AN ECONOMIC PERSPECTIVE OF THE REFORM OF POST-SECONDARY EDUCATION FINANCING IN CANADA

By

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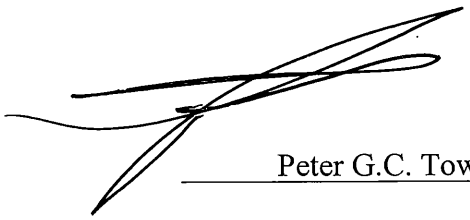

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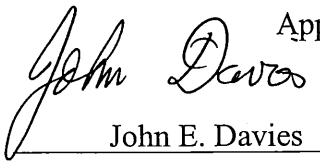

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Abstract

This thesis analyses the costs and benefits of post-secondary education in Canada for both individuals and the nation as a whole. It offers two alternatives, an income contingent repayment plan and a plan where tuition fees are based on academic performance, which would be superior in equality and efficiency over the current system.

Introduction

As university students near the end of their degree program, they frequently talk about what they are planning to do upon graduation. Some decide to pursue graduate studies, but many will look for a job and enter the work force. Many hope that the education they have received will be the foundation for a 'better job' than if they had started working after high school. Suddenly, students begin to do mental calculations of how much they have spent over the past four years, and how much they will earn in the near future. Were all the tuition payments and loans worth it? Of course, many university students will say 'yes', that receiving a post-secondary degree was worth the cost and that they are better off for it.[1] The same likely holds true for most Canadians; most probably feel that the benefits of a post-secondary education outweigh the costs. In this thesis we evaluate the fundamental economic attributes of the current Canadian post-secondary education system and propose improvements to it.[2]

In order to determine if the post-secondary education system is efficient, we must first describe the elements of economic efficiency. In the context of this thesis, dynamic efficiency relates to the pace of innovation in the economy. This is important to education institutions because they need to keep pace with technology in order to be competitive nationally and globally. Technical efficiency refers here to the ability of the system to produce a given level of output at lowest cost. Technical efficiency will, therefore, relate to transaction costs and the number of spots available at universities. Allocative efficiency looks at whether all units for which the marginal benefit to society

exceeds the marginal cost to society are produced. An efficient system would exhibit allocative efficiency by taking all the individuals who have the ability and desire to learn at this higher level and ensuring that they are all able to attend a post-secondary institution of high quality. There are many people who are not able to learn, or who have no desire to learn at a post-secondary level and, in order to be efficient, such a system would steer these individuals towards other alternatives in order to keep costs under control and to avoid misallocated resources. For example, someone aspiring to become a florist, could, no doubt, benefit from the appropriate course or program, but a full undergraduate degree would likely neither be required nor the most beneficial.

To be equitable, a higher education system must not have barriers to entry that would prohibit individuals who have the ability and the desire to attend a post-secondary educational institution from doing so.[3] Such barriers are often of a monetary or geographical nature.

This thesis is divided into six chapters. In the next chapter we examine the current post-secondary education system in Canada by looking at its general structure, government funding, costs to students, and options concerning how individuals can meet these costs. The third chapter looks at the implications of today's system for individuals (accessibility, opportunity costs, debt), the institutions (private funding, scholarships) and the country (productivity gap and 'brain drain'). Benefits of higher education are examined in the fourth chapter along with the fundamental reasons why countries have higher education systems and what these systems will need to be like in the future.

Chapter five provides analysis of alternatives that offer some improvements for the efficiency and equity of the post-secondary educational system. Chapter six concludes the thesis.

2. Current State of Affairs

2.1 Description of Post-Secondary Institutions: Non-Profit Enterprises

Higher education institutions are not usually 'for-profit'. They are part of the service industry and are partly public and partly private institutions, similar to some health care facilities, where the government covers part of the cost and the rest is raised from students and donors. Higher education institutions are not identical as they provide services that differ somewhat from one school to the next. Winston (1999, 14) describes the post-secondary education market as a "trust market" because the "non-profit structure of the suppliers" encourages honest, profit-sacrificing actions that justify trust.

If not profits, then what does motivate the managers of higher education? Many managers are motivated by the desire to offer a high quality of post-secondary education and deliver excellent research. However, we cannot ignore the fact that there is also a desire to keep their jobs, which means financial viability is one of their objectives. A successful university is characterized by the 'pursuit of excellence', a goal that means maintaining or improving the quality of the educational services it supplies and the equity with which they are provided (Winston 1999, 16). Success is measured by the quality of product (students with knowledge) created by the educational institution. This can be assessed by looking at the rate at which graduates are hired, their salaries or potential earning value, and sometimes by the 'word of mouth' reputation of the school.

2.2 Consumer Input

Higher education institutions use consumer-input technology; they buy inputs to their production processes from the consumers who buy their products. In simpler terms this means that, in institutions of higher education, students partly educate themselves and each other. In this unique situation, consumers (the students) are both a factor input and the output; they are the carriers of knowledge (the finished product), but are also a vital part of the university experience, enhancing not only their own education but also that of those around them. The quality of education that a student gets from a university depends, to some extent, on the quality of that student's peers. A high-quality student body is often considered an important resource for post-secondary institutions. Some students will provide more of this input than others, which means that post-secondary institutions will have incentives to try to identify who will be inputs of higher quality, and to entice them to attend their institution. In doing so, a circular process begins; the students who are inputs of higher quality will hopefully attract future students, who will, in turn, attract more future students and so on. Post-secondary institutions are unique because, although there does not appear to be an excess of demand in the market as a whole, there is excess demand for the more prestigious institutions. The most successful universities have the luxury of choosing their consumers, while other universities must often lower their standards to fill spots. For the less desired institution it is a balancing act between revenue (with number of students being a factor) and standards (which will be lowered if too many students are accepted) (Winston 1999, 18).

2.3 Costs

The cost of higher education is a very controversial topic. Students generally feel that tuition is too high, yet while many people agree, tuition fees still increase year after year. When examining the costs associated with higher education one must try to determine if they are allocatively efficient in nature. Tuition fees cannot be too low, because some people will attend university even though the net return to the person and society is lower than from some alternative activity. If tuition fees are too high, some people will be induced not to attend university and partake in a lower-return activity. It would seem that in order to begin the process of assessing the costs of higher education, we should try to determine if higher education is a necessity, a right or a luxury item reserved for only those who can afford it. Schooling through to the end of high school is usually considered to be not only a necessity and a right, but mandatory as the government has made it a legal requirement that everyone go to school until the age of sixteen, regardless of place of residence or income status. Should the same hold true for post-secondary education? Or, should it be reserved for only those who can afford to attend? Or, is it a luxury reserved for only the middle and upper classes? Whatever the answer, if there is one, there is room for debate over how much students should be expected to contribute.

There is a need for an education system to be dynamically efficient, for without this element, an education system would fall behind the pace of the post-secondary educational systems in other countries (as examined in sections 3.7 and 3.8). Dynamic efficiency is important as it relates to the pace of innovation in the economy and the

ability of institutions to keep pace with it. This means that institutions must be current in their research, materials, methods and means of teaching and learning. For example, campuses around the world today are making the move, if they have not already, towards being fully wired for online use. In a few years, if not already, a campus without access to online capabilities would be dynamically inefficient. One could hypothesise that such a situation might result in decreased attendance numbers and research at such a campus that would affect the dynamics of the post-secondary education system within that nation. It is, therefore, partly in the attempt to stay dynamically efficient that we observe an increase in the general operating revenues of post-secondary institutions. We must keep the need for dynamic efficiency in mind when examining the costs of post-secondary education. However, the hard part does not lie in justifying the costs, but rather in answering the question of who should pay them.

