

***THE FISCAL RETURN OF THE
CANADA STUDENT LOANS PROGRAM***

BY

MARC RICHARD

UNIVERSITY OF OTTAWA

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SUPERVISOR: PROFESSOR GILLES GRENIER

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1.0 INTRODUCTION

The Canada Student Loans Program (CSLP) has changed a lot over the years and will continue to do so to maintain its financial integrity and its ability to assist individuals with their investment in human capital. Ten years ago, the CSLP was operating under a guaranteed loan regime in which the lenders financed the loans, but the government was still responsible for the loans in case of defaults. Five years ago, the CSLP and the lenders embraced a fuller partnership in which the financial institutions, for a fixed risk premium¹, were entirely responsible for servicing and collecting student loans.

Today, the CSLP is yet again reinventing itself. The lenders, claiming unsustainable losses, decided to withdraw from the program, and the CSLP engaged in direct lending. All seem to agree that a direct lending regime will be more costly than the risk-shared one. Some argue that it may even be more costly than the guaranteed loan regime. In addition, the CSLP, because of its direct lending freedom, will almost certainly face increasing pressures from its stakeholders to reduce the interest rates charged to the students². This would further increase the program's costs. When can we say that the CSLP has become too costly? Is the CSLP a sound financial proposition?

The financial integrity of the CSLP has been and continues to be questioned. In assessing the CSLP's financial integrity, the focus is usually on the amount of government funding without considering the fiscal returns – the additional tax revenues accrued to the government resulting from investing in human capital. However, if we accept the assumptions of human capital theory, the financial assistance provided by the CSLP would enhance borrowers' earnings capacity, and hence, generate fiscal revenues for the government. This suggests that to address the CSLP's financial integrity more fully, one should also look at the fiscal return.

The paper calculates the real fiscal return of the CSLP 1995 cohort (all the students who consolidated their loans in 1995)³, and compares it to the government's long term debt yield to ascertain the efficiency of the CSLP's investment. In addition, the paper attempts to answer the questions raised earlier. Such an analysis is unprecedented and might prove to be useful for the CSLP administrators.

Our guiding principle in establishing assumptions was to be as stringent and conservative as possible, so as to not overestimate the real fiscal return. As such, the

¹ The government paid the participating lenders 5 percent on the value of loans consolidated each year. See section 2.1.2 Risk Shared Loans for further detail.

² Already the NDP, in its draft election platform wants to "make the Canada Student Loan(s) Program interest-free throughout the life of the loan." The draft election platform is entitled "Commitment to Canadians: Canada Can Be Better – The New Democrats' Vision for Canada's Future". This document was also cited in the National Post of August 2, 2000.

³ The choice of the cohort is justified in section 3.1.2 Cost-Benefit Analysis.

real fiscal return developed here is probably a lower bound on what the CSLP could generate.

The paper comprises five sections, the first being this introduction. In the second section, we provide a general description of the CSLP's financing regimes⁴ adopted since its inception, and the CSLP's policy context during the 1990's. We also review some empirical work done on the CSLP. The third section develops the methodological framework and presents the data used in this paper. It defines the concept of fiscal return and confirms that we use a standard cost-benefit analysis framework. In addition, it describes the relevant literature on the fiscal return. It also includes a sub-section that discusses the choice of the hurdle rate⁵ necessary to ascertain the level of fiscal return. The fourth section presents our results and analyses the impact of different financing regimes on the real fiscal return of the CSLP 1995 cohort. It also evaluates the impact of an increase in the interest rate charged to students under a direct lending regime. The last section lists our conclusions.

2.0 CANADA STUDENT LOANS PROGRAM

To fully appreciate the results developed in this paper, it is important to become familiar with the CSLP and its policy context. For this reason, this section comprises two sub-sections that aim at providing this type of background information. In the first sub-section, we describe the financing regimes adopted by the CSLP since its inception. The second sub-section sketches the CSLP's policy context in the 1990's and reviews some empirical work done on the CSLP. The reader can refer to Annex 1 for a detailed description of the CSLP's administrative features.

2.1 Changes to Financing Regime

This sub-section describes the three financing regimes adopted by the CSLP since its inception: guaranteed loan regime (1964-95), risk sharing regime (1995-2000), direct lending (2000 and beyond). Such a description is essential because the financing regime in which the CSLP operates has important implications for the costs of the program, and hence for its fiscal return. It is important to note that all the administrative features described in Annex 1 apply to each regime. However, the modality of their application may differ from one regime to the next.

2.1.1 *Guaranteed Loans*

Prior to 1995, the CSLP provided financial assistance in the form of a 100 percent government guarantee for loans made by private sector lenders. Lenders financed and

⁴ See Annex 1 for a detailed description of the CSLP'S administrative features.

⁵ The hurdle rate is the marginal cost of capital, or the rate at which the next project is financed. If the rate of fiscal return of a given project is greater than the marginal cost of capital, then one should carry out that project.

disbursed their own loans to students and were expected to service and collect their loans.

The government paid the Interest Subsidy to lenders at the Ministers' rate. Borrowers, consolidating their loans after completing their studies, had up to 9.5 years to repay following a 6-month grace period, at a fixed interest rate (the student's rate) with fixed monthly payments. The ministers' and student's rates were based on the average yields of government of Canada bonds maturing in 1 to 5 years and 5 to 10 years respectively, plus 1 percent for administrative costs borne by the lenders.

Generally, lenders were only required to send one registered letter to the borrower's last known address before submitting a claim and receiving full payment from the government. The government then would attempt to recover the defaulted student loans using three main collection tools. Virtually all defaulted student loans were assigned to private collection agencies for recovery immediately following the payment of the claim. In cases where private collection activity was unsuccessful, the loans were sent to the Department of Justice for legal action. Since 1992/1993, the Department has used set-offs of income tax refunds in instances when individuals do not make regular payments and default on their student loans.

2.1.2 Risk Shared Loans

Between 1995 and 2000, the CSLP operated under a risk-sharing regime. Under this regime, the lenders assumed full responsibility for servicing and collecting the student loans in return for a 5 percent risk premium. The risk premium was paid on the value of loans consolidated each year.

The government retained control over the determination of CSLP eligibility and required the lenders to lend to all who qualified without reference to past credit history. No fees are charged on the loan while students are in full-time studies.

The CSLP paid the lender prime-based interest for the *Interest Subsidy*. In repayment, borrowers had the option of fixed (lender prime + 5%) or floating (lender prime + 2.5%) interest rates and no maximum repayment period was specified. This provided flexibility to schedule repayments over a longer period than was previously available.

Together, the interest rate paid by the government under the interest subsidy program and the risk premium were intended to compensate the lenders for a net default rate of 7 percent. Such a net default rate level reflected the historical experience of the program under a guaranteed loan regime up to about 1992.

2.1.3 Direct Lending

As these lines are written, the Government of Canada is taking the necessary steps to put in place alternate arrangements to ensure the uninterrupted delivery of the Canada Student Loans Program. The Government of Canada requested responses from financial institutions for a new agreement on the delivery and administration of the CSLP. Too few financial institutions indicated an interest in continuing to participate in the CSLP to ensure viable delivery of the program. Those that were interested claimed unsustainable losses and requested increases in the risk premium far greater than the amount the federal government was prepared to pay.

While the CSLP will engage in direct lending activities and finance the student loans, the intention is to have student loans administered by Service Bureaus. Service Bureaus, which are commonly used by financial institutions, would establish loan accounts, maintain contact with the borrowers and administer the loan once the borrower begins repayment. Full details on the direct lending regime will be available once consultations with provinces and stakeholders are completed.

2.2 Policy Context During the 1990's and Review of Empirical Work

In this sub-section, we look at the policy context⁶ in which the CSLP evolved during the 1990's and some of the empirical work that have contributed to a better understanding of the CSLP.

The 1990's were a period of intensive change for the program. Although the issue of fiscal return was not part of the policy debate at the time, it is helpful to look into that crucial period to provide context on the issue of fiscal return.

As discussed by Finnie and Schwartz (1996b), during the 1990's, the program was under increased scrutiny and criticism. Much of this was prompted by the results of the 1990 Auditor-General's report⁷, and a 1991 consultant's report⁸ commissioned by the CSLP. The Auditor-General's report indicated that the default rates were getting too high, leading to excessive costs to the federal government. It also pointed to "a lack of monitoring of activities administered by the provinces, (...) of success in recovering loans, and of proper management information."⁹ The CSLP was also criticized because while some students received too little to meet their basic needs, others received too much. In addition, many thought the repayment terms were too inflexible, causing further undue hardship for some students.

⁶ See Schwartz (1997) for an excellent literature review on topics relevant to student financial assistance.

⁷ Canada. (1990).

⁸ Bennecon Ltd. (1991). "Assessing Need in the Canadian Student Loans Program". Mimeographed.

⁹ Canada. (1990). Auditor General. Report of the Auditor-General of Canada to the House of Commons. Ottawa, pg. 696.

Meanwhile, financial pressures on students were increasing. Students were graduating with higher debt loads, and tuition fees were on the rise in the early 1990's¹⁰.

In response to these pressures, the CSLP increased the loan limits in 1994 to provide more to those in need. In 1995, it implemented a new need assessment process to target subsidies to those who need it the most. It also entered into the risk-sharing agreement with the lenders, hoping to curtail the costs of defaults. In spite of these changes, some argued that an Income Contingent Repayment (ICR)¹¹ scheme would bring further flexibility in the program and help especially those who had difficulty in repayment. The idea of ICR seemed to gain momentum with academia, but was disliked by most student associations and provinces¹².

It is amid that context that the bulk of empirical work on student loan programs in Canada and the CSLP appeared.

Finnie and Schwartz, arguably the most prolific writers on the CSLP, paved the way to a better understanding of the loan programs in place in Canada during the guaranteed loan regime era, and their impact on students. In Finnie and Schwartz (1996a), they performed an empirical analysis of student loans using the National Graduate Survey (NGS)¹³. Finnie and Schwartz focused on those who graduated from Canadian universities with a Bachelor's degree in 1982, 1986, or 1990. They developed a model of student borrowing and specified several econometric models¹⁴ to ascertain patterns of

¹⁰ Finnie and Schwartz (1996b), pg. 4-6.

¹¹ Although ICR programs can take a variety of forms, their main characteristic is that the rate of repayment is contingent upon the borrower's income during the post-study period. The idea of ICR has been around since the 1940's (Finnie and Schwartz 1996a, page 64). However, Milton Friedman in Friedman (1962) laid the foundation of ICR. Australia, New Zealand, the United Kingdom, Sweden, and the United States have implemented ICR programs (Finnie and Schwartz 1996a, page 64). In Canada, David Stager of the University of Toronto has been an advocate for ICR (see Stager and Derkach (1992)). ICR within the Canadian context is further discussed in AUCC (1993), Kesselman (1993), and West (1993).

¹² Most student associations were opposed to ICR because of concerns over negative amortization and the length of time over which borrowers would be required to pay their loans. Depending on its design, an ICR scheme can require the recapitalization of unpaid interests and loans can be repaid over 25 years or more (even over the natural life of the borrowers like in the Australian model).

¹³ Although the NGS contains a well of micro information that can be used to develop sensible policies, it is not without weaknesses. As explained in Plager and Chen (1999), students who had not completed their studies and students attending private institutions (the source of many problems and a growing segment of the CSLP) were excluded from the survey. In addition, the NGS survey focussed on the education, training and labour market experiences of the graduates two years after graduation.

¹⁴ The authors specified a probit model of whether or not the individual graduates with a student loan; an OLS model of the amount borrowed; a double-censored tobit model of the proportion repaid two years after graduation; and, a probit model of the incidence of reported difficulties with repayment of the loan.

borrowing that went beyond that developed by Hiscott (1996)¹⁵. The main findings of their analysis were that:

- Under the student loan programs in place through the early 1990's demand factors (as proxied by field of study and gender) appeared to have affected student borrowing to only a relatively small degree. Thus, supply factors (the eligibility rules) were the principal determinants of borrowing.
- Reported difficulties with repayment of student loans were relatively uncommon (in the range of 7-8 percent of all Bachelor's graduates), but were somewhat more frequent among women, and vary significantly with the size of the loan, earnings, the field of study, and province of residence
- The structures of multivariate borrowing and repayment relationships are significantly different for men and women. There is some evidence that women had a slight tendency to borrow a little less than men, pay their loans back somewhat more rapidly, and to experience greater difficulties with repayment.
- The relationship between student loan borrowing from programmes in place through the early 1990's and socio-economic background as proxied by parental education is relatively weak and inconsistent. This suggests that the programmes were not overly successful in delivering greater amounts of student assistance to those in need.

Although the number of those suffering difficulty in repayment was not as large as expected, the results indicated that the loan programs prior to 1995 really needed to better target their subsidies to those in need. In 1995, the CSLP implemented a new need assessment process to target subsidies to those who need it the most. No one has studied the impact of this change yet. Finnie and Schwartz (1996a) concluded that the adoption of an Income Contingent Repayment loan program would likely reduce the repayment burden of certain graduates but that given the relatively low incidence of repayment problems the need for such relief might not be wide spread.

