grants under the Industrial Research and Development Incentives Act (IRDIA) in the amounts of 25 percent of capital expenditures and 25 percent of current expenditures in excess of the average level over the previous five years. The 25 percent grant was non-taxable and provided the same incentive for firms paying tax at the 50 percent rate as had the previous tax deduction. These grants provided access for non-taxable firms to the R & D incentives. The IRDIA program was cancelled in 1975 because of government spending restraints.

1974
The carryforward feature for R & D expenditures was extended to include current expenditures incurred in taxation years ending after 1973.

1977-78
An investment tax credit (ITC) of 5 to 10 percent, varying by region, was introduced on both current and capital expenditures. The ITC was deductible against taxes payable to a maximum of $15,000 plus 50 percent of tax otherwise payable in excess of that amount.

1978
An additional tax allowance of 50 percent of current and capital expenditures in excess of the average level over the previous three years was introduced. The minimum rate of the ITC was raised to 10 percent and 20 percent, respectively, in Atlantic Canada and the Gaspé region, and to 25 percent for small businesses.

1979

1980
*Interpretation Bulletin* IT-151R2, “Scientific Research and Experimental Development Expenditures,” was released on December 16, 1980.

1983
In 1983, the incentives to R & D performers consisted of the following:

1) a current writeoff of current and capital R & D expenditures or, at the taxpayer’s option, an unlimited carryforward;

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2) ITCs on R & D expenditures, with limits on utilization against federal taxes payable; and

3) an additional deduction based on incremental R & D expenditures.

At this time, the government recognized that this assistance was not available to taxpayers unless they had income taxes payable. Even then the benefits were limited, given the restrictions on the use of ITCs. In order to make the incentives more useful, in 1983 the government introduced mechanisms to flow through tax credits to investors from companies that could not use the additional deductions and credits. In addition, the government introduced partial refundability of ITCs and removed the limitations on the refundability of ITCs against taxes payable.

The specific measures introduced to make the incentives more useful included the following:

• partial refundability (20 to 40 percent) of unused ITCs introduced for expenditures made before May 1986;

• three-year carryback of ITCs; carryforward extended to seven years from five years;

• elimination of limit on deductibility of ITCs against taxes payable;

• elimination of incremental 50 percent allowance;

• 10 percent increase in ITC rates to 20 percent, 30 percent, and 35 percent for general R & D expenditures, Atlantic Canada R & D expenditures, and R & D expenditures made by small businesses, respectively; and

• share purchase tax credit (SPTC) and scientific research tax credit (SRTC) flowout mechanisms.

The SPTC and the SRTC were tax incentive mechanisms for SR & ED whereby the R & D incentives were forgone by the actual R & D performer and instead were flowed out to individual investors in the company. The SRTC was abused, and was viewed as a disaster in promoting the policy objective of encouraging R & D activities in Canada.

Under the SPTC program, the corporation performing the R & D was allowed to flow out its ITCs to purchasers of qualifying new equity shares of the corporation. The purpose of the program was to allow non-taxable R & D performers to benefit from the ITCs (which were generally not refundable) by allowing them to flow out the benefits of the ITCs to the investors. The SPTCs were not subject to the same level of abuse as the SRTCs. However, the program was terminated on December 31, 1986.

Under the SRTC program, a corporation could forgo its R & D tax deductions and its ITCs, and could instead flow them out to investors in the form of a 50 percent federal tax credit. The corporation then had to pay part VIII tax, which would be refunded once the R & D was performed. The purpose of the program was “to attract investors to R & D projects and to overcome many of the uncertainties that were perceived as impeding
more conventional project funding.”” The program was quickly abused: instead of attracting investors who were interested in long-term projects, it attracted investors who were interested only in quick profits, and the “quick flip” was born, leaving investors with quick profits and companies with insufficient funds to pay their part VIII tax liability or to fund their R & D activities.

1984
A 35 percent ITC was limited to the first $2 million of R & D expenditures per year. The government issued a moratorium on quick flips in October 1994; after that time, the SRTC was available only to investors who purchased qualifying shares. SRTC issues were confined to equity shares. However, “significant abuses continued as more and more elaborate schemes were developed to relieve the government of the burden of collecting its tax revenues.”