The costs of post-secondary education can be categorized as public or private. Public costs represent the contribution of government at all levels. Private costs can be either direct or indirect. Constantatos and West (1991, 130) define direct costs as tuition that the students or their families pay, and indirect costs represent forgone earnings during the period spent in school.

2.3.1 Public Costs Paid by Government

Post-secondary education is an investment for both individuals and governments. For individuals who obtain a post-secondary education it is a personal investment in their future, and for governments it is an investment in the future of the nation (the benefits

of which will be examined below). For a variety of reasons the federal government of Canada has been reducing the amount of funding available to higher education institutions as shown in Table 1. This does not necessarily mean that the government does not appreciate the value of investing in post-secondary education, but it seems to imply that other investments are perceived to generate higher benefits. Some critics, such as Constantatos and West (1991, 130), say that cutbacks to higher education have a variety of effects on the nation, including a decrease in the government's ability to deliver on its 'job and growth agenda'. They say this is because cutbacks to higher education are viewed as a depletion of the nation's intellectual capital (failure to maintain growth of human resources), which they argue had been built up to an impressive level over past decades. In order to secure maximum returns on the nation's investment in higher education, the federal government will need to take a different approach than the one taken in recent years in order to ensure the well-being of universities' research infrastructures.

TABLE 1
General Operating Income by Source of Funds ($1000s)

	Government	%	Fees	%	Donations	%	Other	%	Total
1986-87	3,916,774	81.32	767,519	15.93	34,140	0.7	98,012	2.03	4,816,455
1987-88	4,201,182	81.34	826,970	16.01	32,017	0.61	104,313	2.01	5,164,482
1988-89	4,488,011	80.9	911,681	16.43	31,269	0.56	116,351	2.09	5,547,312
1989-90	4,847,120	79.92	1,012,406	16.69	43,076	0.71	161,943	2.67	6,064,545
1990-91	5,213,615	78.86	1,177,997	17.81	45,017	0.68	174,065	2.63	6,610,694
1991-92	5,646,355	77.21	1,406,315	19.23	74,867	1.02	185,359	2.53	7,312,896
1992-93	5,665,012	75.85	1,565,079	20.95	52,704	0.7	185,525	2.48	7,468,320
1993-94	5,713,222	74.05	1,726,974	22.38	74,998	0.97	199,143	2.58	7,714,337
1994-95	5,419,051	72.22	1,826,075	24.33	61,402	0.81	196,833	2.62	7,503,361
1995-96	5,333,321	70.4	1,940,508	25.61	75,934	1	226,364	2.98	7,575,187
1996-97	4,922,416	66.83	2,118,260	28.75	70,170	0.95	254,508	3.45	7,365,354
1997-98	4,935,039	64.53	2,336,576	30.55	87,533	1.14	288,212	3.76	7,647,360
1998-99	5,098,459	63.59	2,542,450	31.71	97,674	1.21	278,322	3.47	8,016,905

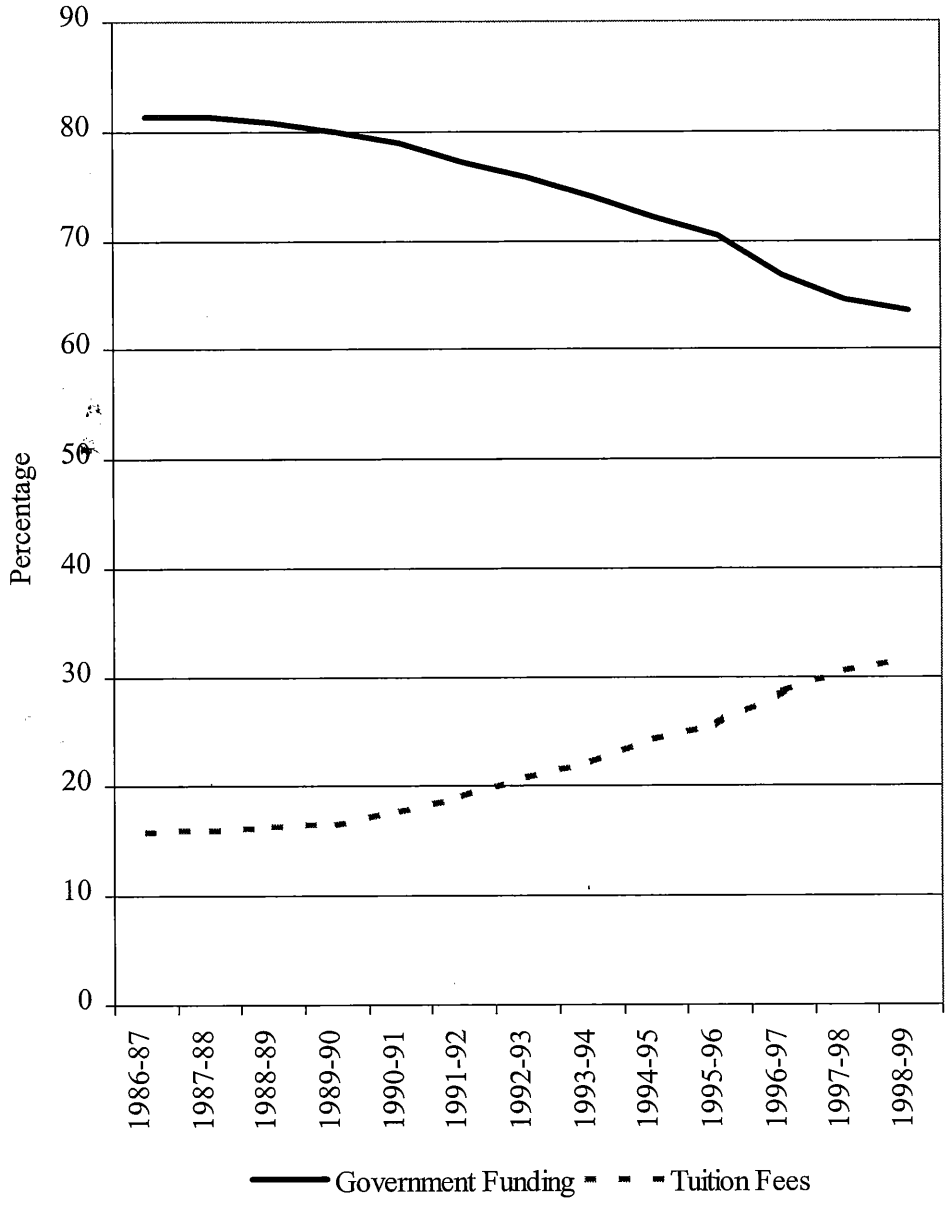
SOURCE: AUCC 2001

In order to better understand the government's situation with regard to federal funding of post-secondary education in Canada, Table 1 examines sources of financing of universities from 1986 to 1999. The data in Table 1 show that there has been a steady decrease in the percentage paid by government (which corresponds to the steady increase in tuition fees). Although the absolute value of government funding has risen over the years, the percentage of institutions' operating income paid by the government has decreased. Between 1986 and 1999 the government's contribution to post-secondary education decreased from 81% to 63.5% of institutions' operating income. In 1995 and 1996 alone, the federal government cut spending on post-secondary education by $7-billion. Damage from those cutbacks is still being felt, and the increase in funding in recent years has not been enough to cover increasing costs and thus to curtail spiralling tuition fees.

Figure 1 shows graphically the difference in government funding and revenue generated from tuition fees. It demonstrates that the gap between government and student contributions to higher education is narrowing. Provinces spend more on post-secondary education than the federal government, but a large part of their funding comes from federal transfers. In 1999/2000 the federal government supplied post-secondary institutions with $1,328,781,000, while the provinces supplied $6,762,990,000 — over five times as much (Smyth 2001b).