Finnie and Garneau (1996), building on Finnie and Schwartz (1996a), and also working with the NGS, investigated the patterns of student borrowing and repayment of the 1982, 1986, and 1990 cohort of graduates at the College, Bachelor's, Master's, and Doctoral level. In that study, the authors found that:

- Students seem to have borrowed more when given the chance, indicating that many had both the capacity and need (or desire) to increase their borrowing.

¹⁵ Hiscott specifies only OLS models explaining the total amount of education debt owed by graduates two years after completion of their postsecondary programs. This analysis also uses data sets of the NGS for the graduate cohorts of 1988 and 1992.

- Only 5-10 percent of all graduates seem to have repayment problems related to the repayment of student loans.
- The incidence of repayment problems varies significantly by field of study, and is strongly related to the labour market situation of the individual.
- Burdens vary significantly by field of study due to the associated earnings patterns. The "burden gap" is related to the choice of field of study rather than earnings differentials between men and women within a given field.

Based on their findings, the authors suggested that consideration be given to finding ways to generally facilitate increased borrowing, and provide more flexibility in repayment terms in order to provide relief to those who experience difficulties with their entry into the labour market after graduation. These recommendations were made even if, as the authors pointed-out, borrowing limits had already been increased from \$105 a week to \$160 a week in 1994 and that the Interest Relief program had been expanded in 1995 to cover those at low earnings levels as well as the unemployed. The authors came to similar conclusions as Finnie and Schwartz (1996a) regarding ICR, adding however, that it remained an interesting option to create greater flexibility in payback arrangements.

In their influential work "Student Loans in Canada: Past, Present, and Future.", Finnie and Schwartz (1996b) built on the results of Finnie and Schwartz (1996a), and Finnie and Garneau (1996), and focused on student borrowing through the CSLP. The authors indicated that the risk-shared arrangement newly implemented by the CSLP would probably lead to lower gross default rates, reduced costs for the government, and provide greater flexibility in repayment schedules. They suggested that by retaining control over the eligibility criteria, the government preserved the equity aspects of the student loans system and the efficiencies of risk pooling. Seeing that an ICR would greatly enhance the flexibility in repayment by tying repayment levels to earnings, the authors recommended the implementation of a small-scale ICR pilot system. They also suggested improvements to the CSLP such as the enhancement of the Interest Relief Program as it would be inexpensive, the implementation of loan a remission program, and to closely monitor the efficiency of the need-assessment procedures.

Many recommendations were favourably received by the policy makers in CSLP headquarters, and the idea of enhancing the interest relief program as well as implementing a loan remission program were retained in the 1997 and 1998 budgets. However, intense lobbying on the part of student associations and the lack of interest on the part of the provinces killed ICR.

Unfortunately, although the risk-shared arrangement was a fantastic financial deal for the government, it never lowered the gross default rates as expected by Finnie and

Schwartz. In fact, gross default rates continued to increase throughout the second part of the 1990's, probably prompted by poor youth employment, the increase in the loan limits of 1994, and the increasing student need in the face of rising tuition fees¹⁶. The lack of flexibility on the part of the banks to accommodate students did not enhance the flexibility in repayment schedules either. While it is true that the government preserved the equity aspects of the student loans system by retaining control over the eligibility criteria, the banks though the CSLP portfolio provided inefficient risk pooling.

In 1997, shortly after implementing the risk-shared regime, banks called attention to what they called an alarming default situation. Therefore, high defaults associated with the CSLP and their impact on the overall health of the program retained much of the attention during the later part of the 1990's. However, it remained impossible to assess the problem of default for loans under the risk-shared regime as the CSLP only had access to the banks' data in 1999.

The situation of increasing defaults within the guaranteed regime was however noted in Plager and Chen (1999). In this study, the authors used data from the CSLP administrative data system to examine general patterns of CSL debt in 1990-91 to 1995-96 for all full-time students, and specific trends in student debt by type of educational institution attend. The authors found that debt load accumulated by students in the acquisition of further education was on the rise between 1990-91 and 1995-96. Their analysis also showed that students were having increasing difficulty repaying their CSL and that more and more students were accessing the IR program as a temporary measure. Such a situation, they reasoned, was largely due to poor labour market conditions combined with rising tuition fees during the 1990's¹⁷. Overall, student borrowers who studied at private institutions (private career colleges and training institutions) had the greatest repayment difficulties. The authors indicated that defaults and bankruptcies continued to be a problem, especially in the early years of repayment when the borrower tries to find a job. Interestingly, university students were more likely to resort to bankruptcy in the first year of repayment than were borrowers from colleges or private institutions.

Spector (1999) also analyzed the problem of defaults and focused on its financial impact on the program. Using CSLP administrative data, including data obtained from the financial institutions, Spector developed an OLS model of default and charted cumulative density functions of defaults for various years and type of educational

¹⁶ The financial institutions indicated however that as much as 50% of early defaults were due to the difficulty of tracking students shortly after they graduate. As is often the case, the students move after graduation without thinking of notifying the financial institutions when they have loans. Without a new address, it is difficult for financial institutions to initiate repayment procedures.

¹⁷ Plager and Chen indicated that the combination of higher costs and diminished resources has increased the financial need of students, resulting in their application for larger loan. One might also add that the poor job market conditions did not facilitate school-to-work transitions, prompting many to seek assistance for interest relief.

institutions. The main findings were that default rates were 8 percent lower for universities and community colleges than in private schools, and that the type of educational institutions attended mattered more in determining default rates than province of residence. Spector concluded that loans made to individuals attending private institutions were creating an onerous financial burden on the CSLP, as they were not producing an offsetting pool of persons in the labour force able to bear the burden of loan repayment. He estimated that at an overall average of 20% default rate the 5% risk premium charged to the banks would generate adequate compensation to financial institutions. The private institutions were the main culprit in pushing the overall default rates to the 25% range.

In 2000, the financial institutions participating in the program indicated that they would not renew the risk-shared contract, claiming unsustainable losses. While the CSLP hoped for a risk premium in the range of 10%, financial institutions were insisting on a risk premium closer to 25 percent. Such a risk premium would be tantamount to a full guarantee. According to CSLP officials, the program would have been ill advised to accept a risk premium higher than 15 percent¹⁸.

Except for Spector (1999), the body of literature presented above focused primarily on the students and their financial needs. In most cases, they provided recommendations to improve the way students are served when it comes to borrowing. What is the debt burden? What are their repayment patterns? Do the students get what they need? Is financial assistance targeted to those who need it the most? How has the CSLP responded to their needs? How can the CSLP provide more repayment flexibility to those who have difficulty repaying? All these questions answered by the literature above were aimed at improving the way financial assistance is delivered, ensure that it helps students get the level of financial assistance they need, and that students repay their loans without undue hardship. These are crucial issues for the CSLP. After all, what would be good about having a "fiscally sound" financial assistance program if it does not help the students?

Nonetheless, the government has to balance the need to provide financial assistance to students with the need to do so in a fiscally responsible manner. This, as will be discussed in section 3.1.1 Definition of Fiscal Return, refers to the notion that the government can also be considered an economic agent that has its own purpose. Therefore, our focus is instead on the program itself from a government perspective. When can we say that the CSLP has become too costly? Is the CSLP a sound financial proposition? Should the CSLP consider a reduction in the rate charged to students? Which financing regime yields the best fiscal return? Unlike the literature outlined above, our paper will attempt to answer these questions.

¹⁸ According to CSLP officials, this would be the rate at which the cost of the risk-shared regime would have been equivalent to that of the guaranteed regime.

3.0 METHODOLOGY AND DATA

This section comprises three sub-sections. The first establishes the methodological framework employed in this paper. It defines the concept of fiscal return and outlines the approach adopted to calculate the fiscal return. The second sub-section describes how the data were developed and their source, including the incremental tax revenues and the costs. The third develops the hurdle rate used to assess the fiscal returns.

3.1 Methodological Framework

The following defines the concept of fiscal return and outlines the approach adopted to calculate the fiscal return.

3.1.1 Definition of Fiscal Return

Traditional economic analysis has focused on the calculation of social and private returns to education, probably because it assumed that the government's sole purpose was the efficient allocation of educational resources on the behalf of society. According to this view, the government is justified in intervening only if the social return is superior to an appropriate interest rate of reference. As rational individuals invest in their education only if the private return on the degree they seek is superior to an interest rate of reference, an appropriate allocation of resources will ensure appropriate market signals, and hence, appropriate choices by individuals. According to this view, it could be argued that the social return is the only relevant concept for the society. Indeed, while the social return considers the benefits accrued to society as a whole as a result of the additional education, the fiscal return considers the question of efficiency only from the point of view of a specific program, which may have little influence on society. Even the private returns would be more useful as it assists individuals in their decision to undertake further education or training. Thus, the fiscal return would be a much more limited concept¹⁹.

However, as argued by Lemelin and Perrot (1990), Perrot (1991), and Appleby and Rouleau (2000), the government is also an economic agent that has its own purpose. Essentially, the government simply seeks to broaden its inter-temporal budget constraint by maximizing the present value of the difference between the costs and revenues resulting from its intervention in the field of education. Therefore, the rate of fiscal return is the rate that would equate the incremental tax revenue attributable to the additional education with the subsidies paid to individuals for providing that extra

¹⁹ Perrot (1991) establishes that $B^s(r) = B^p(r) + B^f(r)$, where B is for Benefits, the superscripts s, p and f are for social, private and fiscal respectively, and r is the rate of return. As Appleby and Rouleau (2000) describes it, the social returns correspond to the algebraic sum of the private and fiscal returns. This implies that the fiscal return of educating our citizens would be smaller than the social returns.

education²⁰. This assumes that without subsidies, the individual would not pursue the additional education. Such an assumption would be justified. Indeed, embedded in this assumption is the notion that post-secondary education makes a difference, and that those who accessed the CSLP would not have been able to pursue post-secondary education without its assistance. Based on human capital theory we could argue that education or training (hence post-secondary education) would make a difference since it raises the productivity of workers and their life time earnings by imparting useful knowledge and skills. In addition, according to Human Resources Development Canada (1997), the CSLP makes a difference: "The evaluation provides strong evidence that the CSLP allows individuals – who would otherwise be unable to do so – to enrol in post-secondary education. (...) Overall, an estimated 78% of CSLP borrowers reported that they would not have enrolled if they had not received a Canada Student Loan."^{21,22}

For our purpose, the fiscal return compares the CSLP subsidies paid to graduates of the 1995 cohort (direct costs)²³ as well as the foregone tax revenues while individuals are acquiring their education (indirect costs) to the incremental tax revenue associated with the higher levels of education (revenues). Adapting the basic assumption of Lemelin and Perrot (1990) and Perrot (1991), we assume that the government is justified in providing additional financial assistance to potential CSLP recipients who wish to invest in human capital only if the fiscal benefits of doing so are greater than the costs²⁴.

The fiscal rate of return will be used to establish whether the CSLP is a good economic proposition and to form an *a posteriori* judgement on the decision of the CSLP to get into direct lending.

There have been very few attempts to calculate fiscal returns, and none with the fiscal return for the CSLP. Lemelin and Perrot (1990)²⁵, using a standard cost-benefit approach, calculated the fiscal return of the university education system for the province of Québec during the 1980's. This specific application of fiscal return brings in

²⁰ In general, the costs include subsidies paid to students and schools, and the forgone tax revenues while individuals are studying.

²¹ See page 34. The evaluation of the CSLP was done after the 1995 changes to the need assessment process.

²² Finnie and Schwartz (1996a) (after considering loans programs in place in Canada prior to 1995) concluded that programs were not overly successful in delivering greater amounts of student assistance to those in need. In 1995 the CSLP implemented a new need assessment process to better target assistance. Many people involved in student financial assistance programs across Canada contend that the incrementally of the CSLP increased with the adoption of the new need assessment criteria. Since the need assessment process prior to 1995 was never evaluated, this assertion would be difficult to prove.

²³ The choice of the cohort is justified in section 3.1.2 Cost-Benefit Analysis.

²⁴ As pointed out by the Director of this major paper, there could be other objectives such as the redistribution of income.

²⁵ Lemelin and Perrot (1990) only make reference to one study. It is that of Holcombe and Holcombe. "The Return to the Federal Government from Investment in Higher Education." Public Finance Quarterly, 12, 3, July 1984, pages 365-371. This study reports a fiscal return of 15% for the education system in the U.S.

parallel Québec's expenditures in the university education system and its future fiscal revenues stemming from those who obtained higher levels of education. They argued that at the root of this application is the assumption that the government is preoccupied with its long-term fiscal resources that are the result of a set of tax rates and corresponding tax bases. The government prefers to achieve a desired level of fiscal resources by broadening the tax bases instead of increasing the tax rates. They conclude that the government will deem an intervention beneficial if it generates a long-term fiscal surplus defined as the difference between the present value of future fiscal revenues and its costs for the current period. In other words, Lemelin and Perrot (1990) assume that the government forms its opinion over a time period, which is typical of a private sector investor. Lemelin and Perrot (1990) found that the fiscal rate of return for Québec's university system during the 1980's was 9%. As the marginal cost of capital for public projects in Québec during that period was somewhere between 8-10%, the authors noted that the province's choice to invest in the education system was acceptable.