1985
The SRTC program was finally eliminated in the May 23, 1985 budget. In the same budget, the government introduced 100 percent refundability of ITCs for small R & D performers in order to make the R & D tax incentives available directly to non-taxable corporations, rather than through the mechanism of flowing out unused R & D incentives from non-taxable corporations to their investors. Thus, the R & D incentive became a source of financing for taxable and some non-taxable R & D performers. However, this system still does not provide a complete flowthrough of benefits to non-taxable corporations. For example, public companies and non-Canadian corporations are not entitled to cash refunds of unused ITCs. Instead, these types of corporations must use the incentives within a 10-year window (3-year carryback and 7-year carryforward). The effectiveness of these incentives is reduced by their ability to generate taxable income and the time value of money.

Other fundamental changes were introduced in 1985:

• “Wholly attributable to R & D” requirements for SR & ED expenditures were relaxed to “all or substantially all attributable.”
• R & D credit was extended to expenditures of a current nature “directly attributable” to R & D.
• R & D was recast as scientific research and experimental development. The purpose of the changes to the definition was to ensure that a broader range of R & D would qualify for the incentives.
• Change-of-control rules were introduced for ITCs and SR & ED deductions.

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17 Ibid., at 7:4.
The ITC base was computed net of assistance. This change was significant: prior to the change, only amounts received in any taxation years ending after 1973 under an Appropriation Act and on terms and conditions approved by the Treasury Board with respect to scientific research expenditures incurred for the purpose of advancing or sustaining the technological capability of Canadian manufacturing or other industry reduced the deductible expenditures with respect to which the grants were made.\textsuperscript{18} Prior to the change, it was possible to obtain the R & D tax incentives on work that was funded in part or in whole by other Canadian corporations or from government grants that did not meet the above definition. In effect, one could have had R & D fully funded and yet still recover all the credits.

After this change, for ITC purposes, a taxpayer’s R & D expenditures must be reduced by government assistance, non-government assistance, and contract payments. Contract payments are only those received from corporations carrying on business in Canada. Therefore, the taxpayer is still entitled to claim the Canadian R & D incentives on work performed in Canada even though such work has been funded by a foreign entity.

It should be noted that Revenue Canada’s interpretation of what constitutes a contract payment has evolved over time.

\textbf{1986}

R & D incentives were extended to payments made to federal granting councils; 20 to 40 percent refundability of unused ITCs was extended to credits on expenditures made before 1989; and the SPTC program ended.

\textbf{1987}

The purchase of buildings and/or associated lease costs were excluded from R & D incentives, with some grandfathering period. An exception was provided for special-purpose buildings. Restrictions were reintroduced on the amount of ITCs claimable in a year. The carryforward period for ITCs was extended from 7 years to 10 years. “Related to the business” requirements were strengthened, and partnership rules were introduced. These rules put further blocks on passive investors investing in R & D and receiving the writeoffs and other incentives. The 20 percent refundability of unused ITCs was eliminated for expenditures made before 1988, and the 40 percent refundability of unused ITCs was extended indefinitely. \textit{Information Circular 86-4R, “Scientific Research and Experimental Development,”} was released on September 27, 1987.

\textbf{1988}

A “fast-track” process was introduced to allow taxpayers a partial R & D ITC refund prior to Revenue Canada’s issuing a notice of assessment.

\textsuperscript{18} Paragraph 37(1)(c) of the Income Tax Act, RSC 1952, c. 148, as amended by SC 1970-71-72, c. 63, and as subsequently amended.
Information Circular 86-4R2 was released on August 29, 1988, and Interpretation Bulletin IT-151R3 was released on June 24, 1988.

1992
The government introduced several changes to the R & D program in its December 2, 1992 economic statement. For years ending after December 2, 1992, an alternative method (the proxy method) was made available for computing the amount of R & D overhead expenditures. Previously, Revenue Canada allowed general and administrative expenses, including salaries and wages, that were not directly attributable to R & D to be allocated to R & D on an incremental cost basis. This incremental cost allocation method put undue record-keeping burdens on small R & D performers:

Usually, taxpayers without a sophisticated cost accounting system face the virtually impossible task of satisfying Revenue Canada [that the expenditures are incremental to the R & D activity]. As a result, many small companies, or companies without sophisticated cost accounting systems, do not bother to claim overhead costs since they do not wish to spend their time disputing the issue with the tax authorities.