Many researchers, including Francois Vaillancourt, have conducted studies to determine the private and public returns from education in Canada. Such studies are

FIGURE 1: Government Funding and Tuition Fees



SOURCE: AUCC 2001

useful as they can help the public sector allocate scarce funds among the education sector and other sectors of society (or among the different levels of education). Vaillancourt (1995) recently concluded that although there are positive rates of return from all educational programs, the highest rates of return (private and public, for men and women) come from completion of high school. This likely explains why governments provide secondary school education but only contribute partially to post-secondary education.

There is a strong link between government funding and tuition fees. Funding formulae from provincial governments to individual universities are diverse, but they do generally depend on the number of students and the composition of the student body (undergraduate *versus* graduate). Given universities' funding requirements, as government funding decreases it seems natural that tuition fees must increase. Government cutbacks can thus be linked to the creation of negative incentives for today's youth to attend post-secondary institutions.

2.3.2 Today's Increasing Tuition

Tuition is a user fee for education. In recent years there has been a growing reliance on user fees as a source of revenue for post-secondary education. As examined in the previous section, this increase is a direct result of the federal government's movement away from publicly funded and universally accessible education to more of a user-pay system.

In this section we examine the growth tuition in recent years and how the balance of who is paying for post-secondary education has been changing.

Perhaps one of the biggest concerns for today's students is that tuition fees are spiralling upwards. This means that many students who are accepted at a post-secondary institution will incur debt and remain indebted for many years following graduation. Statistics Canada (2000) reported that the average increases in tuition for 2000/01 ranged from 3% to 7% in Canada, which is actually somewhat of a slowdown compared to the 7% to12% average annual increase experienced across Canada during the past five years. From 1994/95 to 1999/2000, aggregate tuition fees across Canada (including miscellaneous student fees) increased 44.5% from $1,989,198,000 to $2,874,942,000 (Smyth 2001b). Between the years 1994/95 and 1998/99, total student enrolment (full-time and part-time) at Canadian universities increased only from 575,713 to 580,376, approximately 1% (Statistics Canada 1996b). Some experts, such as Farran (1997), have predicted that the cost of a four-year university degree (fees, books, transportation and accommodation) could easily reach $150,000 by the year 2015. These tuition fees do not include other compulsory fees for students. Some schools, such as Acadia University, add on the cost of a laptop rental for their Acadia Advantage program.

Increases in tuition at Canadian universities from 1995/96 to 2000/01 are summarized in Table 2. The only significant exceptions were institutions located in the province of Québec, where fees either remained unchanged or decreased because of provincial

TABLE 2
University Tuition Fees for Full-time Canadian Arts Students at Degree Granting Institutions

		1995-1996	2000-2001	% change
Newfoundland	Memorial University	2312	3300	43%
PEI	University of PEI	2820	3480	23%
Nova Scotia	Acadia University	3495	5805	66%
	University College of Cape Breton	3000	4070	36%
	Dalhousie University	3095	4320	40%
	University of Kings College	3105	4050	30%
	Mount Saint Vincent University	3050	4110	35%
	St Francis Xavier University	3175	4370	30%
	Saint Mary's University	3115	4210	35%
New Brunswick	University de Moncton	2292	3245	42%
	Mount Allison University	3040	4390	44%
	University of New Brunswick	2610	3635	39%
	St. Thomas University	2190	3060	40%
Québec	Bishop's University	1680	1668	-1%
	Concordia University	1680	1680	0%
	Universite Laval	1680	1668	0%
	McGill University	1668	1668	0%
Ontario	Brock University	1836	3951	61%
	Carleton University	2451	3910	60%
	University of Guelph	2451	3950	61%
	Lakehead University	2451	3910	60%
	Laurentian University	2451	3951	61%
	McMaster University	2451	3830	56%
	Nipissing University	2451	3720	52%
	Ottawa University	2450	3892	59%
	Queen's University	2451	3951	61%
	Ryerson Polytechnic University	2452	4020	64%
	University of Toronto	2451	3951	61%
	Trent University	2451	3951	61%
	University of Waterloo	2452	3952	61%
	University of Western Ontario	2451	3920	60%
	Wilfred Laurier University	2450	3951	61%
	University of Windsor	2452	3858	57%
	York University	2451	3951	61%
Manitoba	University of Manitoba	2377	2796	18%

	University of Winnipeg	2292	2786	22%
Saskatchewan	University of Regina	2640	2813	7%
	University of Saskatchewan	2550	3298	29%
Alberta	University of Alberta	2529	3770	49%
	University of Calgary	2660	3834	44%
British Columbia	University of British Columbia	2295	2295	0%
	Simon Fraser University	2310	2310	0%
	University of Victoria	2265	2265	0%

policy. The average increase across the nation during the period was 38%, and over fourteen of the forty-four schools listed had experiences increases in tuition of over 60% during this six-year period.

Increasing tuition is somewhat equitable as it affects all students (with the exception of Québec students, and with the obvious note that students from upper class families will not feel the squeeze), but it is inefficient as it creates non-optimal incentives for young Canadians to obtain a post secondary education. Decreasing government participation puts pressure on institutions to raise funds in other ways (fundraising, private donations, etc.) and increases the demand for scholarships, loans and grants.

2.4 Parents and Saving

Included in the costs to society, there are some costs that must be met by individuals obtaining a post-secondary education. (In the post-secondary market these costs are often an issue for parents as well as the students, as some parents try to contribute to their child's post-secondary education.) For example, most students pay rent/residence fees, food/meal plan, schoolbooks and supplies, and travel expenses. The contribution of parents to the funding of a post-secondary education for their children often starts years before the future students can start contributing themselves. Bortolotti (1997) showed that 84% of parents in Canada expect their children to attend a post-secondary institution while, in fact, only 20-24% do. He also reported that out of the 84% that plan on post-secondary education for their children, 82% say they are worried about their ability to finance that education.

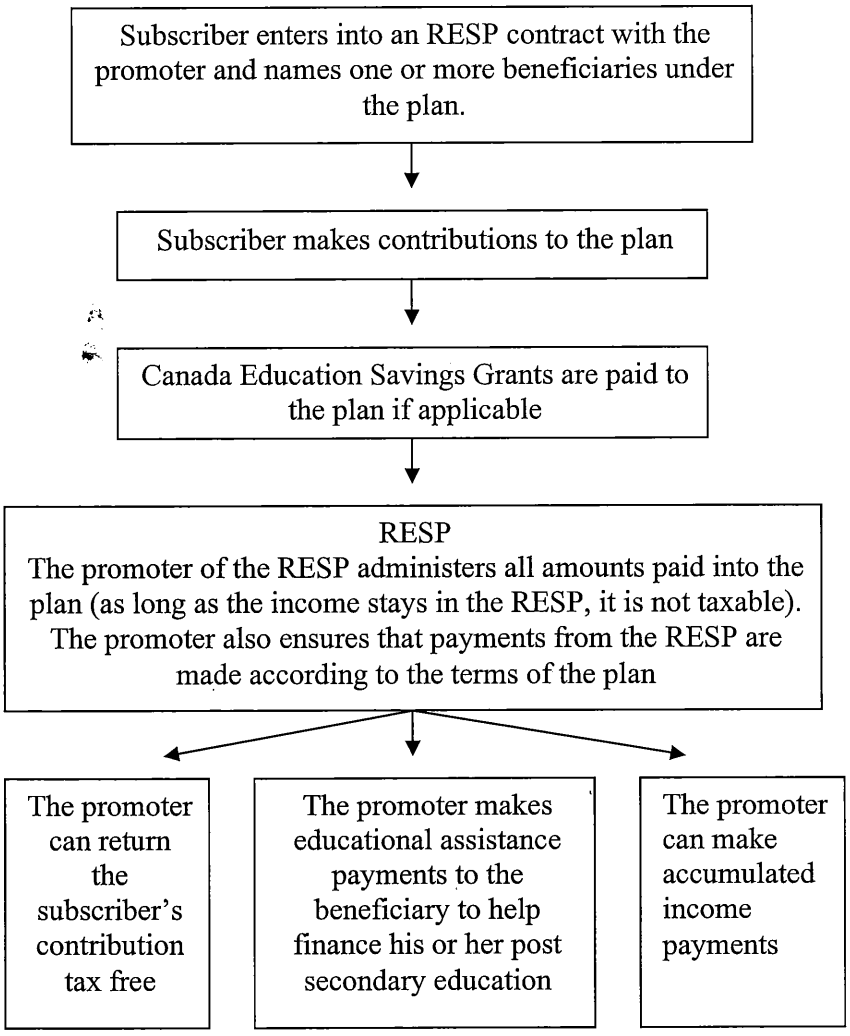
The following sections outline the various ways parents can save for their children's future education in Canada, including Registered Education Savings Plans (RESPs), trusts and loans. The government has initiated different programs with benefits such as tax breaks for those saving for education purposes. The positive and negative features of these programs will be examined.