Perrot (1991) adopts similar assumptions and the same methodological framework²⁶ as Lemelin and Perrot (1990) to calculate the fiscal return for France's university system during the 1980's. Perrot develops an interesting analysis of the government's interests. Indeed, when looking at the fiscal return, the government can be considered a lender, an insurer and a creditor. The government is a lender since it finances some investment in education in the form of subsidies that are reimbursed by the students for the rest of their lives through the income tax system. The government is an insurer as the amounts reimbursed by students are contingent upon their income, and not upon the value of subsidies they received. Finally, the government is a creditor protected by the obligation of students to pay their taxes. With the fiscal return somewhere between 7.5%-10% and the marginal cost of capital in the 8%-10% bracket, Perrot found that France made an acceptable investment.

3.1.2 Cost-Benefit Analysis

As with Lemelin and Perrot (1990) and Perrot (1991), we adopt a standard cost-benefit analysis approach to calculate the fiscal returns. This is also consistent with Bourdeau-Prineau (1999)²⁷, Vaillancourt (1998), (1995), (1986) and a large body of literature on social and private returns to education²⁸.

The rate of fiscal return for the CSLP will be obtained by discounting the stream of incremental tax revenues over time until it is equal to the stream of costs required to carry out the investment. In other words, the fiscal rate of return, "r", will be set at a level such that

²⁶ The assumptions and methodological framework were already developed at the beginning of this section.

²⁷ It is an update of Vaillancourt (1995).

²⁸ You will find a summary of this literature in Bourdeau-Prineau (1999).

$$PV = 0 = \sum_{i=1}^N \frac{(IT_i - C_i)}{(1-r)^i},$$

with N being the number years, IT_i the incremental tax revenues received by the government as a result of its investment in human capital, and C_i the CSLP costs stream for the 1995 consolidation cohort (defined below). In our calculations $N=45$. That is the number of years between the first year the students of the 1995 consolidation cohort enter the program in 1992, and the year of their retirement at age 62 (as posited by Bourdeau-Primeau (1999))²⁹.

The internal rate of return (IRR) thus calculated is the root of a PV function. In order to solve for $PV = 0$, the PV function has to have a unique root. If the function has multiple roots or no root at all, there are no IRR. This equation may yield positive or negative rates of return, depending on the relationship between IT_i and C_i .

The incremental tax revenues (direct revenues) can be defined as the marginal tax revenue produced by the acquisition of the next higher level of education. The CSLP recipients who consolidated their loans³⁰ in calendar year 1995 constitute the 1995 consolidation cohort (identified as the "1995 cohort" thereafter). The stream of direct costs is the stream of subsidies paid each year, between 1992 and 1999, to the 1995 cohort. There are no one-period "up-front" costs as is the case with the usual calculation of returns to education. Instead, we have a stream of subsidies from the moment the individuals borrow from the program and interact with it while in school or in repayment.

The 1995 cohort was chosen for two reasons. First, the 1995 net and gross earnings developed by Bourdeau-Primeau (1999), and used to calculate the incremental tax revenues, are relevant to the 1995 cohort. Second, the cost of subsidies associated with the 1995 cohort had enough time to accumulate and to accurately reflect the "normal" costs associated with a typical CSLP cohort (under a guaranteed loan regime).

²⁹ While the costs for the 1995 consolidation cohort are compiled up to 1999, the earnings extend far beyond, up to age 62.

³⁰ The consolidation of loans is purely an administrative process that "usually" takes place at graduation in order to set the repayment process in motion. For example, many student-borrowers have to apply for loans each year. As a result, typical student-borrowers with a bachelor degree may have up to four separate loans at the end of their programs. These loans are "consolidated" into one final loan to be reimbursed to the lenders. Many student borrowers, however, never graduate, but still have to consolidate their loans to start repayments. Student-borrowers can accumulate separate loans, at various rates, over the course of their entire studies up to the Ph.D. level before consolidating their loans. For example, some student-borrowers only need one or two Canada student loans to tie them over their B.A. and M.A. Others finance all their studies with such loans. Still others finance only their Ph.D. studies with Canada student loans. Indeed, the CSLP database indicates that many Ph.D students finance at least part of their studies with Canada student loans. In the end, the accumulation of Canada student loans during the course of studies depends greatly upon the financial situation of each student-borrowers.

We will correct the incremental tax revenues to take into consideration the abilities of individual. Regarding this issue, there are two competing views. The first suggests that some individuals with postsecondary education would have been able to earn more than those who have only a high school diploma, even without their postsecondary education degree. The second on the other hand suggest that these individuals could achieve higher earnings only with PSE degrees. We also adjust earnings to correct the imperfection of the CSLP's need assessment process and to create a realistic earnings profile for the private institutions. We provide more details in section 3.2.3 Incremental Tax Adjustments.

While we include the indirect costs (i.e. foregone tax revenues while individuals are acquiring their education), we ignore the indirect benefits such as reduced welfare³¹ payments, EI payments, crime³² and other spillovers. The GST revenues are also excluded. Such an approach is also in keeping with Bourdeau-Prineau (1999), Vaillancourt (1998), (1995), (1986) and a large body of literature on social and private returns to education. Unlike O'Donoghue (1999), our calculation of the fiscal return does not take into consideration the transfers paid to individuals. Finally, our calculations assume that all student loan recipients remain in Canada until they retire, therefore suggesting that brain drain is negligible. These elements were excluded so as not to overburden the calculations with complexities, which in the end would not have enhanced the robustness of our results.

The incremental tax revenues are calculated from the 1995 net and gross earnings obtained from Bourdeau-Prineau (1999). A detailed description of how IT_i is constructed is provided in section 3.2.2 CSLP's Incremental Tax. See section 3.2.4 Costs for a detailed description of the costs.

We assume that the tax structure remains constant. That is, there are no changes in tax rates, tax bases and basic exemptions.

All costs and earnings are expressed in 1995 dollars. Hence, our calculations generate real fiscal returns.

³¹ See Barrett (2000) for an analysis of the impact of educational attainment on welfare in Canada. Interestingly, one finding of this study is that educational attainment has a much greater impact on the welfare exit rate for women than for men.

³² See Lochner for an analysis of the impact of educational attainment on crime in the United States. This study found that both high school graduation and ability directly lower criminal propensities. While much of the correlation between education and crime seems to be caused by differences in ability, high school graduation substantially would lower criminal participation rates (by as much as 60% for 19 year old men) even after controlling for heterogeneity in ability. Reductions in incarceration rates would even be more substantial. Policies that raise the skills and abilities of children and adolescents as well as encourage them to finish high school can have sizeable impacts on crime.

3.2 Data

This sub-section describes how the incremental tax revenue for the CSLP's 1995 cohort is developed. In addition, it outlines how the three incremental tax revenue adjustment factors are derived and why the adjustments are necessary. Finally, it provides a detailed description of the costs used in this paper.

3.2.1 Net and Gross Earnings

This sub-section describes the 1995 net and gross earnings we use to develop the CSLP's incremental tax revenues.

All incremental tax revenues discussed in the other sub-sections below were developed using the 1995 Canadian net and gross earnings by level of education obtained directly from Bourdeau-Primeau (1999). We do not attempt to control for field of study, occupation, or industry of employment, as data for such control are not available.

The net and gross earnings were developed by Bourdeau-Primeau as follows. First she estimated gross earnings functions by gender for several levels of education including High School, College, Bachelor's, Master's and Ph.D. degrees. Second, she created the net earnings by subtracting personal income taxes from gross earnings.

The data used in Bourdeau-Primeau (1999) to develop the gross earnings functions are from the 1996 Census Individual microdata file made available to researchers in April 1999³³. The gross earnings functions were estimated using the records of those individuals aged 15 or older, with positive earnings (the sum of wages and salaries, excluding self-employment income). Lawyers' earnings are included in the estimation of the earnings functions.

The regression results of Bourdeau-Primeau (1999) are reproduced in Table 1 (next page) for the reader's convenience.

These earnings functions were developed using standard semi-logarithmic functions with a concave relationship between earnings and age by level of education. Bourdeau-Primeau developed the gross earnings by directly applying the functions to normal age profiles.

Then, Bourdeau-Primeau (1999) created the net earnings by subtracting personal income taxes from gross earnings. In her paper, Bourdeau-Primeau calculated the tax burdens for each gross earnings profile using a computerized, simplified version of the 1995 tax return, using the Ontario and Federal tax rates as follows:

³³ The microdata available for her study is a sub-sample of the long-form questionnaire administered to 20% of all Canadian households. This sub-sample represents 2.8 percent of Canada's population.

1.52 x 17% for taxable incomes $\$0 < Y < \$29,590$
 1.52 x 26% for taxable incomes $\$29,590 < Y < \$59,180$
 1.52 x 29% for taxable incomes $\$59,181 < Y$.

In other words, Bourdeau-Primeau estimated that the Ontario taxes added another 52 percent of tax burden with each federal tax bracket, for combined tax rates in Ontario of 26 percent, 40 percent and 44 percent respectively. Bourdeau-Primeau used the Ontario taxes as a proxy for other provincial taxes since it would have been too burdensome to calculate taxes for each province.

TABLE 1
 BOURDEAU-PRIMEAU'S 1995 GROSS EARNINGS FUNCTIONS BY LEVEL OF EDUCATION

Parameter	Women					Men				
	High School	College	B.A.	Master	Ph.D.	High School	College	B.A.	Master	Ph.D.
Constant	6.4428 (0.0605)	7.4738 (0.0694)	7.2277 (0.0922)	6.2542 (0.2517)	5.9519 (0.7734)	6.1765 (0.0514)	6.7613 (0.0726)	6.8693 (0.0826)	8.2044 (0.3315)	6.3183 (0.3216)
Age	0.1389 (0.0030)	0.1078 (0.0035)	0.1340 (0.0047)	0.1859 (0.0116)	0.2017 (-0.0332)	0.1797 (0.0026)	0.1667 (0.0035)	0.1673 (0.0039)	0.1276 (0.0137)	0.193 (0.0142)
Age ²	-0.0015 (0.0000)	-0.0012 (0.0000)	-0.0015 (0.0001)	-0.0021 (0.0001)	-0.0021 (0.0003)	-0.0019 (0.0000)	-0.0019 (0.0000)	-0.0018 (0.0000)	-0.0013 (0.0001)	-0.002 (0.0001)
R ²	0.0807	0.0322	0.0464	0.0572	0.0724	0.167	0.0901	0.0888	0.054	0.1059
F	301.3590	513.7900	508.2880	129.4100	19.1100	866.831	141.715	953.893	46.211	107.8
N	29648	30879	20911	4271	489	28600	23074	19589	1620	1822

Source: Bourdeau-Primeau (1999), Tableau A-2, Contrôlé pour la fréquentation scolaire.

All taxpayers are assumed to claim the personal exemption, the employment expense, the C/QPP, the unemployment insurance premiums, and the combined Registered Retirement Savings Plan / Registered Pension Plan deduction. The 5 percent federal surtax is taken into consideration for amounts of tax paid greater than of \$12,500.

Bourdeau-Primeau's approach is consistent with, among others, Vaillancourt (1995, 1998) who calculated the returns to education in Canada³⁴. It is also consistent with a wide range of studies on the return to education³⁵. Lemelin and Perrot (1990) also used earnings calculated from estimated earning functions to measure the fiscal return of the university system in Québec.

³⁴ For an in-depth discussion on the issue of earnings and education, see Woodhall (1987b).

³⁵ A good summary of studies can be found in Bourdeau-Primeau (1999), pages 7-8.

Since the purpose is to measure the fiscal return of the CSLP, which is a federal program, we only consider the tax revenues accrued to the federal government as revenues. Indeed, provincial taxes do not show up on the federal government's fiscal balance sheet as revenues. For this reason, the provincial tax estimates were removed from the total tax paid computed by Bourdeau-Primeau (1999). In short, the incremental tax series developed below only include the federal tax revenues.

As mentioned above, the province of Québec does not participate in the CSLP. Despite that, there are two reasons why the Canadian earnings functions (which include Québec) adequately reflect the cross-sectional picture of the labour force upon which the recipients of the federal student financial assistance program can form their decisions. First, although Québec does not officially participate in the CSLP, it receives yearly alternative payments from the CSLP to assist in paying the costs of operating a similar program. In the end, the CSLP reaches student-borrowers in Québec just as it does in other jurisdiction. The only difference is the delivery framework favoured by Québec. Second, many CSLP recipients migrate to Québec in order to complete their education. For example, as indicated in Richard et al. (1997), between 1989 and 1997, almost 13 percent³⁶ of CSLP recipients migrated to Québec.

3.2.2 CSLP's Incremental Tax Revenues

To calculate the fiscal return of the CSLP, we have to estimate the total incremental tax revenue accrued to the government as a result of investing in human capital through the CSLP. This is done in three steps. First, we develop the incremental tax revenues from net and gross earnings functions, by gender, for college, bachelor, master and Ph.D. degrees. Section 3.2.1 Net and Gross Earnings above provides a brief recapitulation of how Bourdeau-Primeau (1999) developed the 1995 net and gross earnings used in the calculation of the CSLP's incremental tax revenue. Second, we develop incremental tax revenues for the university, college and private (private career colleges and training institutions) segments from their respective incremental tax revenues by gender. Third, we aggregate the incremental tax revenues of the three segments, i.e. university, college and private into CSLP's total incremental tax revenue. Each of these three steps is further described in the following sections.