The proxy method is optional on a year-by-year basis and allows the calculation of overhead costs as a factor of direct R & D salaries. Under the incremental method, each overhead cost must be identified on an item-by-item basis and must be proved to be incremental and directly attributable to the R & D activity. Thus, the proxy method should result in increased certainty for its users, because direct R & D salaries are usually easier to determine than incremental overhead.

Partial ITCs may be earned on shared-use equipment (used primarily for R & D) that was acquired after December 2, 1992.

1993
Interpretation Bulletin IT-151R4, applicable to SR & ED expenditures incurred after December 15, 1987, was released on August 16, 1993.

1994
• The annual ITC limit, which restricted the extent to which ITCs could offset federal taxes payable, was eliminated.
• Class 44, a new capital cost allowance (CCA) class, was introduced for patents and licences acquired after April 26, 1993.
• An accelerated CCA rate for rapidly depreciating equipment was established.

• The annual taxable income limit was increased, with a corresponding decrease in the $2 million expenditure limit for corporations claiming 35 percent refundable credits for years beginning after 1993.

• The definition of SR & ED was clarified to include “experimental development”—shop-floor R & D.

• Remuneration based on profits or bonuses paid to specified employees (related to or owning at least 10 percent of any class of shares of the corporation) was excluded from qualifying R & D expenditures.

• The definition of qualifying current SR & ED expenditures was clarified to include a portion of an expenditure where that portion was incremental to the prosecution of SR & ED.

• The definition of qualifying current SR & ED expenditures was clarified to provide that salary and wages could be accrued and need not be paid.

• Sole-purpose SR & ED corporations were no longer exempt from the prescribed expenditures rules for years beginning after February 22, 1994.

• The February 22, 1994 budget introduced measures to prevent taxpayers from filing taxpayer-requested adjustments (TPRs) for R & D performed in the prior years. Under the phase-in provisions, TPRs had to be filed by September 13, 1994 in order to be valid. After that date, all R & D claims must be filed by the due date of the income tax return for the year following the year in which the R & D expenditures were incurred. (This deadline was changed again in the 1995 budget.) This announcement led to a flurry of activity: many taxpayers reviewed their records in order to ensure that they had claimed all their eligible expenditures. By March 31, 1994, Revenue Canada had more than 2,000 claims waiting to be reviewed and audited, representing over $425 million in potential investment tax credits. By September 13, this number had grown to over 16,000 claims. This additional workload has created numerous problems for Revenue Canada.

• The Department of Finance announced a study of “contract payments” rules.

• Information Circular 86-4R3 was released on May 24, 1994, without the computer software application paper. Computer software represents a large and growing segment of R & D performed in Canada. The 1994 auditor general’s report estimated that computer software represented 44 percent of the total claims. Many believe that this figure is an understatement: many R & D projects classified, for example, as telecommunications actually contain a high proportion of software development. The removal of this application paper means that there are no guidelines in this area. This has led to a number of problems in Revenue Canada’s audits of computer software claims.

21 Supra footnote 2, at 32-15.
• Some Taxation Service Offices introduced the concept of the “bubble audit.” This audit methodology is based on an audit at the activity level rather than the project level. Again, this has led to confrontation between taxpayers and Revenue Canada.

• The auditor general’s report on the R & D program was released.

• A December 15, 1994 Globe and Mail article reported that Canada’s largest banks were claiming $300 million in R & D tax credits with respect to computer software development costs dating back to the mid-1980s. The Globe and Mail suggested that these claims raised serious questions about the government’s design of the R & D tax credit program.

1995
In the February 27, 1995 budget, it was announced that the Department of Finance is undertaking a general review of computer software and information technology (IT) R & D, including the use of software, hardware, and communications technology to collect, process, store, and disseminate information.

In reaction to the December 1994 Globe and Mail articles, an immediate moratorium was placed on IT-related R & D tax credit claims by financial institutions. Pending the outcome of this IT review, those institutions will not be able to claim tax incentives on qualified IT R & D expenditures. Once the IT review is completed, however, financial institutions will be able to claim tax incentives under whatever new rules are introduced in the 1996 budget, retroactive to the 1995 budget date.

Limits were placed on the amount of ITCs that can be claimed by members of a corporate group in non-arm’s-length contracts. Essentially, the corporate member claiming the ITCs may claim ITCs only on the actual costs incurred by the non-arm’s-length R & D performer; no markup on the R & D activities may be flowed through to the R & D purchaser. These new rules are extremely complex and will add to the compliance burden.