2.4.1 RESPs

Since the 1960s RESPs have become increasingly popular because of their growing flexibility and low risk. RESPs are contracts between an individual (often referred to as a subscriber) and a person or organization (often referred to as the promoter) that are registered by the Canada Customs and Revenue Agency. Figure 2 is a diagram illustrating how an RESP generally works.

In 2001, the government increased the annual contribution limit to $4,000, and a lifetime maximum of $42,000 per student. Income from RESPs is now transferable to registered retirement savings plans if it goes unused (if RRSP room is available), and parents can now name several beneficiaries and apply the fund to a wider range of education expenses, no longer limited to tuition. Herein lies a problem with RESPs: parents may be reluctant to try to determine their children's educational future before they are old enough to decide for themselves. This worry is a realistic one as RESP foundations report that 15 % to 20 % of plans end up being forfeited because the beneficiary chooses not to attend a post-secondary institution (Bortolotti 1997, 45). Of

FIGURE 2: The RESP Path



SOURCE: CCRA 2001

course, those who start saving while their children are very young reap the maximum benefits of RESPs.

Since 1998 the Government of Canada has given Canadians with RESPs a Canada Education Savings Grant (CESG) of 20% on the first $2,000 of annual contributions made to an RESP. These grants plus the accumulated earnings become part of the educational assistance payments paid to the beneficiary (CCRA 2001). Contributions to an RESP are not tax deductible. Savings in an RESP grow tax-free until the beneficiary enrols full-time at a post-secondary institution, when he or she begins to use the RESP for education the "income accumulated on the subscriber contributions and the grant as well as the grant itself become taxable (HRDC 2001). However, unless they have a sizable income, most students will not pay any tax on their benefit (Bortolotti 1997, 45). Once money has been placed in a RESP account, one must decide between mutual funds and fixed-return financial instruments. Mutual funds are more volatile, but are designed for higher long-term returns. Therefore, they are a more common choice in the child's early years. Canada Saving Bonds or guaranteed investment certificates are less risky (but lower-yielding) products and, therefore, are more commonly used as the child nears the age of attending university.

There are four national organizations that deal exclusively in RESPs: Canadian Scholarship Trust Foundation, USC Education Savings Plans, Heritage Scholarship Trust Foundation, and Children's Education Trust of Canada (Bortolotti 1997, 44).

2.4.2 In-Trust Accounts

In-trust accounts are set up and held in trust by an individual for a child. In contrast to RESPs, there is no tax deferral on income earned (the donor will be taxed annually on the interest or dividends), and there are no annual or maximum contribution limits. The biggest difference is that the money in investment accounts can be used in any way the beneficiary sees fit, instead of being limited to educational purposes as with RESPs (Farran 1997, 72).

2.4.3 Formal Family Trusts

A family trust is the most flexible of all the plans mentioned when it comes to saving for an education. This trust can hold any type of investment including stocks, mutual funds, cash, bonds, and real estate. These trusts are also flexible in the timing of payouts to beneficiaries because the trust allows one to specify exactly when the assets and earnings will be paid and under what conditions. A family trust also offers the opportunity for income splitting, as capital gains will be attributed to the beneficiary's hands if the assets are paid or are payable to them. The negative side of family trusts is that they cost more to set up and to maintain compared to in-trust accounts and RESPs (Leigh 2000, 14).

2.5 Canada's Student Loan System

Of course, planned savings accounts are not the only source of funds for students planning to obtain a post-secondary education. In Canada students have access to a range of loans and scholarships. How these have been changing over recent years, as

well as the effect they have on students after graduation, are examined below,

Financial aid is available for full- and part-time students through the Canada Student Loans Program. This program also incorporates Canada Study Grants, which fund qualified students with disabilities, students with dependants, high-need and part-time students, and women in certain fields of doctoral studies (Campus Access 2001). Canada Study Grants differ from student loans in that they do not have to be repaid. Part-time students with demonstrated financial need may qualify for a grant of up to $1,200 annually, and women in full-time doctoral studies can qualify for a grant of up to $3,000. However, Canada is often criticized for its lack of a national grant program open to all students regardless of circumstance. Indeed, Canada and Japan are the only industrialized countries without such a system (Haggart 1997, 9). The absence of a national grant program means that, for most Canadian students, all aid is in the form of loans, which means that every dollar received is a dollar of debt.

If a student receives any type of government loan, the government pays the interest that accumulates on the loan to the lender (usually a chartered bank) while he or she is studying. After students complete their full-time studies, interest on the loan begins to accumulate, but students are given a six-month grace period before payments begin. Once the grace period has expired, students are required to pay back both interest and principal. Campus Access (2001), which provides online information regarding the Canadian Student Loan Program, points out that some students who face difficulties paying back loans may be eligible for interest relief or debt reduction. Canadian

students can receive loans from both the federal and provincial governments. Students can receive a loan up to a maximum of $165 for each week of their study period from the federal government (Campus Access 2001). The amount available from provincial governments varies across the country. For example, students in Ontario can receive up $275 per week ($165 per week for Ontario residents studying outside the province or country) on top of their federal government loan, while Nova Scotia students can receive up to $150 (Campus Access 2001).

Although the different dollar values for loans in different provinces can be justified on the basis of different costs of living in the various regions, the logic behind having two student loan programs seems lacking. Why would students be required to fill out two separate sets of forms asking for very similar information?[4] The result is inefficient as resources are wasted on unwarranted transaction costs. Certainly one combined system would save government resources and the time and energy of students.

2.5.1 Private Bank Loans

Since 1993 many banks have offered personal loans to students who do not qualify for government aid. These programs differ, but generally students can borrow up to $6,000 in each of four years (which is almost the same amount as the maximum Canadian Student Loan). There are two major differences between private and government loans. The first is that with private loans interest is tallied and collected from the time the funds are received. The second is that while repayment of all loans begins six months after graduation, students can apply for interest relief on federal and provincial loans for

up to 30 months (Farran 1997, 72).

2.6 Comparing the Canadian System to Those of Other Countries

The Canadian system can be evaluated relative to those of other countries. A report published in 2001 by Organization for Economic Co-operation and Development (OECD) provides some disappointing news for Canada and its post-secondary educational system, although not a huge shock to those aware of government cutbacks and increasing tuition fees. Since 1997 Canada has been ranked number one of OECD nations with regard to percentage of the population aged 25 to 34 with a post-secondary education (almost 50% in Canada) (Sokoloff 2001). However, Sokoloff (2001) points out that the bad news is that many expect we will soon lose this position because other countries are being very aggressive in their approaches to improving education and meeting the growing demand for specialized programs. In 1999, 35.6% of the student-age population in the U.K. completed a degree compared to 33% in the U.S., 29% in Japan and 26.9% in Canada (Sokoloff 2001). However, not all of these figures can be attributed to a lack of funding as many might suspect. Although Canada and the Czech Republic are the only two OECD countries that experienced a decrease in public funding to post-secondary education between 1995 and 1998, Canada is still among the top world spenders on post-secondary education expenditures per capita. Canada spends US$14,579 per student, well above the OECD average of US$11,720 (Sokoloff 2001). Despite this high spending per student, according to Sokoloff (2001), institutions still say they lack the resources to keep up with demand and remain strapped for resources.