Incremental Tax Revenues by Level of Education by Gender

Incremental tax revenues by for college, bachelor, master and Ph.D. degrees are calculated as follows from Bourdeau-Primeau's (1999) net and gross earnings functions of appropriate levels of education:

$$IT_i = ((GEA_i - NEA_i) - (GEB_i - NEB_i))/1.52 = (GEA_i - NEA_i - GEB_i + NEB_i)/1.52$$

³⁶ An average of almost 30,000 CSLP recipients each year.

where IT stands for incremental tax, G gross, N for net, E for earnings, A for after investment, B for before investment, and i is subscript for the number of years that runs to N. For example, the incremental tax revenues, by gender, of a college diploma is the difference between the tax paid by individuals with a college diploma and the tax they would have paid if they had a high school diploma:

$$IT^{College} = ((GE^{College} - NE^{College}) - (GE^{High\ school} - NE^{High\ school}))/1.52$$

$$= (GE^{College} - NE^{College} - GE^{High\ school} + NE^{High\ school}) / 1.52$$

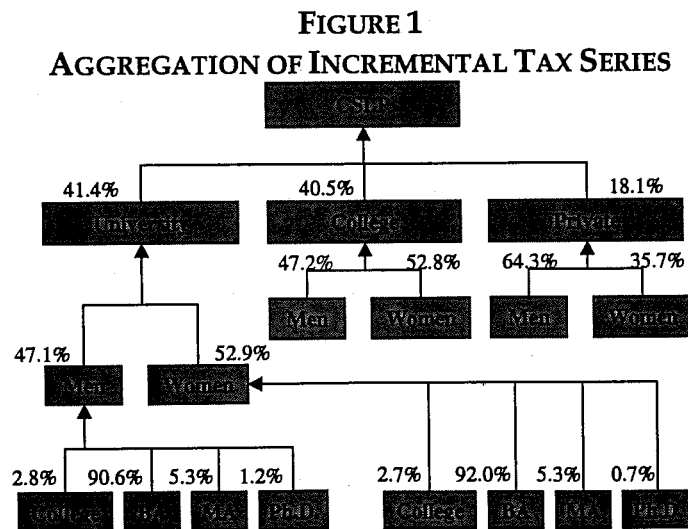
We dropped the subscript for ease of presentation, and added a superscript to indicate the level of education.

As described in 3.2.1 Net and Gross Earnings, Bourdeau-Primeau's net earnings take into consideration both, the provincial (as proxied by Ontario) and federal taxes. As indicated in section 3.1.2 Cost-Benefit Analysis, our calculation is only concerned with the federal tax. For this reason, we divide the incremental tax revenues by 1.52 to remove the provincial taxes. As also indicated in 3.1.2 Cost-Benefit Analysis, the 1.52 factor is used by Bourdeau-Primeau to approximate the Ontario taxes, and used as a proxy for other provincial taxes.

Incremental Tax by Segments: University, College, Private

Then, we develop incremental tax revenues for the university, college and private segments from their respective incremental tax revenues by gender.

The incremental tax revenues of each segment are a weighted-average of their incremental tax revenues by gender. Figure 1 outlines this process. Each box at the beginning of an arrow identifies which incremental tax is aggregated. The number along the arrow running from the box is the weight used in the process of averaging. Each weight corresponds to the ratio of the number of people to whom this incremental tax applies to the total number of people found in the final aggregate (tip of the arrow). For example, 47.2 percent of students who contracted a student loan to



Source: Weights developed by the author using CSLP's administrative data for the consolidation cohort of 1995.

attain a college degree were men, while 52.8 percent were women. Therefore, the incremental tax for CSLP College segment is:

$$IT^{College} = (47.2\% \times IT^{College} \text{ of Men}) + (52.8\% \times IT^{College} \text{ of Women}),$$

where IT stands for incremental tax. The same process applies to the aggregation of incremental tax revenues of other segments.

Bourdeau-Primeau (1999) did not compute an earnings function, by gender, for private institutions. Therefore, we assumed that the incremental tax revenues, by gender, for the private segment are 20 percent lower than that of the college segment. This assumption is fully explained in the section called Private Institutions Factor below.

The incremental tax revenues of the Private segment are also a weighted-average on the incremental tax revenues by gender created for that segment.

The incremental tax revenues by gender for university institutions had to be created before being aggregated into a University segment because Bourdeau-Primeau (1999) did not calculate earnings function for them. The incremental tax revenues by gender for university institutions were developed using a weighted-average on incremental tax revenues, by gender, of college, bachelor, master and Ph.D. degrees (see Figure 1) developed in the section above.

The fact that the incremental tax revenues of college level is included in the aggregation of the incremental tax revenues of university institutions is due to a peculiarity of the CSLP. When students contract loans with the CSLP, it is usually with the intention to complete a postsecondary degree. However, some will not complete the degree in which they enrol. They still owe the money to the CSLP but they have not attained the next level of education. Therefore, they have to repay their loans with earnings of the previous level of education. Hence, the government is not getting the additional tax revenue a higher level of education would generate. For this reason, we assigned the incremental tax revenues of the college level to the small fraction of the cohort who contracted loans from the CSLP in order to pursue university education but did not complete³⁷.

The incremental tax revenue for the University segment is also a weighted-average of incremental tax revenues by gender created for this segment.

Health sciences degrees (e.g. dentistry, doctors) and law degrees are included in the three usual university levels as the CSLP data does not allow for a finer breakdown that could be matched with the health sciences earnings function of Bourdeau-Primeau. Although these professions tend to generate higher incremental tax revenues, they were

³⁷ This is the non-degree category found in the CSLP university data.

therefore assigned that of the regular B.A., M.A., or Ph.D. degrees. The impact that this choice has on the fiscal return for the CSLP is difficult to predict. It all depends on how, and which way, the distributions of income and the number of loan recipients are skewed³⁸.

CSLP's Incremental Tax Revenues

Finally, we aggregate the incremental tax revenues of the three segments, i.e. university, college and private into CSLP's total incremental tax revenue. The CSLP's total incremental tax revenues are a weighted-average on incremental tax revenues of the three segments developed above: University, College and Private (see Figure 1).

Since all the incremental tax revenues are for individuals, we multiplied them by the total number of borrowers of the appropriate aggregate in order to have units comparable to the costs provided to us by the CSLP.

3.2.3 Incremental Tax Adjustments

For various reasons, not all the incremental tax revenues should be counted as a benefit. The ability of individuals, administrative features of the CSLP, and the quality of the data at hand are all reasons for possible adjustments. In the paragraphs below we describe and justify the use of the three following adjustment factors: the ability factor, the need assessment factor, and the private institutions' adjustment factor.

Ability factor

The issue surrounding the ability factor is well summarized in Woodhall (1987a). Human capital theory suggests that education or training raises the productivity of workers and their life time earnings by imparting useful knowledge and skills. However, many argue that higher earnings of educated workers simply reflect their superior ability, rather than the specific knowledge and skills acquired during the educational process. Others go even further and argue that education does not improve productivity at all, but simply acts as a "screening device" that enables employers to identify individuals who possess superior innate or personal characteristics valued by employers.

The screening hypothesis would lead to interesting implications when considering the fiscal return of the CSLP. It is said that if the screening hypothesis were true, an increase in the level of schooling would have private returns, but no social returns. This is because individuals possessing superior innate skills would achieve higher levels of earnings regardless of their going through a PSE educational process. Based on this reasoning, a proponent of the screening hypothesis may argue that a dollar spent on the

³⁸ This point was clarified by Professor Day, a referee for this major paper.

CSLP is a dollar wasted as there are only private returns accrued directly to individuals. Neither the government, nor society can benefit from investing in the CSLP since earning differentials due to education are nonexistent. However, it could be argued that there would be benefits in investing in the CSLP even if the screening hypothesis were 100 percent true. Indeed, the CSLP could help people obtain degrees that they would not otherwise have been able to afford, and get "screened" for jobs that would enhance their future earnings. In this case, every dollar spent on the CSLP would directly benefit the government in terms of increased tax revenues and society as a whole.

Proponents of human capital theory refute the "screening hypothesis" by saying that while a "weak" version is probably true, there is no solid evidence to support the "strong" version. At present, as witnessed by a brief literature review on the subject by Gullason (1999), there does not seem to be a consensus on the issue. As the screening hypothesis debate is not settled, we will assume that the abilities of individuals do account for some of the higher earnings.

The literature often suggests that simple-earnings profiles overestimate the effect of education on earnings. They therefore also overestimate additional fiscal revenues accrued to the government. To account for this *ability factor* in this paper, the tax differentials will be reduced by 20 per cent as already suggested and developed in Conference Board of Canada (1997). While somewhat arbitrary the Conference Board indicates that the 20 per cent factor is felt to reflect the average estimates from previous studies. For example, Blaug (1982) in a study of U.S. earnings differentials concludes that ability accounts for approximately 40 percent of income differentials. Psacharopoulos and Woodhall (1985) argue that this same factor would account for between 20 and 30 percent of the earnings differentials. In Canada, Constantatos and West (1991) report social rates of return based on assumptions about the influence of ability that range from 0 to 35%. Finally Mulvey and Martin (1995), after a comparison of Australian and U.S. findings, concluded that one-third of the overall return to schooling is due to education, one-third to ability and one-third to shared family environment.

Need Assessment factor

The main objective of the CSLP is to provide financial assistance to those who want to obtain PSE, but do not have the financial means to do so. To accomplish that, it relies on its need assessment process. However, no matter how well designed the need assessment process, it is not and probably will never be a hundred percent efficient. In other words, not only it does not provide enough assistance to some students who would need more, but more importantly for our analysis, it provides financial assistance to students who would be able to afford their PSE without the CSLP. As a result, a portion of fiscal revenues would be generated even without the support of the

CSLP. The CSLP total incremental tax revenues should therefore be reduced by some factor to correct that problem.

Some argue that this conclusion would be too severe as the additional money the borrower receives from the CSLP may be spent on education of superior quality. For example, the loans awarded to a borrower who can afford basic PSE without it might allow her to attend a "better" school and/or program than she would have been otherwise able to afford. While this is conceivable, the main goal of the program is to assist those who cannot afford PSE. Therefore, if the CSLP gave money to those who can afford PSE, regardless of the quality effect, it has failed its mandate and the Canadian taxpayers. Besides, who knows if the money was spent on superior education instead of other things of interest to the borrowers?

Therefore we feel the tax differentials should be corrected to take into consideration the imperfection of the need assessment process. To account for this *need assessment factor* in this paper, the tax differentials will be reduced by 22 percent, 31 percent and 13 percent for college, university and private students respectively. This is consistent with Human Resources Development Canada (1997), which presents the results of a survey connected with the evaluation of the CSLP. This evaluation found that respectively 78 percent, 69 percent and 87 percent of college, university and private students borrowers would not have enrolled if they had not received a student loan.

Private Institutions Factor

As already indicated above the section entitled 3.2.1 Net and Gross Earnings, Bourdeau-Primeau (1999) did not estimate an earnings function for people who attended private institutions. This is reflective of the lack of data in general regarding that segment. We have to somehow compensate for that gap to build the CSLP's total incremental tax revenues.

One easy solution is to assume that the incremental tax profile of people attending private institutions would be, at the most, as high as that for those attending college institutions. However, given the repayment difficulties of students attending private institutions relative to the other two CSLP segments, this assumption would probably overestimate the returns of that group³⁹.

Therefore, we will assume that the incremental tax of people attending private institutions is 20 percent lower than that of those attending college institutions. Although the 20 percent value is arbitrary, we felt that it is somewhat representative of information at hand.

³⁹ As indicated in section 2.2, Plager and Chen (1999) and Spector (1999) found that students who attended private institutions seem to have more repayment difficulties. However, they do not directly identify the reasons why it is the case. They only hint that one probable cause is low income.

Total Adjustment factor

The total adjustment factor applied to the incremental tax series are developed as follows:

$$TAF_j = 1 - Total_j$$

where "TAF_j" is the total adjustment factor for each segment, "Total_j" is the sum of the ability, need assessment and private institutions factors described above, and j the segment subscript. Table 2 shows the total adjustment factors by segment used in that paper. For example, the total adjustment factor for private institutions is: 1 - 20% - 13% - 20% = 47%.

3.2.4 Costs

This section is subdivided into two parts, one for the direct costs and the other for the indirect costs. Each defines the costs used in this study and describes, when applicable, how they were developed. It also briefly analyses them to ensure that they are sound and of appropriate magnitude.

	College	University	Private
Ability	20%	20%	20%
Need Assessment	22%	31%	13%
Private Institutions	0%	0%	20%
Total	42%	51%	53%
Total Adj. Factors	58%	49%	47%

As our main goal is to calculate the fiscal returns of the CSLP as a whole, this section focuses on total CSLP costs. Nonetheless it should be borne in mind that definitions and descriptions used here still apply to all the sub-aggregates of the CSLP (i.e. University, College and Private institutions).