Additional reporting requirements were introduced, and limitations were imposed on the timing of the deductibility of payments to not-for-profit R & D corporations.

Limitations were introduced on unpaid amounts for R & D: if the R & D is not paid for within 180 days of the taxpayer’s year-end, the ITCs cannot be claimed until the year in which payment is made.

Draft legislation containing the February 27, 1995 budget proposals was introduced July 19, 1995, and contained a number of surprises;22

• The filing date for R & D claims was changed to 12 months following the due date of the income tax return for the year in which the R & D expenditures were incurred.

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• In filing its R & D claim, a taxpayer must identify any non-deductible, unpaid amounts with respect to R & D expenditures for the year in which the liability arises in order to be able to claim the ITCs on the amounts when they are paid.

• ITCs may not be claimed on payments to a person or partnership that is not a “taxable supplier”—that is, a person or partnership that is not a Canadian resident or does not receive an R & D payment in the course of carrying on business through a permanent establishment in Canada.

• New contract payment rules for non-arm’s-length parties are complex. The rules take into account many scenarios: parties with different year-ends, situations in which parties become non-arm’s-length, and situations in which one party receives assistance related to the intercorporate R & D. A “qualified expenditure pool” concept was introduced to facilitate the calculation of a taxpayer’s ITC claim.

• Several new anti-avoidance rules were introduced; for example, if a taxpayer enters into a transaction whose principal purpose is to take advantage of the new contract rules by causing the parties to be non-arm’s-length, then neither party can claim ITCs on intercorporate R & D.

• The cutoff date for determining how much government assistance has been received or is entitled to be received by the taxpayer was changed from the date on which the return is filed to the date on which the return is due.

A House of Commons committee was informed that it would take as long as two years for Revenue Canada to process a backlog of 15,000 TPRs for R & D tax credits totalling $1.6 billion. TPRs have the lowest priority in Revenue Canada’s assessment hierarchy, even though some of these adjustments may date back as far as 10 years.

On August 29, Revenue Canada released a consultation paper on the application of regulation 2900 to computer software; on September 29, the Department of Finance released its consultation paper on information technology SR & ED. Following the release of these discussion papers, Revenue Canada and the Department of Finance had consultations across Canada with taxpayers and industry associations.

THE AUDIT PROCESS
Prior to the 1995 budget, the decision of what activities qualified as SR & ED was left to the Revenue Canada auditors—audit and accounting professionals who had no technical or educational qualifications in R & D.

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This lack of experience, coupled with the auditors’ normal bias toward enforcing compliance, led to many disagreements over the definition of R & D in the early 1980s. This problem was addressed in the May 23, 1985 budget:

The Minister of National Revenue will be announcing changes to the administration of the R & D tax incentives, including the hiring or contracting of technical experts to aid tax auditors in the determination of qualified R & D. These experts will automatically become involved in cases where R & D claims are in dispute between taxpayers and the regular tax auditors. In some cases, the technical expert may be on site to deal directly with the company. This will ensure that taxpayers (whether claiming the regular tax incentives for R & D or the refundable credit) have direct access to experts in the case of doubt.26

In response, Revenue Canada built up a cadre of scientists and engineers to assess the technological aspects of the SR & ED program:

Currently, the Department has over 60 such science advisors on staff. In addition, it hires experts on a contract basis, as necessary, to supplement its in-house expertise. Claims are reviewed by a science advisor for the technical aspects and by an auditor for the related costs.27

There is no doubt that Revenue Canada’s administering of the program caused certain tensions to develop. First, the role is one of program delivery, not compliance. In some instances, it was and is difficult for Revenue Canada’s staff to separate the two. Second, the science advisers did not fit into a department dominated by auditing and accounting professionals. However, this has improved over time; Bruce Doern concluded that in “the early 1990s, there was arguably a better sense of equilibrium about the two roles.”28

THE CONSULTATION PROCESS

A major problem in the early 1980s was the lack of consensus between Revenue Canada and industry as to which activities qualified as R & D. The definition of SR & ED contained in regulation 2900 is very broad and open to interpretation. At that time, there were no court cases on the topic. Even today, there are a minimal number of cases, and none of these, in my view, are landmark decisions.