The message of the OECD report is very clear: many people and countries feel that one can measure the success of a society by its level of educational attainment. Moreover, many economists attribute productivity and high living standards to education levels. Many developed countries are reevaluating and restructuring their post-secondary education programs, and this fast-paced environment we live in will not wait for Canada. Canada has to start producing a better-educated work force along with more research scientists, engineers and other professionals.

3. Implications

The current post-secondary education system in Canada, with its government cutbacks and increasing tuition fees, has a series of implications for today's students as well as for the nation as a whole. The present system raises questions about whether our approach is progressive or regressive, the changing opportunity costs of obtaining a post-secondary education, the growing debt of today's students, and the 'brain drain' situation in Canada.

3.1 Tuition Fees: Progressive or Regressive?

Increasing tuition fees for students may indicate a trend towards acceptance of user fees in general. Many would argue that Canada's policies in regard to post-secondary education are becoming more regressive, but there are two sides to this argument.

Statistics seem to indicate that tuition fees in Canada reflect somewhat the benefits students in different programs or level of study receive (paying for what you get). However, these tuition fees could also be seen as a deterrent to prospective students who want to pursue a certain course of study (degree program).

Table 3 shows differences in average tuition by area of study. The most expensive is dentistry with annual fees of $7,678, which have also seen a 6% increase during the last year. Tuition fees for the study of law increased the most over the same period (18.2%).

However, high tuition fees are perceived to be higher in almost all fields, and while there is sometimes a difference, many would say that it is not much of a difference at that, and that all levels of study should have lower fees. These people would argue that Canada's policies towards secondary education are becoming regressive and preventing many young, less wealthy, Canadians from obtaining such an education.

If we were to look at post-secondary education as one might examine another industry selling a product, there would be a market-clearing price for the product (education), which could vary from one university to the next. *Ceteris paribus*, strong students should pay a lower tuition than weak students because they contribute more at the margin to the educational activities of the school. The same would hold true for a good athlete, although the contribution is in a different form, and would also be true for a graduate student. There are definitely some aspects of this in Canada's higher education system, as it is usually the stronger students who receive more scholarships, and

TABLE 3
Tuition By Area of Study

	1999/00	2000/01	% change
Agriculture	3,205	3,208	0.
Architecture	3,347	3,318	-0.
Arts	3,281	3,380	3
Commerce	3,125	3,264	4.
Dentistry	7,244	7,678	6
Education	3,024	2,838	-6.
Engineering	3,465	3,622	4.
Household Sciences	3,182	3,164	-0.
Law	3,475	4,106	18.
Medicine	5,646	5,975	5.
Music	3,314	3,688	11.
Science	3,252	3,360	3.
Undergraduate	3,293	3,405	3.
Graduate	3,522	3,961	12.

SOURCE: Statistics Canada 2000

students are to a certain extent accepted at a university based on their quality as an input.

3.2 Getting in the Door: Who is Attending University?

Tuition fees have a large impact on accessibility to post-secondary education by excluding students who cannot afford to pay. It seems that they not only deter students from applying, but they may also contribute to the growing number of part-time students and the increase in the drop-out rate (students leaving university because they cannot afford to continue). The case in Canada seems to be that universities draw most of their students from families that are already above the average in educational background and income. In the early 1980s 29% of fathers of full-time students held university degrees, in contrast to 13% of the whole male population aged 35 to 65 (Levin 1990, 52). Recent statistics are harder to come by, but it does seem that children from upper-middle class and higher backgrounds are over-represented in the post-secondary educational environment. So, is this horizontally equitable, that one's ability to enter a post-secondary institution could rest on one's parents financial standing? Is this how we, as a nation, want our post-secondary education system to work? Likely not, but the question still remains as to what can be done to help remove this barrier to entry that could be causing a misallocation of resources.

There is evidence from other countries that lowering tuition fees does not necessarily have a significant impact on who attends university (Levin 1990, 53). A policy of lower tuition would, if anything, seem to be a very regressive social policy when combined

with the fact that children in the system are predominantly from middle and upper class families, because tuition is only part of the cost. These critics would state that the financing of university is still largely done through general tax revenues, but that it is usually those who are already advantaged who see the benefits such as higher income and employment levels (Levin 1990, 53). Even the direct costs of tuition are partly subsidized by the government through tax credits both for students and their parents.

So, is tuition the main determining factor of who attends university? Would lower tuition fees change the composition of students on campuses across Canada? It seems worth mentioning that there are a variety of factors that affect young Canadians' decisions about whether or not to pursue post-secondary education, so perhaps the inequality is not something a policy could control. Such factors include: the students' academic background/achievements and their opinion of their own abilities, their parents' educational background and income; the intentions of their friends and siblings; the availability of financial resources; the availability of university programs close by/right times; ability to get into their ideal program; their perception of the institutions as supportive or not; accessibility of other supports (child care, transportation); other opportunities; and, finally, chance or luck. It also seems that out of this long list of factors the first two dominate, and so while rising tuition fees are definitely a problem and concern for current and prospective students, they may not be the deciding factors for attending university. In chapter 4 alternative proposals will be examined that may deal with this inequality of access to higher education.

3.3 Indirect Social Costs: Opportunity Costs of Attending University

As the dynamics of post-secondary education change, so does the opportunity cost (the value forgone by not employing a resource in its next best alternative use) of attending such an institution. Recent years have seen a significant changes in tuition fees at major institutions, which mean that the opportunity cost of attending university has changed as well. If a student did not attend a post-secondary education institution, he or she could use those four (or more) years to earn income. This means that there is a monetary loss incurred by attending such an institution; a major part of the opportunity cost of attending university is the income forgone by attending such a post-secondary institution. The opportunity cost could also be forgone travel time, leisure time or the investment of the tuition and/or loan money into other projects or means of consumption. This opportunity cost is not only incurred by the individual, but by society as well. A nation that supports higher education also loses a number of people that would otherwise be a part of the work force, earning income that would in turn add to consumption and the GDP of the nation. However, we must also calculate the benefits of higher education relative to its opportunity cost, and many would argue that those, too, have increased. The earning differential received after obtaining a degree from an institute of higher education is usually quite significant, not to mention the number of jobs that are available to graduates with post-secondary degrees. One's standard of living (or perhaps simply their enjoyment in life) could be significantly altered by a different job that was/is only obtainable with specific post-secondary training.

3.4 Growth of Scholarships

Scholarships are a way for different institutions to make tuition fees more affordable, and are given on the basis of merit, not income level. They create an incentive for students to achieve high quality results. As tuition has increased, so has the amount of scholarships and bursaries (money given to students on the basis of need that does not need to be repaid) available. From 1998/99 to 1999/00 the value of scholarships and bursaries for Canadian students increased by $90-million (or 24%) (Smyth 2001a). The competition for scholarships has been steadily increasing during recent years, thus increasing the pressure to maximize marks and expand résumés. Universities are using the increasing number and dollar size amounts of scholarships to lure outstanding students.

Some critics, such as Scholfield (2000b) see this growing race for scholarships as "ominous: yet another sign of the Americanization of Canada's academic landscape." These critics feel that regardless of the increase in scholarships, increasing tuition and government cutbacks make for unequal access to higher education. Adding more scholarships as a form of relief from these cutbacks has been labelled a sort of Darwinian approach, the survival of the fittest (Scholfield 2000b).