Direct Costs: CSLP Subsidies

The direct costs used in this study are those incurred by the 1995 cohort between 1992 and 1999. In other words, we tracked the cost generated by each of the CSLP recipients who consolidated their loans in calendar year 1995 up to 1999. An estimate of these costs for the 1995 cohort is shown in Table 3 (next page).

Since the risk-shared regime started in August 1995, the costs of the 1995 consolidation cohort are almost exclusively those incurred under the guaranteed loan regime. Some risk premium costs can be attributed to this cohort, but they are negligible.

There are no "up-front" costs as is the case with usual calculation of return to education. Instead, we have a stream of subsidies from the moment the individuals borrow from the program and interact with it while in school or in repayment.

The costs were obtained from the CSLP administrative files and/or were estimated using administrative data and appropriate behaviour specific to the CSLP.

All costs used in this study are expressed in constant 1995 dollars. Hence, when used with the 1995 earnings functions they generate real fiscal rates of returns.

TABLE 3
TOTAL COSTS FOR THE 1995 COHORT
(Millions of 1995 \$)

	Defaults	Interest Subsidy	Alternative Payments	Collection Costs	Interest Relief	Loans Forgiven	Risk Premium	Admin	Recoveries	Total Costs
1992	0.0	-25.0	-12.4	0.0	0.0	0.0	0.0	-1.4	0.0	-37.3
1993	0.0	-63.6	-12.6	0.0	0.0	0.0	0.0	-1.5	0.0	-75.9
1994	0.0	-99.4	-12.7	0.0	0.0	0.0	0.0	-1.5	0.0	-111.1
1995	-117.4	0.0	-12.9	-0.4	-15.4	-0.4	-0.3	-1.5	2.5	-145.8
1996	-167.5	0.0	-13.1	-2.3	-8.3	-0.7	0.0	-1.5	14.1	-182.2
1997	-54.0	0.0	-13.4	-4.2	-2.5	-0.5	0.0	-1.5	26.0	-51.7
1998	-22.6	0.0	-13.5	-4.5	-1.3	-0.2	0.0	-1.6	28.1	-16.3
1999	-5.3	0.0	-13.7	-4.3	-0.5	-0.1	0.0	-1.6	27.1	1.6
Total	-366.8	-187.9	-104.4	-15.6	-28.0	-1.9	-0.3	-12.1	97.8	-618.7
Per \$	-0.27	-0.14	-0.08	-0.01	-0.02	-0.001	-0.0002	-0.01	0.07	-0.46
Conso- lidated (cents)										
% of total Costs	59.3%	30.4%	16.9%	2.5%	4.5%	0.3%	0.05%	2.0%	-15.8%	100.0%

Source: CSLP administrative data and estimates based on CSLP administrative data.

See Section 3.2.4 Costs for a detailed description of each variable presented in this table.

As shown in Table 3 above, its costs the federal government a total \$619 million to subsidize the loans of the 1995 consolidation cohort. Since the borrowers of the 1995 cohort consolidated \$1.3 billion of loans within the 1995 calendar year, each dollar lent to that cohort cost the federal government 46 cents in subsidies⁴⁰.

⁴⁰ It should be noted however that to have a true picture of fiscal returns, we would have to compile the costs and the recoveries over at least 10 years after the students have consolidated their loans. Since the costs occur, for the most part, within the first 7 years after the student enters the program (starting the first year interest subsidy is paid to the student), and that revenues continue to accumulate over a longer period, real fiscal return for the CSLP would be understated.

The CSLP subsidies or statutory expenditures used in this study and shown in Table 3 are further defined and described thereafter.

Claims Paid (Gross Defaults)

Under the guaranteed loan regime, the financial institutions claimed any loan losses from the government. The government honoured its guaranteed loans by paying the lending institution the full amount of the unpaid principal, plus accrued interest if an individual defaulted on his or her loan repayment. The amount of claims paid was provided to us by the CSLP using their administrative data files.

To date, the federal government paid a total \$367 million to lending institutions to guarantee the defaulted loans of the 1995 consolidation cohort. This represents 27 cents for every dollar of loans consolidated, or 59 percent of total costs paid to the 1995 cohort over the 8 years under review. The cost of claims paid or gross defaults is clearly the cost driver of the CSLP. Even after factoring in the recoveries (7 cents for every dollar of loan issued) and the cost of recoveries (1 cent), the cost of net default (21 cents) still is high at \$285 million, or 46% of total costs for this cohort. To date, the CSLP gross default rate for the 1995 consolidation cohort, using expenditures expressed in 1995 dollar, is 27 percent⁴¹.

Between 1995-96 and 1998-1999⁴², the period over which the claims for the 1995 consolidation cohort were paid, total claims paid by the CSLP averaged \$365 million⁴³. Hence, the figure of \$367 million provided to us by the CSLP seems to be acceptable.

Interest Subsidy

The Interest Subsidy has been and will likely continue to be an integral feature of the CSLP for a long time. Under this scheme, the government pays the lenders all interest on Canada student loans at prime rate (also called the minister's rate) while borrowers are enrolled in full-time studies.

As it was impossible for the CSLP to provide us with the actual interest subsidy paid to the 1995 cohort, we estimated it using the following formula developed by the CSLP⁴⁴:

⁴¹ Sum of claims paid between 1992 and 1999 divided by the value of loans consolidated by the 1995 consolidation cohort.

⁴² This period is felt to be more representative of the 1995 cohort since default behaviour changed markedly from 1995 onwards.

⁴³ Calculated from HRDC Main Estimates, Part III, CSLP Statutory Expenditures.

⁴⁴ This formula was developed by the CSLP and used in its actuarial model for its negotiations with financial institutions to renew the risk-shared agreement. Although CSLP officials believe it generates sound estimates, it has been refined since then.

where G_i is the growth of the value of loans to be financed each of the first three years by the CSLP. G_i is defined as the estimated proportion of the total final value of loans disbursed each year. The value of loans consolidated by the 1995 cohort, provided to us by the CSLP using its administrative data files, is divided by 3 because, on average, as indicated by the CSLP, students enrol in 3 year programs. The minister's rate is that of the 1995-96 fiscal year and can be found in HRDC's 1996-97 Main Estimates, on page 4-17.

In words, the formula assumes three equal loan disbursements that are cumulated each year and financed by the CSLP. This formula was used to estimate the interest subsidy between 1992 and 1994.

To date, the cost of interest subsidy for the 1995 consolidation cohort accumulated between 1992 and 1999 were \$188 million. It represents 0.14 cents of each dollar of loans consolidated for this cohort or 30% of total costs. It is the second most important cost driver of the CSLP.

Our estimate seems to be reasonable, as the interest subsidy paid between 1991-92 and 1998-99 fiscal years averaged \$193 million⁴⁵. It can therefore be deemed a fair representation of the cost incurred by the government for the cohort of 1995.

Alternative Payment

Since the inception of the program, a province or territory that chooses not to participate in the CSLP is entitled to an alternative payment to assist in paying the cost of operating a similar program. The calculation of the amounts paid to Quebec and the N.W.T. is based on the population in each jurisdiction, and the amount of statutory expenditures spent in participating provinces.

Unfortunately, the CSLP cannot calculate the amounts of alternative payments attributable to the 1995 cohort. Therefore, we assumed that the alternative payment attributable to the 1995 consolidation cohort is equal to \$104M, the average nominal payments made by the CSLP to Quebec and the N.W.T. between 1991-92 and 1998-99 fiscal years⁴⁶. This amount was split equally between 1992 and 1999 to arrive at the alternative payments costs for the 1995 cohort⁴⁷.

⁴⁵ Calculated from HRDC Main Estimates, Part III, CSLP Statutory Expenditures.

⁴⁶ Calculated from HRDC Main Estimates, Part III, CSLP Statutory Expenditures.

⁴⁷ You should note that the nominal amount was split evenly. After accounting for inflation, it no longer looks like it was an even split.

This mean that on the average, the alternative payments for this cohort represent 17 percent of total statutory expenditure for this cohort, or 8 cents per dollar of loans consolidated.

Collection Costs

Under the guaranteed loan regime, once the government pays a claim, it takes responsibility for collecting from the borrowers. This usually involves sending the loan to a collection agency. If a borrower refuses to repay the loan, the Department of Justice becomes involved and legal action may result. In addition, income tax refunds may be set-off as payment toward defaulted loans. All these activities generate costs for the CSLP.

Although these collection costs are published by the CSLP in HRDC's Main Estimates, it was not possible for the CSLP to provide us with the collection costs associated with the 1995 cohort. Therefore, we used the following estimation method developed by the CSLP to create a collection costs series: Value of Recoveries X Cost rate of 16%. The cost rate was estimated by the CSLP from on their analysis of previous school-year consolidation cohort. The recoveries are described further below.

To date, the federal government paid an estimated total of \$16 million in collection costs for the 1995 consolidation cohort. This represents 1 cent for every dollar of loans consolidated, or 3 percent of total costs paid to the 1995 cohort over the 8 years under review.

The estimate seems a little low when compared to the average collection cost of \$24 million⁴⁸ between 1991-92 and 1998-99 fiscal years. However, it is our best guess.

Interest Relief

Under IR, the government reassumes responsibility for making interest payments on the outstanding loan, and no principal payments are required from the borrower.

Although the Interest Relief costs are published by the CSLP in HRDC's Main Estimates, it was not possible for the CSLP to provide us with the costs associated with the 1995 cohort. Therefore, we used the following estimation method developed by the CSLP to create an Interest Relief costs series:

Value of Loans on Interest Relief X Student's Rate of 9.25%.

The series for the value of loans on Interest Relief for the 1995 cohort was provided to us by the CSLP using its administrative data files. The student rate is that of the 1995-96

⁴⁸ Calculated from HRDC Main Estimates, Part III, CSLP Statutory Expenditures.

fiscal year and can be found in HRDC's 1996-97 Main Estimates on page 4-17. The student rate was the maximum rate that a bank could charge borrowers. The CSLP developed this value using Government of Canada bonds maturing in 5 to 10 years.

To date, the federal government paid an estimated \$28 million in Interest Relief costs for the 1995 consolidation cohort. This represents 2 cent for every dollar of loans consolidated, or 5 percent of total costs paid to the 1995 cohort over the 8 years under review.

The estimate seems to be reasonable, as interest relief paid between 1991-92 and 1998-99 fiscal years averaged \$29 million⁴⁹. It can therefore be deemed a fair representation of the cost incurred by the government for the cohort of 1995.

Loans Forgiven

The federal government pays the lending institution the full amount of the unpaid principal plus accrued interest in the event of the death of the borrower or if the borrower becomes permanently disabled and cannot repay the loan without undue hardship.

The amount of loans forgiven to the 1995 consolidation cohort was provided to us by the CSLP. To date, the federal government forgave a total \$2 million of loans for the 1995 consolidation cohort. This represents 1/10 of 1 cent for every dollar of loans consolidated or 0.3 percent of total costs paid to the 1995 cohort over the 8 years under review.

The estimate seems a little low when compared to the average collection cost of \$5 million between 1991-92 and 1998-99 fiscal years. However, given the relative unimportance of these costs, the difference is not worrisome.

Risk Premium

Since the risk-shared regime started in August 1995, the costs of the 1995 cohort are almost exclusively those incurred under the guaranteed loan regime. However, some risk premium costs can be attributed to this cohort. Although they are small in magnitude, we decided to include them to avoid overstating the fiscal return.

Under the risk premium arrangement it had with the financial institutions, the federal government paid the financial institutions 5 percent of the value of the value of loans consolidated each year. As it was impossible for the CSLP to provide us with actual risk premiums paid for the 1995 cohort, we estimated it using the following formula:

⁴⁹ Calculated from HRDC Main Estimates, Part III, CSLP Statutory Expenditures.

Value of Loans Consolidated under the Risk Premium by the 1995 cohort X 5%.

The value of loans consolidated under the risk-shared premium by the 1995 cohort was provided to us by the CSLP.

The federal government paid an estimated \$0.3 million in risk premiums for the 1995 consolidation cohort. This represents half of 1 percent of total costs paid to the 1995 cohort over the 8 years under review. As the risk-shared regime only started in 1995, it is impossible to compare our estimate with an historical average.

Administration

Like any other government of private business organization, the CSLP faces costs for administering its program. These costs include the head-quarter administration costs as well as the administration fees paid to province to process CSLP loan applications.

These costs are typically difficult to track, let alone to determine the amount of administration costs incurred by a particular cohort. Nonetheless, the CSLP was able to provide us with a figure that it deems reasonable for the cohort of 1995. It estimates these costs at about \$12 million (\$12.1 million in 1995 dollar). This amount was equally spread over the review period (i.e. \$1.5 million from 1992 to 1999). In 1995 dollars, it represents about 1 cent for every dollar of loans consolidated, or 2 percent of total costs paid to the 1995 cohort over the 8 years under review.

Recoveries

In order to reflect the most accurate picture of the fiscal return for the CSLP, one has to take into consideration all recoveries that might offset the costs.