Revenue Canada’s original position on activities that qualified as R & D was set out in Interpretation Bulletin IT-439, published in 1979. However, that position “was perceived by taxpayers as giving insufficient guidance on the meaning of eligible ‘Research’ and ‘Development,’ a perception that the Department [of National Revenue] recognized and shared.”29

26 Canada, Department of Finance, 1985 Budget, Budget Papers, May 23, 1985, 16-17.
27 Supra footnote 2, at 32-19.
28 Supra footnote 6, at 21.
Following the SRTC fiasco and the 1985 budget, the central task was for Revenue Canada to develop a new, agreed statement of guidelines both to make the SR & ED incentive work and to restore confidence in the purposes and integrity of the federal research and development incentives as a whole. The process of developing new guidelines was led by the newly appointed Senior Science Advisor at Revenue Canada [Dr. Russ Roberts] who simultaneously faced the challenge of recruiting and training the new cadre of technical advisors and securing their legitimacy in the eyes of the dominant auditing and accounting professionals in Revenue Canada. 30

As a part of the changes following the SRTC experience, Revenue Canada no longer issued advance rulings on whether certain activities qualified as SR & ED. However, advance rulings were still given on the financial aspects of R & D transactions. Taxpayers may consult with Revenue Canada’s science advisers as to what qualified as SR & ED prior to filing a claim; however, any advice given in such discussions was not binding upon the department.

The consultation process initiated by Dr. Russ Roberts resulted in the issuance of Information Circular 86-4R on September 27, 1987. The circular set out Revenue Canada’s views on what constituted R & D based on the definition in regulation 2900. The consultation process involved arm’s-length panels of experts who were given the task of formulating the technical guidelines. Business and industry were invited to present written briefs to the panel. In addition, Dr. Roberts spent many months consulting industry about the nature of the guidelines and the procedure used to formulate them. Apparently, the process was quite acrimonious at times. 31

Information Circular 86-4R has now evolved into Information Circular 86-4R3. In addition, Revenue Canada has released industry application papers that describe what constitutes R & D in specific industries: automotive, machinery and equipment, aerospace, and plastics. An application paper for the software industry was released with Information Circular 86-4R2 but was withdrawn in May 1994. Currently, there is a draft application paper for the pharmaceutical industry.

The release of Information Circular 86-4R in the autumn of 1987 marked the beginning of better relations between taxpayers and Revenue Canada on R & D-related issues. Although in 1988 R & D performers were still extremely frustrated with the program’s administration, 32 consultations with Revenue Canada and political pressure applied by the R & D performers were beginning to result in improvements.

30 Supra footnote 6, at 14.
31 Ibid., at 15.
The positive results from the consensus developed in the period from 1988 to 1994 is demonstrated by the decreasing number of SR & ED objections and “actions” arising from objections in that period:

An action is not well defined and apparently several actions could occur for any single objection. The figures supplied by Revenue Canada Appeals Branch indicate that there were 150 actions since 1988-89, 100 in each of 1989-90 and 1990-91, 90 actions in 1991-92 and 34 and 23 in 1992-93 and 1993-94 respectively.33

The next major set of consultations occurred in 1991-92. These consultations led to the introduction of the shared-use equipment rules and to the introduction of the proxy amount—a notional formula, based on SR & ED salaries, that is used to calculate allowable overheads in determining a taxpayer’s SR & ED claim. “Industry views are generally complementary about the 1991-92 process.”34

A means of ensuring ongoing consultations was set up in April 1992, when Revenue Canada re-established a technical liaison committee made up of experts from the industrial and academic R & D communities and senior Revenue Canada officials. The committee’s mandate includes the following responsibilities:

- providing advice and commenting on administrative matters to Revenue Canada officials that reflect the research and development perspective;
- assisting Revenue Canada in identifying opportunities for a closer, more efficient working relationship with the SR & ED community;
- providing a forum for the department to communicate its plans and initiatives to R & D performers; and
- assisting the department in developing policies, procedures, and forms affecting the delivery of the program.35

Revenue Canada has stated that it intends to consult the committee on all major initiatives affecting the SR & ED program, and that Revenue Canada wants the committee to be its liaison with the scientific and industrial research community in Canada.36

Consultations also occurred in 1994 with respect to proposed changes to the contract payment rules. Again, these consultations were well received by industry.