Recently the federal government introduced Millennium Scholarships provided through the Canadian Millennium Scholarship Foundation. This foundation manages a $2.5-billion dollar fund that will create scholarships until 2010. According to Scholfield (2000a), this fund is the biggest single investment any government has ever made in

higher education. However, despite this huge contribution to higher education, many critics point out that it only came after years of cutbacks and that many students are still being left behind. Scholfield (2000a) points out that assistance is only available to full-time undergraduate students who have completed one year of a post-secondary program and is, therefore, missing a lot of hardworking, needy students.

Scholarships are, of course, the most beneficial form of funding for any student to receive because they are essentially a gift or 'free' money. They do not need to be repaid, and the only slightly negative impact they have is that any amount over $500 is calculated as 'other income' and is taxable. Essentially, scholarships lower the cost of education while having no effect on students' benefits once they graduate. If anything, there is the added prestige of receiving a scholarship, as they are often given for outstanding achievement.

The social perspectives of scholarships are also fairly positive. Scholarships are usually viewed as an efficient expenditure as they are based on merit. In 4.3, an extension of the scholarship initiative, the idea of tuition linked to academic achievement, is examined.

3.5 Student Debt

Students with loans graduate with debt, and data indicate that the size of student debt is rising. As described above, all loans must be paid back, and although they do not accumulate interest while the student is in school, interest must be paid after graduation. The burden of student debt is becoming an increasingly political issue all over Canada.

There is growing alarm that these debts are becoming unmanageable and will discourage a number of talented people from pursuing post-secondary education. Many individuals are spending what is considered to be an excessive number of years paying back student loans. During the payback period, the individual's standard of living is lowered because of the loan payments, which raises the question as to whether the future payoff will outweigh the payback costs. Many do not dispute that being in debt is something that many individuals will face during their lifetime whether in connection to education, a house, or a car. However, there is an argument that such large debts for Canadian graduates may create an incentive for young people to bypass education and go straight into the 'working world'. Having such disincentives in place could be detrimental to both the individual and society in the long run, and so a balance must be found.

3.6 Private Funding

In order to meet increasing costs, and in an attempt to keep tuition down, many institutions are expanding fund-raising campaigns, reaching out to staff, students, alumni and corporate connections more forcefully than in the past. In the mid 1990s McGill University conducted a special campaign and raised $208-million in donations. Similar campaigns at the University of Alberta brought in $90-million, $63-million at Victoria, and $45-million at Saskatchewan, but all were somewhat dwarfed by the University of Toronto's campaign that secured $400-million for the school (Dwyer 1997, 66). The position of head fundraiser at many institutions is becoming a very prestigious and lucrative position for those who can bring in the big dollars. No longer

are such jobs viewed as part-time or volunteer positions. Many institutions, such as the University of Toronto, view them as being essential. Jon Dellandrea, the University of Toronto's chief development officer is the highest paid employee at the university, receiving a quarter of a million dollars annually for his services. Sunstrum (1998) estimates that the University of Toronto spent $21-million to finance the campaign, which is more than many smaller universities can raise. Moreover, McGill University and the University of Toronto presently employ approximately sixty people in their development offices, while smaller universities have staff numbers in the single digits.

Some critics say that growing dependence on private funding and donations is dividing campuses across Canada into 'have' and 'have-not' faculties. During the past decade business schools at Western, York, Toronto and the University of British Columbia have all been renamed after generous donors. There is also the concern that private funding will slant academic priorities. It has been hard to find equal support for the arts and humanities; many corporate donations are directed to towards sciences or business programs. Not only could private funding alter academic priorities, it could also change the focus of research conducted at universities across Canada. However, it is also astonishing to note that the bigger universities are finding that close to, and sometimes over, half of their operating budgets are obtained through these fund-raising campaigns and private donations. In 1999 The University of Toronto's $400-million from its campaign equated to 65% of its entire annual operating budget, and McGill University's $208-million campaign represented 48% (Sunstrum 1998). However, some are quick to point out that smaller universities' needs are not as great as those of bigger

universities proportionately.

The reality in Canada seems to be that many campuses are in need of money for aging buildings and laboratories, and for libraries that are requiring more and more money to stay up to date (including the cost of shifting from print to electronic data). This increases the pressure to seek private donations, and this pressure is heightened by the fact that the market for researchers is an increasingly global one. This hunt for money can result in a type of hierarchy of institutions, where universities are separated by their wealth. It seems that the bottom line in recent years is that donated wealth will buy an institution quality and stature. Every institution wants to be successful, and its success is often measured by the quality of students, research, faculty and resources. These cost money, and top professors and professionals demand high salaries, and it is these that attract the top students and largest research grants. Universities may feel trapped into joining this race for money because the accumulation of wealth is required to overtake those institutions above one's 'ranking' of universities and, similarly, to fend off those below them that pose a threat (Winston 1999, 28).

3.7 Canada and the U.S.: The Productivity Gap

Canadians often compare themselves to their American neighbours. As higher education in a country is often thought to affect its productivity (discussed in section 3.11) it is worthwhile to examine productivity growth in the two countries in order to examine if there is, in fact, a 'productivity gap'. Jorgenson and Lees (2000), in a report prepared for Industry Canada, state that prior to 1973 productivity growth in most

Canadian industries exceeded that in the U.S. After 1973 productivity in Canada grew at a rate similar to the U.S., but from 1988 to 1995, the American productivity growth rate exceeded Canada's in twenty of the thirty-three industries analyzed (Jorgenson and Lees 2000). However, the average annual percentage increase in productivity growth over the thirty-three industries was 0.83 for Canada (1988-95) and 0.82 for the U.S., which seems to indicate that there is not a productivity gap between the two countries. Even though the productivity gap between Canada and the U.S. may be negligible, it does not mean that Canada's post-secondary education system is better, equal or even worse than that of the U.S. It merely points out that either the differences in education systems have not affected productivity growth, or they have but both countries have ended up with similar productivity growth rates for other reasons. Either way, the connection between productivity gap and higher education seems to be fairly weak. A more pressing topic may be the 'brain drain' phenomenon to be examined in the following section.

3.8 Costs to Society: The 'Brain Drain' Situation in Canada

The term 'brain drain' refers to the number of Canadians who move to the U.S. to work. According to Kesselman (2001), the costs of the brain drain phenomenon fall into two categories: fiscal and civic. The fiscal costs are derived from the "gap between the taxes paid and the cost of public services used by the workers most inclined to emigrate" (Kesselman 2001, 79). The earnings and assets of those who leave Canada to work in the U.S. are above the Canadian average, which means they pay above-average taxes but use below-average amounts of public services. When they leave, this net

contribution to the public sector is eliminated, which decreases the ability of the government to finance social investments. Kesselman points out that this leaves the national debt to be supported by a smaller taxable base (which would raise requisite tax rates). Civic costs are also significant. Kesselman states that "well-educated, talented and skilled workers and managers are highly active as volunteers in community and political organizations," and, therefore, they compose a vital group that helps define a distinct national identity. The emergence of a knowledge-based economy has increased the demand for skilled workers throughout the world, especially in the U.S. As a result there is concern in Canada over a brain drain related to this growing demand for skilled workers. According to Human Resources Development Canada (HRDC 1999), all employment growth in Canada in the 1990s was for workers with a post-secondary diploma or degree, and it seems that employability of lower-skilled workers is declining independently of cyclical demand.

On average, Canadians are becoming more highly skilled. More than half of the labour force aged 25-64 now has a post-secondary degree or diploma (compared to 37% in the US). HRDC (1999) also cites Canada as having the highest post-secondary enrolment in the world, although the university graduation rate ranks only second.