The recoveries represent any amounts recuperated from defaulted loans through collection actions initiated by the CSLP or income tax set-offs. The recoveries are amounts recovered from defaulted loans by collection agencies on the behalf of the federal government. The income tax set-offs are amounts recovered from defaulted loans by Revenue Canada through the income tax system on the behalf of the CSLP.

The recoveries are usually presented as a specific item in the Main Estimates, separate from the income tax set-offs. However, the recoveries used here include the recoveries per se and the income tax set-offs.

Although the recoveries are published by the CSLP in HRDC's Main Estimates, it was not possible for the CSLP to provide us with the value associated with the 1995 cohort. Therefore, we used the following estimation method developed by the CSLP to create a recoveries series:

Value of Defaults X Recovery Rate of 60% X Probability Distribution of Recoveries.

The value of defaults, the recovery rate and probability distribution for the 1995 cohort were all obtained from the CSLP. The value of default came from the CSLP administrative data files while the recovery rate and probability distribution were estimated by the CSLP through an analysis of previous school-year consolidation cohorts. According to the CSLP, the probability distribution used here is stationary. That is, it was found to be stable across cohorts financed under a guaranteed loan regime.

To date, the federal government recovered an estimated \$98 million of defaulted loans for the 1995 consolidation cohort. This means that for every dollar of loans consolidated the government recovers about 1 cent. In addition, the recoveries offset about 16% of the total costs paid to the 1995 cohort over the 8 years under review.

Indirect Costs: Foregone Tax Revenues

The foregone incremental tax revenues are those lost by the government while individuals are acquiring their education.

To estimate these we assumed that the government would have been able to collect the amount of taxes generated by the earnings of the previous level of education net of what the government gains in taxes from students' earnings during their study period. Arithmetically:

$$FIT_i = ITPEL_i - ITWS_i,$$

Where FIT is the forgone incremental tax, ITPEL the incremental tax of the previous education level, and ITWS the incremental tax generated by a student while in study. The subscript "i" runs from 1992 to 1994, the study period.

Since the incremental tax of those who completed high school is null over the period during which College and Private students could be working instead of studying⁵⁰, there are no forgone incremental taxes for College and Private students. The incremental tax is null because the income of high school graduates is too low in the early years in the labour force to generate any tax revenues for the federal government. For similar reasons, forgone incremental tax for university students exists only for the third year of study.

⁵⁰ Between the ages of 18 and 20.

3.3 Hurdle Rate

The fact that an internal rate of return (IRR) may be positive does not necessarily mean that a project is a good economic proposition. Taken alone the IRR does not offer any indication regarding the value creation of an economic project.

As indicated in Peppers and Bails (1987)⁵¹, whether a positive IRR is a sign of a good economic project depends on the magnitude of the cost of capital raised for the project. Specifically, a firm should expand its output as long as marginal revenue is greater than marginal costs. Under these conditions, the firm's economic principle for investment is:

If IRR (the marginal percentage rate of return) > Marginal Cost of Capital (MCC) (the rate at which the next project is financed), then carry out the capital project.

In the context of the CSLP this statement can be translated by saying that the government is justified in providing a subsidy to those who wish to invest in human capital for as long as the marginal tax revenue is greater than the marginal cost of subsidy. The same decision principle would therefore apply for the CSLP.

The only difference is that the government has a more limited number of options to finance its projects/program. A firm can finance capital projects by issuing debt, preferred stock, common stock or using retained earnings. The government finances capital projects mainly by issuing bonds⁵². Therefore, the MCC for the CSLP should be a real government bond yield.

It can be argued that a 7-year government bond yield would be appropriate for the CSLP. Indeed, according to CSLP officials, on average, CSLP borrowers repay their loans within a little less than 7 years.

On the other hand, as was also indicated by CSLP officials, the full return for a cohort does not materialize before 10 years or more. Indeed, to have a complete picture of fiscal returns, the costs and the recoveries would have to be compiled over at least 10 years after the students have consolidated their loans. For the most part, the costs occur within the first 7 years after the student enters the program (starting the first year interest subsidy is paid to the student). However, revenues continue to accumulate over a longer period such that the fiscal return measured before 10 years after students enter the program would be understated.

⁵¹ Chapter 12 – The Economics of time: Capital Budgeting.

⁵² For example, in June 2000, the share of bonds in the government of Canada's unmatured debt payable in Canadian or foreign currencies was 78% (Source: Department of Finance. 2000. "The Fiscal Monitor: Highlights of Financial Results for June 2000." Table 6, Condensed Statement of Assets and Liabilities).

Finally, our analysis of the discounted payback period⁵³ indicates that the CSLP subsidies paid to the cohort of 1995 are repaid after 16 years, hence justifying the use of a longer term yield.

Given the wide range of possibilities, we decided to compare the real IRR of the 1995 cohort to the 7-year, 10-year and long-term real government bond yields of 1995. Our analysis of the results presented in the next section will however focus on the long-term government real bond yield.

Table 4 shows the three possible yields. We will also discount the CSLP's net incremental tax using these yields to evaluate the extent of the value created under each scenario.

TABLE 4
1995 GOVERNMENT BOND YIELDS

	7-year	10-Year	Long-term
Nominal Yields	7.90%	8.10%	8.40%
Inflation in 1995	2.20%	2.20%	2.20%
Real Yields	5.70%	5.90%	6.20%

Sources: Bond Yields – Bank of Canada Review, Spring 1996, Table F1-S53.
Inflation – Bank of Canada Review, Feb. 2000.

4.0 Results and Discussion

This section provides a brief recapitulation of the method and assumptions used to develop our results. It also discusses the sensitivity of the results to our assumptions and analyses the results for the 1995 cohort. Finally, it provides an analysis of the impact of changes in financing regime on the 1995 cohort, and a cursory review of the fiscal return of the CSLP during the second part of the 1990's under the risk-sharing regime.

In this paper we estimate the real fiscal return for the CSLP using a standard cost-benefit analysis approach. That is, the fiscal return is the rate at which $PV = 0$, and at which the stream of revenues is equal to the stream of costs required to carry out the investment.

The revenues are the incremental taxes (the marginal tax revenue) produced by the 1995 cohort, and collected by the federal government as a result of acquiring higher levels of education. The incremental taxes are derived from usual semi-logarithmic gross and net earning functions with a concave relationship between earnings and age, by level of education. They were aggregated according to the definition of the CSLP's three segments. They were also reduced to account for the abilities of individuals and the flaws of the need assessment process. We also assumed that the incremental tax for graduates of private institutions is 20 percent lower than of graduates of College institutions.

⁵³ We defined the discounted payback period as the time required for NPV of cumulative costs and CSLP incremental tax to become positive.

The stream of direct costs is the subsidies paid each year, between 1992 and 1999, to the 1995 cohort. While the indirect costs are included, the indirect benefits were not. The direct costs were either obtained from the CSLP, or estimated using CSLP data and methodologies recognized by the program. Here also we favoured stringent assumptions.

Since the incremental tax revenues and the costs are all expressed in 1995 dollars, our calculation yields a real fiscal return.

Our results are presented in Table 5. Based on our assumptions, the estimated real fiscal return for the CSLP's 1995 cohort is 6.8 percent. The results contained in table 5 will be discussed in detail later, but let us first discuss the sensitivity of the results.

TABLE 5
REAL FISCAL RETURNS 1995 COHORT

	University	College	Private	CSLP Total
Women	9.8%	2.8%	2.2%	5.4%
Men	11.1%	N/A	N/A	N/A
All	8.7%	N/A	-3.4%	6.8%

It should be borne in mind that the level of fiscal returns shown in table 5 are dependent upon our set of assumptions used to adjust the incremental tax revenues and the estimation of the costs. We will focus here on the sensitivity of the adjustment of incremental tax revenues since they have, by far, the largest impact on the bottom line.

Table 6 lists a range of results generated from the permutations of various incremental tax adjustments (adjustment levels kept as developed in this paper). The first column of

TABLE 6
REAL FISCAL RETURN FOR THE CSLP 1995 COHORT:
SENSITIVITY OF RESULTS

Incremental Tax Adjustments	CSLP Total	University	College	Private
All	6.8%	8.7%	N/A	-3.4%
Need Assessment and Ability	7.1%	8.7%	N/A	4.0%
Need Assessment and Private	9.5%	11.1%	5.4%	4.0%
Need Assessment Only	9.8%	11.1%	5.4%	8.0%
Ability and Private	10.3%	12.2%	5.8%	2.3%
Ability Only	10.6%	12.2%	5.8%	6.7%
Private Only	12.5%	14.1%	9.6%	6.7%
No Adjustments	12.8%	14.1%	9.6%	10.3%

table 6 identifies the set of adjustments made on the incremental tax revenues, the other columns present the fiscal return by segment, for that given set of incremental tax adjustments.

The results developed and discussed in this paper are on the first line for "All" adjustments. They vary from 6.8% (CSLP Total), which includes all the adjustments, to 12.8%,

which does not factor in any

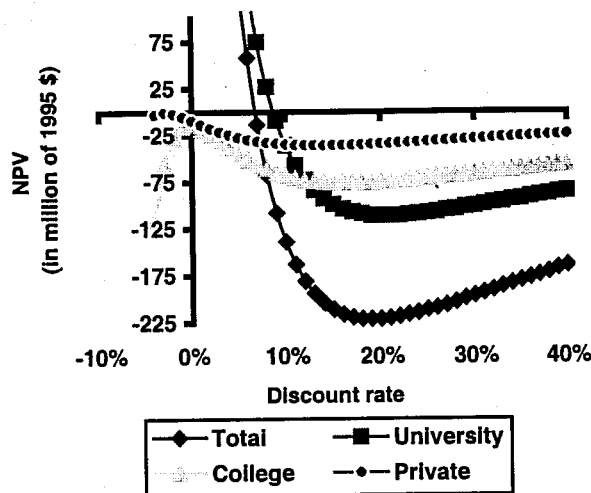
adjustments. Although it would be difficult for everybody to agree on the magnitude of the adjustment factors, the necessity of including any of these three adjustments (with an adjustment level different than 0) is probably less controversial. Our choice of the

most stringent set of assumptions for the calculation of the fiscal return is akin to the narrowing of confidence intervals for statistical tests. If under this set of stringent assumptions it can be determined that the CSLP is a good financial proposition, than we can have a certain measure of confidence in the final verdict.

Let us now turn to the analysis of the results presented in table 5. As mentioned earlier, based on our assumptions, the estimated real fiscal return for the CSLP's 1995 cohort is 6.8 percent. While the estimated real fiscal return of the university segment is high at 8.7 percent, that for the Private segment is -3.4 percent. Since the PV function for the College segment has no root, it has no IRR and hence no calculable fiscal return value.

Indeed, as shown in Figure 2, which depicts the graphical solutions by segment, the PV function for the College segment (triangles) never cuts the abscissa.

Figure 2 - CSLP PV Functions



This result is probably due to an anomaly in the College men's earnings profile generated by Bourdeau-Primeau's earnings function. From the age of 45, the men's earnings profile falls below that of the previous level of education. Although Bourdeau-Primeau (1999) could not calculate an IRR for College men, she did not provide an explanation for the problem. In the context of the CSLP's fiscal return, this anomaly generates negative incremental tax revenues for both the College and the Private segments, from the age of 45 onward. While the costs of the Private segment are such that a solution remains possible, those of the College segment are too large in relation to College earnings, which results in a downward shift of the College PV function, well below the abscissa. The anomaly in the College men's earnings profile

makes little economic sense, and raises concerns about the validity of the earnings function approach.

TABLE 7
VALUE OF RETURNS AT VARIOUS DISCOUNT RATES
(Millions of 1995 \$)

	Government Bond	University	College	Private	All
	Real Yields in 1995				
7 Year	5.7%	\$157.9	-\$49.8	-\$29.0	\$79.1
10 Year	5.9%	\$144.3	-\$50.9	-\$29.3	\$64.1
Long term	6.2%	\$121.1	-\$52.7	-\$30.0	\$38.4

Table 7 shows that when discounting the CSLP's net incremental tax with the long-term government real bond yield indicate, the program generated a little more than \$38 million in net tax revenues. The

University segment alone collected net tax revenues of \$121 million, while the two other segments lost almost \$83 million. The Private segment performs better than the College one as its value of return is -\$30M compared to -\$52.7M respectively.

The value of returns for College and Private segments were likely affected by this anomaly in the College men's earnings profile (recall that incremental tax revenues for the Private segment are derived from those for the College segment). Although the negative return of the Private segment is not surprising, the negative return for the College segment is more puzzling. Even if the magnitude of the discounted value of returns for both segments is clearly affected by the earning profile anomaly, that for the College segment probably suffered the most from it. In the end, this re-emphasizes the fact that the total CSLP fiscal return calculated here is probably a lower bound on what the CSLP could generate.

In addition, we would expect the University segment to perform better than the college one, which would, in turn, perform better than the private one. Spector (1999) even put the University and College segments in the same major league of good performers. While our results show that the University performs better than the other two as expected, the Private segment performs better than the College one. Although this result can be surprising, it can be explained by the fact that the need assessment adjustment factor is the lowest for the Private segment (see table 2), which brings up its incremental tax revenues profile.