As noted earlier, in 1992-93 a consensus developed between industry and the government on the definition of what activities qualified as R & D. The low number of appeals in those years is one reflection of the program’s stability. However, this stability has been threatened by several

33 Supra footnote 6, at 25.
34 Ibid., at 16.
36 Ibid.
recent government actions, including the release of Information Circular 86-4R3 without an appendix on computer software, the introduction of the concept of “bubble” audits, and the release of the Department of Finance’s and Revenue Canada’s discussion papers on R & D and information technology. The following section addresses each of these items.

Audit Approaches
Revenue Canada instructs taxpayers to do the following when preparing their technical descriptions to accompany SR & ED claims:

1) State overall scientific or technological objectives of the project or program.

2) State what particular scientific or technological advances, if any, that you sought in this taxation year.

3) Describe the scientific or technological uncertainties that make the achievement of the overall project and program objectives unpredictable.

4) Usually, to establish whether or not a claim is eligible, you have to examine the eligibility of the highest-level initiatives. You can save both time and effort spent on the claim for both the claimant and science advisor by tracking the line of eligibility from the highest conceptual level down to the mundane and apparently ineligible tasks.37

In fact, this method is often consistent with the way in which taxpayers treat costs and maintain their technical documentation. However, despite the instructions reproduced above, Revenue Canada introduced the “bubble” approach to technical audits. Under this approach, Revenue Canada is now auditing at the activity level within projects. Projects are broken down into activities that have specific technical objectives, and these activities are judged in isolation. This has resulted in greatly reduced SR & ED claims for taxpayers who previously had been audited with no major difficulties. The “bubble” approach is not only inconsistent with Revenue Canada’s instructions to taxpayers but can also lead to absurd results: if a project is broken down into small enough components, most of the components by themselves will not qualify as R & D. In addition, in order to reach a valid conclusion, an auditor will require greater technical knowledge in a specific field. In many cases, Revenue Canada auditors lack such knowledge.

Further, the activity level assessment is inconsistent with other government R & D filing requirements, such as those released by NSERC and Industry Canada, as well as with the definition of SR & ED contained in IC 86-4R2, IC 86-4R3, and form T4088. In my view and in the view of a number of R & D performers, provided that projects have clearly defined technology goals, Revenue Canada should audit at the project level.

Other problems have recently surfaced, including the Revenue Canada auditors’ changing what qualifies as technological uncertainty. For

example, system uncertainty is recognized as a valid uncertainty in IC 86-4R2.\textsuperscript{38} Currently, Revenue Canada auditors are in many cases denying that system uncertainty is a qualifying criterion. In addition, Revenue Canada has stated that

the taxpayer may be fairly confident that the goals can be achieved, but may be uncertain which of several alternatives (i.e. paths, routes, approaches, equipment configurations, system architecture, circuit techniques, etc.) will either work at all, or be feasible to meet the desired specifications and/or cost targets.\textsuperscript{39}

In practice, however, Revenue Canada auditors are not accepting this type of uncertainty as valid.

For the R & D program to be effective, it is necessary for Revenue Canada to issue clear, concise instructions to taxpayers and to audit on the basis of these instructions, all of which should be consistent with the definition of R & D contained in the Act. Unfortunately, Revenue Canada’s present audit approach is not only inconsistent with its own instructions to taxpayers, but fails to demonstrate an understanding of the R & D process.

**Timeliness of Audits**

At present, Revenue Canada is swamped with more than 16,000 TPRs filed prior to the September 13, 1994 deadline. At the 1994 annual conference of the Canadian Tax Foundation, officials of Revenue Canada stated that it would take two years to process all of the old claims. The current goal is to have all TPRs audited by March 31, 1997. Revenue Canada’s order of priority in scheduling audits is: (1) current-year refundable claims; (2) current-year non-refundable claims; and (3) TPRs. The current backlog has slowed service to taxpayers who file R & D claims on a regular basis and for those submitting TPRs. The increasing gap in the time between the R & D activity and the audit has led to problems for taxpayers defending their claims.

It has to be hoped that Revenue Canada will take the appropriate steps to process all claims in a timely manner.

**Revenue Canada’s Discussion Paper**

On August 29, 1995, Revenue Canada released a discussion paper on the application of regulation 2900 to computer software.\textsuperscript{40} In my view, this paper only heightened concerns over the stability of the SR & ED program that already existed as a result of the changes in the audit approach referred to previously.