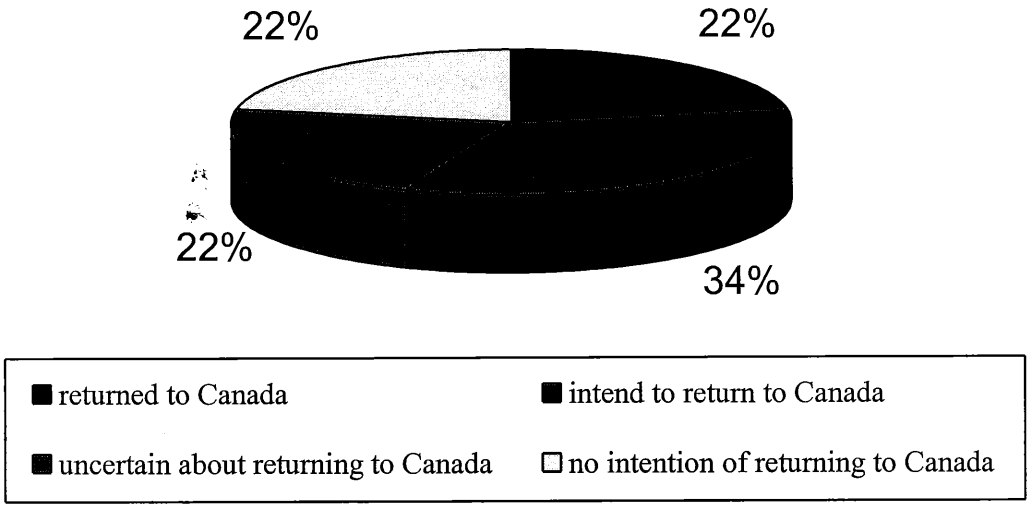
Canada experiences a significant outflow of skilled workers to the U.S., and although we also receive skilled workers, permanent net immigration/emigration data between Canada and the U.S. reveal that Canada is the net loser of skilled workers. It seems that high-income earners are much more likely to leave Canada for the U.S. than low-

income earners. Canadians earning more than $150,000 per year in 1995 were more than eight times more likely to leave Canada than an average income earner. Some of the possible factors influencing migration (permanent and temporary) to the U.S. are more and better professional opportunities, higher salaries and lower personal income tax rates (HRDC 1999).

It might appear that raising tuition in order to recover costs in case students leave would be logical, but this is not what appears to be happening in Canada. For the fall of 2001, the University of Toronto stated that it would be the first Canadian university to guarantee financial support to all PhD students in order to compete with American universities for top students (Sokoloff 2001). This new guarantee covers annual minimum stipends of $12,000 and an additional $5,600 for tuition, while the top doctoral students in engineering can expect close to $22,000. Although few seem to dispute the fact that it is an aggressive step, it is probably one that is needed in order to keep talent at home (Sololoff 2001). This view is supported by reports of the C.D Howe Institute that "Canada cannot afford to be complacent about the number of highly educated scientists and engineers leaving for the United States" (Schwanen 2000).

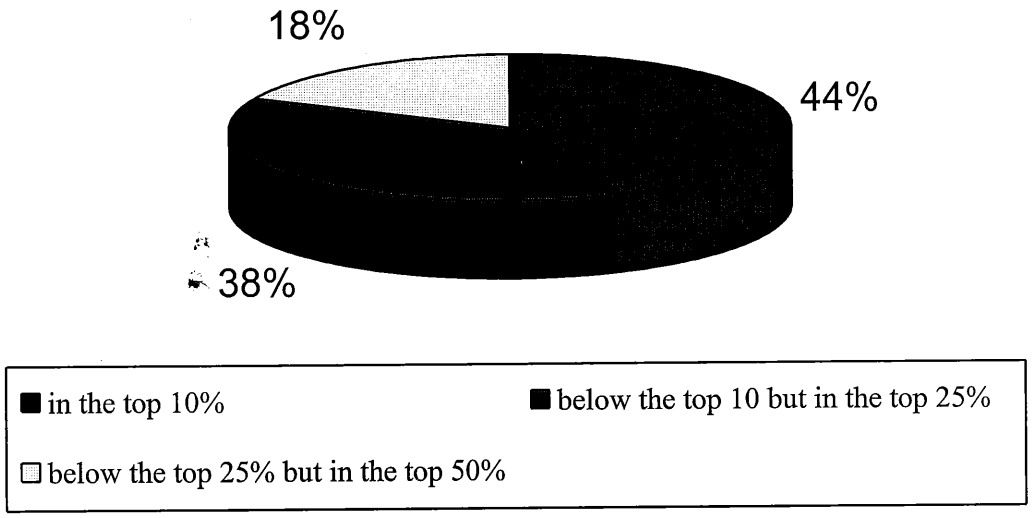
Figure 3 shows the current status of 1995 graduates who moved to the U.S. for work-related reasons. It seems that most who move to the U.S. want to return to Canada (22% have returned, and 34% intend to), and 22% have no intention of returning (22% undecided). Figure 4 graphically shows the graduates who moved to the U.S. for work-related reasons and how they ranked in their class. From this data we can see that 44%

FIGURE 3: Current Status of 1995 Graduates Who Moved to the U.S. for Work-Related Reasons



SOURCE: HRDC 1999

FIGURE 4: Graduates Who Moved to the U.S. for Work-Related Reasons



SOURCE: HRDC 1999

were in the top 10% of their class, indicating that Canada is losing their highest-skilled workers who are, again, probably persuaded by higher remuneration (after-tax U.S. salaries). Others may be attracted to the better opportunities available in the U.S. market, feeling that there is more room for them to pursue better or more interesting jobs.

3.9 Uncertainty

People invest in human capital through the purchase of higher education, even though what they are buying is, in some sense, intangible. Post-secondary education has uncertain returns. This is partly due to the inability to know how related a future job may be to a current program of study, and to the fact that the costs and benefits of post-secondary education do vary for each individual. However, the existence of a brain drain 'problem' in Canada in recent years is evidence that a post-secondary education makes some graduates very marketable. In an increasingly global and competitive marketplace, one that relies more and more on human capital, the uncertainty for individuals is decreased as the demand for highly trained and educated individuals widens and increases.

4. The Big Picture

Behind any education system there must be reasoning, perspective and direction. Regardless of who is 'running the ship' there are some basic questions that should be addressed to help explain the importance of a strong educational system: Why does a country desire a good post-secondary educational system? What do we want from this post-secondary educational system in the future? What are the general factors that will affect the future of the post-secondary educational system? The answers to these questions point out that the course of action presently taken in Canada is probably not the most efficient. These questions will be examined by exploring the benefits of post-secondary education, the country's long-term goals and various expectations for the country's future.[5]

4.1 The Reasons Behind the System: The Benefits

The benefits of post-secondary education are much harder to quantify than the costs, and many economists seem to agree that one of the primary benefits of post-secondary institutions come not from the money these institutions spend but, rather, from the knowledge they generate and transmit. Martin and Trudeau (1999, 48) point out that post-secondary educational institutions "generate and disseminate knowledge and technology" which increase the productivity of factors of production and, thus, GDP. It is generally believed that a nation with a good post-secondary educational system will have a higher standard of living than one without. As mentioned earlier, personal

satisfaction and an enhanced ability to enjoy life are also benefits.