As indicated earlier in the Hurdle Rate section, the discounted payback period, using any of the three government bond yields is about 16 years. This means that the best benchmark for validating the fiscal rate of return is probably the long-term government real bond yield. Since the CSLP real fiscal return is greater than the long-term government real bond yield of 6.2 percent, we conclude the government was justified in providing financial assistance to the borrowers of the CSLP 1995 consolidation cohort. This is notwithstanding the fact that there are other goals to the CSLP.

The CSLP remained a good financial proposition for the 1995 cohort probably because of the performance of the university segment. Indeed, the value of returns suggest that the net tax revenues of the university segment would more than finance the subsidies paid to the two others. However, given the problems raised by the earning profile anomaly, we would however caution the reader against such a strong conclusion. A more tenable position would be to say that the University segment appears to be the backbone of CSLP performance.

As already discussed, the real fiscal return of the 1995 consolidation cohort are representative of a guaranteed loan regime. At the time, the program was still responsible for the defaults as well as its collection. It is however possible to evaluate what would have been the real returns of the 1995 cohort under the risk-shared or the

direct lending regimes. Such an analysis would shed some light into the fiscal efficiency of the various regimes.

For an estimate of the real fiscal return of the 1995 cohort under the risk-shared regime, we must first remove the costs of default, collection and the recoveries from our initial calculations. We then add \$67 million⁵⁴ of risk premium costs (at 5% risk premium) the government would have paid under the risk-shared regime. Everything else remains constant. Under these assumptions, the real fiscal return of the CSLP under the risk-shared regime for the 1995 consolidation cohort would have been around 10 percent. Our analysis further indicates that the return of the 1995 cohort under the risk-shared regime would have been 6.9% with a risk premium of 20%.

To estimate the real fiscal return for the 1995 cohort under a direct lending regime we add \$161M⁵⁵ of provisioning cost for loan losses for the 1995 cohort. We also assume that the spread between the rate charged to students and the cost of borrowing is large enough to compensate for incremental administrative costs and the interest subsidy⁵⁶. Everything else remains constant. With these assumptions, the real fiscal return of the CSLP 1995 cohort under the direct lending regime would have been around 7 percent.

TABLE 8
FISCAL RETURNS BY
FINANCING REGIME
COHORT 1995

Financing Regimes	Return
<i>Guaranteed</i>	6.8%
<i>Risk-Shared</i>	10.0%
<i>Direct Lending</i>	7.0%

Table 8 lists the real fiscal returns for the 1995 cohort under various financing regimes. When compared to our hurdle rate for 1995, the risk sharing and the direct lending regimes would also have been good economic propositions for the 1995 consolidation cohort. Interestingly, our results suggest

that, from a fiscal return point of view, a direct lending regime would perform as well as a guaranteed one. In light of this, one would wonder what were the government's criteria for deciding to engage into direct lending. After all, a guaranteed loan regime no longer held secrets for the government since it administered such a regime for many years.

Let us now look at the fiscal returns of post-1995 cohorts. They can be approximated with the cost structure we established for the 1995 cohort.

⁵⁴ The value of loans consolidated by the 1995 (1,338.6 million) times 5 percent. The value of loans consolidated was obtained from the CSLP.

⁵⁵ Since the CSLP is now the lender, we assumed that, like financial institutions, it would make provisions for loan losses. We therefore assumed that it will completely cover its losses up-front, up to the level of its historical net default of about 12 percent (obtained from CSLP officials). Our estimate is the result of the following: 1,338.6 (Consolidation for the 1995 cohort. Source: CSLP Administrative data) * 12% (historical net default).

⁵⁶ The spread may differ from year to year depending upon financial market conditions. However, if we assume that the CSLP charges what the lender charges to students under the risk sharing regime (prime + 2.5%), it should be able to more than cover its administrative costs since the banks usually make a profit on that kind of spread. However, it is difficult to predict by how much.

To estimate the fiscal return of the CSLP between 1996 and 1999 under a risk-sharing regime, we first add \$36 million in Canada Study Grants⁵⁷ to the 1995 cohort basic costs. Then, we remove the costs of default, collection and the recoveries since the CSLP was operating under a risk-sharing regime. We then add \$67 million of risk premium costs. Under these assumptions, the fiscal returns of the CSLP cohorts under the risk-sharing regime probably averaged about 9 percent. Since the long-term government real bond yield averaged 5.1 percent⁵⁸ during the risk-shared contract, the CSLP under the risk-shared regime has been a very good economic proposition.

It is unclear what the post-2000 fiscal returns will be under a direct lending regime since the impact of the Canada Study Grants and the debt reduction measure are unknown. Moreover, the default situation may depart significantly from its trend of the second half of the 1990. The only certainty is that the fiscal room under a direct lending regime will be greatly reduced, when compared to the risk-sharing one. In the end, whether the direct lending regime is a good economic proposition will depend on the long-term government real bond yields beyond 2000.

Given the decreased fiscal room, should the CSLP consider a reduction in the rate charged to students? Should the CSLP use a reduction in the rate charged to students as a repayment incentive? We can attempt to answer these questions by measuring the impact a change in the rate charge to students and the default rate would have had on the 1995 cohort if it operated under a direct lending regime.

Under a direct lending regime, a reduction of 100 basis points⁵⁹ in the rate charged to students of the 1995 cohort would increase the cost of the cohort by \$46 million and reduce the fiscal return by 50 basis points. It would require a reduction of 160 basis points in the rate charged to students to reduce the fiscal return of the 1995 cohort to 6.2 percent, our hurdle rate. On the other hand, a reduction of 100 basis points in the default rate for the 1995 cohorts would decrease the cost of the cohort only by about 14

⁵⁷ Average expenditures on Canada Study Grants (CSG) between its inception in 1996 and 1999 is \$36M (Calculated from HRDC Main Estimates, Part III, CSLP Statutory Expenditures). Negligible at first, the CSG expenditures reached 109M in 1998-99 fiscal year. (HRDC Main Estimates, Part III, CSLP Statutory Expenditures, 1998-99).

⁵⁸ The average long-term government real bond yield between 1996 and 1999 is 6.5%. It was calculated from Bank of Canada Review, Government of Canada benchmark bond yields, long-term, Table F1, series B14072. The average inflation rate between 1996 and 1999 was 1.5 percent. It was calculated from Cansim data, Consumer price index, 1996 classification, annual average all-items indexes, Canada, historical summary, Matrix 9957.

⁵⁹ The impact was calculated using the CSLP's basic model. The total cost impact was calculated as follows: \$1,338.6 million (Consolidation for the 1995 cohort. Source: CSLP Admin. data) * 1% (the reduction in the rate charged to students) * 56% (the average balance left on the loans) * 6.8 years (the average number of years student take to repay their Canada student loans) * 88% (the net proportion of the value of the loans repaid) = \$45 million (the total cost impact of a rate reduction). This amount is spread equally between 1995 and 1999.

million⁶⁰. The fiscal return of the 1995 cohort would fall by about 20 basis points. It would require a reduction of 600 basis points in the default rate to reduce the fiscal return of the 1995 cohort to 6.2 percent, our hurdle rate.

This analysis indicates that a reduction in the rate charged to students under a direct lending regime would be costly. Presumably, a reduction in the interest rate, tied or not with repayment incentives, could curb defaults, accelerate repayment, and ultimately reduce the discounted payback period. However, the extent of these benefits is unknown. All that seems apparent from our analysis above is that it would require a very large change in the defaults to compensate for the rate reduction. Given the heavy cost burden imposed on the CSLP (mainly because of defaults), it would be prudent to implement a rate reduction only if it is at least cost neutral. In other words, the benefits of such a policy should be well known before proceeding with the change.

5.0 CONCLUSIONS

This paper estimated a real fiscal return for the CSLP's 1995 cohort of 6.8 percent. While the estimated real fiscal return of the university segment is high at 8.7 percent, that for the Private segment is -3.4 percent. We favoured restrictive assumptions, and hence, the total CSLP fiscal return calculated here is probably a lower bound to what the CSLP could generate. Nonetheless, it should be noted that these results are dependent upon many assumptions. They should be interpreted carefully.

Our estimated CSLP real fiscal return is greater than the long-term government real bond yield of 6.2 percent. Therefore, we conclude that the government was justified in providing financial assistance to the borrowers of the CSLP 1995 consolidation cohort. This particular result is fairly robust given that we favoured a restrictive set of assumptions. The CSLP remained a good economic proposition for the cohort of 1995 probably because of the performance of the university segment.

The real fiscal return of the CSLP's 1995 consolidation cohort would have been around 10 percent under a risk-shared regime and 7 percent under a direct lending regime. Therefore, the CSLP would be a good economic proposition under both alternate regimes.

We also found that the CSLP under the risk-shared regime, between 1996 and 1999, has been a very good economic proposition with its fiscal return being almost 4 full percentage points higher than the selected hurdle rate.

⁶⁰ This estimate is developed using the observed probability distribution of real gross defaults for the 1995 cohort. The real gross default is defined as the ratio of the sum of real value of defaults divided by the value of consolidations.

Looking ahead to the future, it is difficult to predict what will be the fiscal return of the CSLP under the direct lending regime. Given our analysis of the 1995 cohort, it is safe to say that the fiscal room will be greatly reduced, when compared to the risk-shared regime. In this context, a reduction in the rate charged to students should be carefully evaluated before being implemented. In the end however, whether the direct lending regime is a good economic proposition will depend on the long-term government real bond yields beyond 2000.

BIBLIOGRAPHY

Appleby, John and Rouleau, Manon. 2000. "Est-il rentable de poursuivre des études postsecondaires au Canada: une analyse temporelle des rendements à l'éducation." Forthcoming working paper. Human Resources Development Canada, Applied Research Branch.

AUCC, Association of Universities and Colleges of Canada. 1993. "A New Student Assistance Plan for Canada." A Report by the AUCC Standing Advisory Committee on Funding. Ottawa.

Barrett, Garry F. 2000. "The Effect of Educational Attainment on Welfare Dependence: Evidence from Canada." *Journal of Public Economics* 77 (2000) 209-232.

Blaug, Mark. 1982. "The Correlation Between Education and Earnings: What does it Signify?" *Higher Education*, 11.

Bourdeau-Primeau, Sandrine. 1999. "Les taux de rendements privés et sociaux de l'éducation au Canada, 1995." Université de Montréal. Master thesis under the direction of François Vaillancourt.

Canada. 1990. Auditor General. Report of the Auditor-General of Canada to the House of Commons. Ottawa.

Conference Board of Canada. 1997. "Individual Returns to Investment in Postsecondary and Lifelong Learning: Phase 1, Feasibility Study, Final Report September, 1997." Submitted to the Learning Programs and Policy Division, Human Resources Development Canada.

Constantatos, Chistos, and West, Edwin G. 1991. "Measuring Returns from Education: Some Neglected Factors." *Canadian Public Policy*, 17,2, June, pages 127-138.

Caucutt, Elizabeth and Kumar, Krishna B. 2000. "Higher Education Subsidies and Heterogeneity. A Dynamic Analysis." University of Rochester: Rochester Center for Economic Research. Working Paper No. 472. May.

Finnie, Ross. 2000. "From School to Work: The Evolution of Early Labour Market Outcomes of Canadian Postsecondary Graduates. *Canadian Public Policy*, Vol. XXVU, No. 2, pages 197-224.

Finnie, Ross, and Garneau, Gaétan. 1996. "Student Loans in Canada: A Cross-Cohort Micro Analysis of Student Borrowing for Post-Secondary Education." Human Resources Development Canada, Applied Research Branch, Research Papers, R-96-16E.

Finnie, Ross, and Schwartz, Saul. 1996a. "Student Loans in Canada: An Econometric Analysis of Borrowing and Repayment Using the National Graduate Surveys." Human Resources Development Canada, Applied Research Branch, Working Papers, W-96-3E.

Finnie, Ross, and Schwartz, Saul. 1996b. "Student Loans in Canada: Past, Present, and Future." C.D. Howe Institute.

Friedman, Milton. 1962. "The Role of Government in Higher Education." In Milton Friedman, *Capitalism and Freedom*. Chicago: University of Chicago Press.

Gullason, Edward. T. 1999. "The Stability Pattern of Sheepskin Effects and its Implications for the Human Capital Theory-Screening Hypothesis Debate." *Eastern Economic Journal*, Vol. 25, No. 2, Spring 1999.

Hiscott, Robert D. 1996. "Patterns of Education Financing and Debt: A Comparison of Two Cohorts of Canadian Post-Secondary Graduates." *Canadian Journal of Higher Education*, Volume XXVI-2, pages 23-46.

Human Resources Development Canada. 1997. "Evaluation of the Canada Student Loans Program. Final Report." Evaluation and Data Development, Strategic Policy. SP-AH039E-10-97, October.

Kesselman, Jonathan. 1993. "Squeezing Universities, Students, or Taxpayers?" In Edwin G. West, *Ending the Squeeze on Universities*. Montréal: Institute for Research on Public Policy.

Lemelin, Clément, and Perrot, Jean. 1990. "Les dépenses publiques pour l'enseignement universitaire et le taux de rendement fiscal: le cas du Québec." *L'Actualité économique, Revue d'analyse économique*, vol. 66, no. 2, Juin, pages 193-217.