Although the paper was released for consultation purposes, the contents revealed a lack of understanding of computer software R & D, exemplified by comments such the following:

\textsuperscript{38} Supra footnote 29, appendix B.1, at 43.
\textsuperscript{39} Ibid., at 6.
\textsuperscript{40} Supra footnote 24.
Development infrastructures allow developers to focus on the logic and function of the product under development by taking care of most, if not all, of the technology-related tasks such as data manipulation and screen management. The paper also revealed a desire to enshrine current audit approaches by failing to discuss system uncertainty and by discussing the phases of development, which attempts to justify the “bubble” concept:

A number of models have been proposed to characterize software development. . . . Such models typically list and organize into groups all of the possible types of work which may be encountered in the development process. There is no reason to believe that work in any particular group will all qualify or all not qualify as SR & ED. For this reason, it is necessary to consider each type of work individually.

This issue was also raised in the Department of Finance’s brief, discussed below.

THE DEPARTMENT OF FINANCE’S DISCUSSION PAPER
On September 29, 1995, the Department of Finance released a discussion paper on information technology SR & ED. In this document, Finance

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41 Ibid., at 2.1.
42 Ibid.
43 Supra footnote 13, at 2.
44 Supra footnote 24, at 2.3.
45 Ibid., at 2.5.
46 Ibid.
raised two issues of major concern to industry. The first concerned what constituted an SR & ED project. (This was a further discussion of the “bubble” concept within projects.) CATA’s brief to the government addressed the issue as follows:

After extensive consultation, the definition of what is any eligible project remains the area of major concern to CATA and our members.

Building an artificial entity defined as [an] “SR & ED project” is of great concern to CATA members. In experimental development, the project answers the question “how.” That is, experimental development is process bound. Defining an artificial process, called SR & ED, that needs to be mapped to reality will represent a long set of ongoing problems for both government and industry. Any attempt to have eligibility turn on and off throughout the development cycle would be untraceable by industry and therefore unauditable by government.

CATA cannot state strongly enough that any definition of project and project description must ensure that eligibility remains at the project level and that activities that support an eligible project are included. This is consistent with the existing Income Tax Regulation subsection 2900.47

This programme is essentially an industry incentive and cannot be applied cost-effectively unless it recognizes the realities of the business and commercial development processes. Any attempt by the government to force a complex tracking of activities that are by nature intermingled in ever-changing environments is destined to fail.48

The second major issue was the possible introduction of the “Australian model” into Canadian legislation:

In Australia, software development is an eligible core R & D activity only if, in addition to meeting the basic innovation and technical risk requirements, the software is developed by the taxpayer for a purpose that includes the purpose of sale, rent, hire or lease by two or more non-associates of the taxpayer (referred to . . . as “multiple sales”).49

Officials of the Department of Finance have stated that this idea was introduced because they believed that Revenue Canada is having difficulty dealing with large-scale internal management information systems projects. However, the impact of such a rule would not only deny the tax incentives for SR & ED to internal computer software development projects but would also deny such benefits to any custom development.

In its brief, CATA stated that “the government could solve their concerns/issues by dealing directly with the problem and by providing an addendum to the Software Paper on in-house development. For both product producers and in-house developers this is a better solution than using of the Multiple Sales Criteria.”50

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47 Supra footnote 13, at 6.
48 Ibid., at 14.
49 Ibid., at 9.
50 Ibid., at 9.
SUMMARY
A number of issues have raised industry concerns about the stability of the SR & ED program, including Revenue Canada’s audit practices and some of the proposals contained in the government’s two 1995 discussion papers. Unless a satisfactory resolution can be found to these issues, both the federal and the provincial SR & ED incentive programs may be emasculated to the point where they are no longer effective.

THE FUTURE
At the time of writing, Revenue Canada has indicated that it will release a new draft of its discussion paper in December 1995. The Department of Finance will make any legislative changes resulting from the recent consultation process in the 1996 federal budget. Revenue Canada has also indicated that it will release new versions of form T661 and form T4088 (the guide to completing form T661) in the spring of 1996. Finally, the Department of Finance will complete its review of the remainder of the SR & ED program in 1996, and any consequential legislative changes will be made in the 1997 federal budget.

CONCLUSION
For a number of years, the SR & ED program has been a very effective method of assisting R & D performers in Canada. Unfortunately, the program’s stability has been threatened by the recent actions of Revenue Canada and the Department of Finance. It is hoped that industry and government can once again reach a consensus so that the program can continue to stimulate R & D in this country.