Lochner, Lance. 1999. "Education, Work and Crime: Theory and Evidence." University of Rochester: Rochester Center for Economic Research. Working Paper No. 465. October.

Miller, Paul; Mulvey, Charles, and Martin, Nick. 1995. "What do Twins Studies Reveal About the Economic Returns to Education? A Comparison of Australian and US Findings." *The American Economic Review*, 85,3, June, pages 586-599.

Montmarquette, Claude. 1997. "L'insertion des jeunes sur le marché du travail: Un résumé des connaissances et un document de réflexions." Research Paper, Human Resources Development Canada, R-97-14F, August, 33 pages.

O'Donoghue, Cathal. 1999. "Estimating the Rate of Return to Education using Microsimulation." *Economic and Social Review*, Vol. 30, No.3, July, pp. 249-265.

Perrot, Jean. 1991. "Les dépenses publiques pour l'enseignement universitaire et le taux de rendement fiscal: le cas de la France." *Revue économique*, 42(1), Janvier, pages 111-132.

Plager and Chen. 1999. "Student Debt from 1990-91 to 1995-96: An Analysis of Canada Student Loans Data." *Education Quarterly Review*, Statistics Canada, Catalogue no. 81-003, Vol. 5, no. 4, pages 10-35.

Peppers, Larry C., Bails, Dale G. 1987. "Managerial Economics: Theory & Applications for Decision Making." Prentice-Hall Inc., 679 pages.

Psacharopoulos, George, and Woodhall, Maureen. 1985. "Education for Development: An Analysis of Investment Choices." Oxford University Press.

Richard, Marc, Wright R. and Plager L. 1997. "Mobility of University Students." Human Resources Development Canada, Canada Student Loans Program, Internal Paper.

Spector, Aron. 1999. "Educational Institution Factors Affecting Overall Student Default Levels." Human Resources Development Canada, Canada Student Loans Program.

Schwartz, Saul. 1997. "Evaluation of the Canada Student Loans Program – Literature review (Draft Report)." Prepared for Goss Gilroy Inc., Management Consultants, and presented to Human Resources Development Canada. March.

Vaillancourt, François. 1998. "The Returns to Education in Canada: 1985 and 1990." Centre de recherche et Développement en Économie (C.R.D.E.). University de Montréal, May.

Vaillancourt, François. 1995. "The Private and Total Returns to Education in Canada, 1985." *Canadian Journal of Economics*, Volume XXVIII No. 3 August, pages 532-554.

Vaillancourt, François. 1986. "The Returns to University Schooling in Canada." *Canadian Public Policy*, 12, 3, pages 449-458.

West, Edwin. 1993. "Ending the Squeeze on Universities. Montréal: Institute for Research on Public Policy.

Woodhall, M. 1987a. "Human Capital Issues." In Psacharopoulos, George. *Economics of Education: Research and Studies*. Pergamon Books Ltd.

Woodhall, M. 1987b. "Earnings and Education." In Psacharopoulos, George. *Economics of Education: Research and Studies*. Pergamon Books Ltd.

ANNEX 1: DESCRIPTION OF THE CSLP'S ADMINISTRATIVE FEATURES

This annex describes the CSLP's current administrative features⁶¹, many of which are at the core of our calculation of the fiscal return for the CSLP. These features are the result of a long maturation process initiated in 1964 with the inception of the program. As the needs of CSLP borrowers evolved through the decades, the CSLP added features designed to support borrowers who faced a difficult school-to-work transition. The following are described below: assessment procedures, program delivery, borrowing limits, interest subsidy, grace period, interest relief, debt reduction in repayment, loan forgiveness, and the Canada Study Grants.

Assessment Procedures

Created in 1964, the Canada Student Loans Program assists Canadians with demonstrated financial need to pursue postsecondary education and training leading to degrees, diplomas or certificates. Financial need is determined through the so-called *need assessment*.

Need assessment, is the process of estimating the financial resources that are available to prospective post-secondary students and then comparing those resources to the costs that students expect to face. It aims at directing government subsidies to targeted groups; usually students with low family income and assets⁶².

Parents are expected to contribute to the costs of their children's education until the student has been out of high school four years, or in the labour force two years, or married, or a single parent. Spouses are also expected to contribute.

In 1994-95, the CSLP revised its need assessment process in an attempt to improve the targeting of subsidies to those who need it the most. In the process, the allowances were updated.

Program Delivery

Student assistance is based on federal-provincial partnerships. In nine provinces and the Yukon, students receive federal and provincial assistance. Québec and the N.W.T.

⁶¹ Although the CSLP is mainly aimed at full time students, it also has a small, non-subsidized part-time loans program, which allows students to pay only interest costs during their studies.

⁶² Some empirical facts from the U.S. indicate that subsidies should be based on merit. Caucutt and Kumar (2000) developed a dynamic framework to analyze higher education subsidies when there is heterogeneity in parental income and student ability. This model does not include economic growth. In Canada, programs such as the CSSHRC, the OGS and the FCAR all use merit as criteria.

do not participate in the CSLP and receive alternative payments⁶³ from the federal government to operate their own programs.

Much of the "front-end"⁶⁴ of the CSLP is delivered by provincial student assistance offices that also administer provincial student aid. Participating provinces determine individual eligibility for Canada student loans and assess students' financial needs based on federal criteria. They also award the aid by issuing a Canada student loan certificate and designate institutions which students may attend with CSLP assistance. Up until August 2000, students took the Canada student loan certificates from the province to private sector lenders which issued the loans. Under the new direct lending arrangement, students will, starting in August 1, 2001, take the Canada student loan certificate to a Service Bureau, which will act as an intermediary for the CSLP that now finances the loans.

Borrowing Limits

The CSLP provides 60% of assessed need for each eligible full-time student up to a weekly maximum limit. The remaining need is expected to be met by the provinces' student financial assistance programs.

The CSLP loan limit is expressed in terms of the maximum amount a student can borrow for each week of school. In the early 1980's, the loan limit was set at \$50. It increased to \$100 a week in 1983 and to \$105 a week in 1984. It remained unchanged until the reform of 1994 when the loan limit was increased to \$165. It has not changed since.

Interest Subsidy⁶⁵

In a normal commercial loan, interest begins accruing as soon as the borrower receives the money and monthly payments on interest and principal are required. However, students who contract student loans are, by definition, not in a position to make such payments since most are either unemployed or earn part-time wages. For this reason, the CSLP pays all the interest on the borrower's student loan for as long as the student continues to be enrolled in full-time studies. Upon completion of studies, the student's debt is limited to the amount originally borrowed. This assistance is called In-School Interest Subsidy.

⁶³ The calculation of alternative payments is based on program costs in the participating provinces and the size of their population. See also Section 3.2.4 Costs - Alternative Payment for further details.

⁶⁴ "Front-end" refers to the need assessment process and the issuing of loan certificates.

⁶⁵ This assistance is not available to students using the part-time loans.

Grace Period

After finishing their studies, CSLP borrowers must consolidate⁶⁶ their loans, assume responsibility for interest, and begin to make payments within six months. Following the end of studies, many borrowers face a considerable period of low or unstable income as they make the sometimes difficult transition to the labour force. For this reason, CSLP borrowers are not required to make payments on their student loans for six months following the date when they cease to be enrolled in full-time studies. These six months are commonly known as the *Grace Period*. The interest accrued during the *Grace Period* is capitalized in the loans when consolidated.

Interest Relief

During repayment, some graduates may suffer a period of low and/or unstable income lasting months (or in some cases years) as they transit into the labour market⁶⁷. If no assistance were available to borrowers during this period, many would find themselves facing loan default, even though their long-term income prospects are very good. For this reason, the CSLP provides assistance to borrowers with low post-study incomes who are experiencing undue hardship because of their student debt obligations. This is accomplished through the *Interest Relief (IR)* program.

Under IR, the government pays the interest on the behalf of the borrower on the outstanding loan. No principal payments are required from the borrower while on IR (the borrower is, however, responsible for reconsolidating the loan once IR support ends). IR is normally approved for three-month periods, up to a maximum of 30 months throughout the life of the loan. Those experiencing prolonged hardship may qualify for an additional 24 months of IR if they have consolidated their loans within less than 5 years, and have exhausted the first 30 months of IR⁶⁸. IR is not given automatically; students must make an application, and must provide evidence (pay stubs, etc.) of their income.

⁶⁶ Student-borrowers have to apply for loans each year. As a result, typical student-borrowers with a bachelor degree may have up to 4 loans at the end of their programs. These loans are consolidated into one final loan to be reimbursed to the lenders.

⁶⁷ This issue of School-to-work transition is documented in Finnie (2000) and Montmarquette (1997). For example, in Finnie (2000), the school-to-work transition is identified as an extended process, with many outcomes changing significantly from two to five years following graduation, and almost uniformly for the better. Hence, IR and Debt reduction would be a safety net to only a minority of individuals.

⁶⁸ The rationale is to bridge those experiencing prolonged hardship up to the point where they might be eligible for the debt reduction program. Individuals are eligible for the debt reduction program only if 5 years have passed since they consolidated.

Debt Reduction in Repayment

Graduates who are still experiencing financial difficulty five years after the completion of their studies, and who have exhausted IR may qualify for the *Debt Reduction in Repayment* program. Under this program, the CSLP pays down the debt of those borrowers who have very high debt-to-income ratios. The maximum amount of assistance is equal to 50 per cent of the loan amount or \$10,000, whichever is the lowest.

Loan Forgiveness

CSLP debts may be forgiven in cases where the borrower has become disabled to the extent that loans cannot be repaid without undue hardship. Debts of deceased borrowers are also forgiven.

Canada Study Grants

The CSLP provides Canada Study Grants to assist students with permanent disabilities, high-need part-time students, women in certain doctoral studies, and full- and part-time student loan recipients with dependants. Unlike student loans, Canada Study Grants do not have to be repaid.

Annex 2: Real Net Incremental Tax

Real net incremental tax is the sum of costs and incremental tax revenues for each segment and the CSLP as a whole.

Real Net Incremental Tax (Million)

	CSLP	University	College	Private
1992	-\$38.8	-\$20.5	-\$13.4	-\$4.9
1993	-\$77.7	-\$41.0	-\$26.8	-\$9.9
1994	-\$113.5	-\$59.9	-\$39.1	-\$14.5
1995	-\$136.7	-\$64.7	-\$43.5	-\$28.4
1996	-\$154.2	-\$69.7	-\$59.0	-\$25.4
1997	-\$21.3	-\$13.4	-\$6.6	-\$1.4
1998	\$16.6	\$3.1	\$9.1	\$4.5
1999	\$37.6	\$12.4	\$17.7	\$7.5
2000	\$39.8	\$15.2	\$18.1	\$6.6
2001	\$41.1	\$16.8	\$17.9	\$6.5
2002	\$42.3	\$18.5	\$17.5	\$6.3
2003	\$43.3	\$20.2	\$17.0	\$6.1
2004	\$44.2	\$22.0	\$16.4	\$5.8
2005	\$45.1	\$23.7	\$15.8	\$5.6
2006	\$45.9	\$25.5	\$15.1	\$5.3
2007	\$46.7	\$27.5	\$14.3	\$5.0
2008	\$49.0	\$31.0	\$13.4	\$4.6
2009	\$49.5	\$32.8	\$12.4	\$4.3
2010	\$49.9	\$34.5	\$11.4	\$3.9
2011	\$50.1	\$36.2	\$10.4	\$3.5
2012	\$50.7	\$38.3	\$9.2	\$3.1
2013	\$52.2	\$41.3	\$8.1	\$2.8
2014	\$52.2	\$42.8	\$7.0	\$2.4
2015	\$52.0	\$44.2	\$5.8	\$2.0
2016	\$51.7	\$45.4	\$4.6	\$1.6
2017	\$82.2	\$77.6	\$3.4	\$1.2
2018	\$82.0	\$78.9	\$2.3	\$0.8
2019	\$81.5	\$79.9	\$1.1	\$0.5
2020	\$80.8	\$80.6	\$0.0	\$0.2
2021	\$79.7	\$80.9	-\$1.0	-\$0.1
2022	\$78.5	\$80.9	-\$2.0	-\$0.4
2023	\$77.0	\$80.6	-\$2.9	-\$0.7
2024	\$75.3	\$79.9	-\$3.6	-\$0.9
2025	\$43.2	\$48.6	-\$4.3	-\$1.0
2026	\$41.9	\$47.8	-\$4.8	-\$1.2
2027	\$40.5	\$46.9	-\$5.2	-\$1.2
2028	\$38.7	\$45.6	-\$5.6	-\$1.3
2029	\$35.9	\$43.0	-\$5.8	-\$1.3
2030	\$34.5	\$41.7	-\$5.9	-\$1.3
2031	\$33.1	\$40.3	-\$6.0	-\$1.2
2032	\$31.8	\$38.8	-\$5.9	-\$1.2
2033	\$30.4	\$37.2	-\$5.7	-\$1.0
2034	\$27.1	\$33.4	-\$5.4	-\$0.9
2035	\$25.8	\$31.5	-\$5.0	-\$0.7
2036	\$24.6	\$29.7	-\$4.6	-\$0.5