APPENDIX A
The table illustrates the cash impact of a large R & D performer undertaking R & D in Ontario per $1,000 of eligible expenditures.

<table>
<thead>
<tr>
<th></th>
<th>R &amp; D eligible</th>
<th>Non-eligible</th>
<th>Tax savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal investment tax credit (20%)</td>
<td>$200</td>
<td>$0</td>
<td></td>
</tr>
<tr>
<td>Tax saving of deduction (45% of $1,000 less $200)</td>
<td>360</td>
<td>450</td>
<td></td>
</tr>
<tr>
<td>Tax benefit from Ontario R &amp; D superallowance$ª</td>
<td>46</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Net after-tax cost</td>
<td>$394</td>
<td>$550</td>
<td>$156</td>
</tr>
</tbody>
</table>

$ª Expenditures net of investment tax credits times the percentage for incremental costs for large performers times the provincial tax rate [($1,000 − $200) × 0.375 × 0.155]. For non-incremental R & D expenditures, the amount of tax savings from the Ontario superallowance is $31 [($1,000 − $200) × 0.25 × 0.155].

APPENDIX B
The table illustrates the cash impact on a small CCPC R & D performer undertaking R & D in Ontario per $1,000 of eligible expenditures. Included
in this calculation is the benefit of the Ontario R & D superallowance and the Ontario innovation tax credit.

<table>
<thead>
<tr>
<th>R &amp; D Tax</th>
<th>eligible</th>
<th>Non-eligible</th>
<th>Tax savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal investment tax credit</td>
<td>(35% × ($1,000 − $100))</td>
<td>$315</td>
<td>$0</td>
</tr>
<tr>
<td>Ontario innovation tax (10% × ($1,000))</td>
<td>100</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Tax savings of deduction</td>
<td>(23% × ($1,000 − $415))</td>
<td>135</td>
<td>230</td>
</tr>
<tr>
<td>Tax benefit from Ontario R &amp; D superallowance</td>
<td>a</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>Net after-tax cost</td>
<td></td>
<td>$421</td>
<td>$770</td>
</tr>
</tbody>
</table>

a Expenditures net of investment tax credits times the percentage for incremental costs for small performers times the provincial tax rate [($1,000 − $415) × 0.525 × 0.095]. For non-incremental R & D expenditures, the amount of tax savings from the Ontario superallowance is $19 [($1,000 − $415) × 0.35 × 0.095]

APPENDIX C
The table illustrates the cash impact on a large R & D performer undertaking R & D in Quebec per $1,000 of eligible expenditures, 50 percent of which is in salaries.

<table>
<thead>
<tr>
<th>R &amp; D Tax</th>
<th>eligible</th>
<th>Non-eligible</th>
<th>Tax savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quebec R &amp; D wage tax credit</td>
<td>(20% × $500)</td>
<td>$100</td>
<td>$0</td>
</tr>
<tr>
<td>Federal investment tax credit</td>
<td>(20% × ($1,000 − $100))</td>
<td>180</td>
<td>0</td>
</tr>
<tr>
<td>Tax savings of deduction:</td>
<td>Federal (29% × $1,000 − $280))</td>
<td>209</td>
<td>290</td>
</tr>
<tr>
<td></td>
<td>Provincial (9% × $1,000)</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td>Net after-tax cost</td>
<td></td>
<td>$421</td>
<td>$620</td>
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</table>

APPENDIX D
The table illustrates the cash impact on a small CCPC R & D performer undertaking R & D in Quebec per $1,000 of expenditures, 50 percent of which is in salaries.

<table>
<thead>
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<th>R &amp; D Tax</th>
<th>eligible</th>
<th>Non-eligible</th>
<th>Tax savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quebec R &amp; D wage tax credit</td>
<td>(40% × $500)</td>
<td>$200</td>
<td>$0</td>
</tr>
<tr>
<td>Federal investment tax credit</td>
<td>(35% × ($1,000 − $200))</td>
<td>280</td>
<td>0</td>
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<tr>
<td>Tax saving of deduction:</td>
<td>Federal (13% × ($1,000 − $480))</td>
<td>68</td>
<td>130</td>
</tr>
<tr>
<td></td>
<td>Provincial (6% × $1,000)</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Net after-tax cost</td>
<td></td>
<td>$392</td>
<td>$810</td>
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</table>