Students are valuable inputs to institutions of higher education, and these institutions can and do control to whom they sell their product. As examined above, excess demand *does* exist in some areas of the post-secondary education market, and this enables institutions to select or compete for the students with the characteristics they most desire. It seems that regardless of the steadily increasing tuition at Canadian universities, families and individuals still feel that the benefits they will receive outweigh the costs. Universities could raise tuition fees to clear the market, but this would probably not work as well as it might in other markets because there are basically two sets of institutions, ones that face excess demand and the others that face excess supply.[6] This is because some students lack the money to attend a post-secondary institution, while others lack the academic ability to gain entrance at their preferred institution. As previously discussed, universities try to attract the best students, and these students may not be able or willing to pay higher fees. By raising fees universities could jeopardize their prestige, level of excellence, and standard of education.

Merisotis (1998) groups benefits from higher education into four major categories: public economic benefits, private economic benefits, public social benefits, and private social benefits. We will adopt a similar grouping of the benefits with additional inspection of salaries, research, development and innovation.

4.1.1 Public Economic Benefits

Merisotis (1998) explains that public economic benefits from post-secondary education are benefits that have a wide range of "economic, fiscal and labour market effects." These benefits generally result in an overall improvement of Canada's economy or major parts of the economy as a result of Canadians' participation in higher education. The first public economic benefit from higher education is increased tax revenues. Tax revenues would increase because individuals with higher levels of education usually contribute more to the tax base because of their higher (on average) earnings. This is really just a transfer, and so to include it in an absolute calculation of benefits would be to double count. However, it is pointed out so that the full path of the impacts can be followed. The second public economic benefit is greater productivity (which is reflected in earnings). As will be discussed in more detail below, generally higher levels of education obtained by citizens lead to higher levels of productivity and GDP levels. Again, these changes should not be counted in an absolute measure of benefits, as they are already reflected in the increase in incomes. Third, there is the public economic benefit from increased consumption. Essentially, increased consumption is the primary benefit and all the other benefits are associated with it). Adam Smith (1776, 1993) put it the following way:

> "Consumption is the sole end and purpose of all production; and the interest of the producer ought to be attended to only so far as tit may be necessary for promoting that of the consumer. The maxim is so perfectly self evident that it would be absurd to attempt to prove it. But in the mercantile system the interest of the consumer is almost constantly sacrificed to that of the producer; and it seems to consider production, and not consumption, as the ultimate end and object of all industry and commerce."

The fourth, public economic benefit from higher education is increased workforce flexibility, and this is associated with dynamic efficiency. Higher education, according to Merisotis (1998), contributes to workforce flexibility by educating individuals in "generalizable skills, critical thinking, writing, and interpersonal communication, each essential for economic competitiveness." The last public economic benefit from higher education is decreased reliance on government financial support. Individuals who have obtained higher education are less likely to participate in government assistance programs than those who have obtained a lower level of education (Merisotis 1998).

4.1.2 Private Economic Benefits

Merisotis (1998) defines private economic benefits as benefits that "have an economic, fiscal or labour market effect on individuals who have attended" a post-secondary educational institution. First, is the private economic benefit of employment. Individuals who have a post-secondary education are often employed at larger rates and with a greater regularity. Since the early 1980s the number of jobs available to high school graduates has decreased by two million. During the same time there were five million more jobs available for individuals with higher-education credentials (MacLean 2001). Similarly, unemployment rates in Canada for those aged 25 to 29 years old were 19.5% for those with less than high school, 11.7% for those with high school education and 5.4% for those with post-secondary education. However, this benefit of post-secondary education is somewhat challenged by certain statistics. One-quarter of Canadians with a post-secondary education reported that they work in positions that do

not utilize their existing skills or that they are over-qualified for their jobs. Furthermore, close to 30% of all Canadians living in poverty have some post-secondary education (Stanford 2001). Because most economic studies do confirm the value of higher education, it would seem that these contradictory statistics merely act to remind us that a post-secondary education provides the tools to obtain more economic benefits, and they are tools that must be used wisely in order to reap the rewards.

Second is the private economic benefit of higher wealth and savings levels. According to Merisotis (1998), individuals with university or college degrees have "greater interest-earning assets, home equity, and other financial assets."

Third is the benefit of improved working conditions for individuals with a post-secondary education. These individuals are more likely to work in white collar jobs, in office buildings, or other well-maintained facilities (air conditioning, heating) with conveniences (computers, child care, consistent work hours, etc.) that could improve the quality of their lives. For example, these jobs are typically safer as there is a much lower risk of injury compared to many blue-collar jobs.

Fourth is the benefit of personal and professional mobility. It seems that there is a connection between the ability to change jobs and to relocate with one's level of educational attainment (Merisotis 1998).

Lastly is the benefit of higher salaries for those with a post-secondary education. This

is, perhaps, the most obvious benefit for many and is the easiest to quantify.

4.1.3 Salaries

One way to measure the value of post-secondary education is to calculate the productivity of individuals who attend university opposed to those who do not. We can make such calculations using their relative incomes.

Table 4 shows the average earnings of Canadians (aged 15 years +) in 1995 by highest level of schooling. These statistics, taken from Statistics Canada's 1996 census, indicate that the difference between average salaries for individuals with less than a university degree (but with a high school certificate) and those with a university degree differ from 50% to 85%, with an average difference of 63%. These data show large financial benefits for individuals with post-secondary education.[7]

Table 5 takes figures of average salaries and calculates the present value of earning that salary for ten years. It then compares these present value figures to those that would be obtained if an individual paid for four years of university in Canada (at an average tuition level) and then worked for six years. Calculations for three discount rates (4%, 7% and 10%) are shown. In all cases the individual would be better off obtaining a university degree than not. Notice that only the cost of university tuition has been used because the cost of food and board would be incurred regardless of whether an individual attended school or worked. However, as attending a post-secondary educational intuition can sometimes lead to an increase in expenses (perhaps living away from home when one otherwise would have stayed, books, etc.) figures have been

calculated that also take into account an additional cost of $5,000 and $10,000 a year for a period of four years. For additional costs of $5,000 per year, after ten years an individual is still better off attending university using the 4% and 7% discount rates, but slightly less well off using the 10% discount rate. Looking at additional costs of $10,000 per year, it seems that after ten years an individual will not be better off attending university with all three discount rates. Once again, it seems important to note

Table 4

TABLE 4
Average Earnings of Canadians (aged 15 years+) in 1995 by Highest Level of Schooling

Highest Level of Schooling	*Less Than Grade 9*	*Grade 9-13 Without Certificate*	*Grade 9-13 With Certificate*	*Less Than University Degree*	*University Degree*	*% Change Between Less Than University and University*
Canada	19,377	18,377	22,846	25,836	42,087	63
Quebec	18,633	18,406	22,258	23,844	40,446	70
Ontario	21,805	19,623	24,103	28,020	44,990	61
Manitoba	16,305	17,179	20,224	23,452	37,196	59
Saskatchewan	16,010	16,639	20,165	22,575	37,050	64
Newfoundland	14,480	14,171	16,003	21,090	39,091	85
PEI	15,058	13,141	16,551	19,648	32,226	64
Nova Scotia	1,388	15,478	19,182	21,359	34,871	63
New Brunswick	16,514	15,085	18,592	21,257	35,723	68
Alberta	18,243	18,116	22,446	25,913	42,087	62
British Columbia	21,661	20,111	24,271	27,135	40,619	50
Yukon	17,900	19,468	24,193	28,205	44,725	59
Northwest Territories	14,100	17,551	31,407	33,304	53,702	61

SOURCE: Statistics Canada 1996b

TABLE 5
Present Value of Funds (Income and Tuition) After Ten Years

No University Degree	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	25,838	209,569	0	0	209,569
	7%	25,838	181,475	0	0	181,475
	10%	25,838	158,764	0	0	158,764
With University Degree	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	42,054	220,451	14,425	0	206,026
	7%	42,054	200,450	13,460	0	186,990
	10%	42,054	183,157	12,597	0	170,560
With a University Degree and Loans/Debt *assumed extra costs of $5,000 per year	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	42,054	220,451	14,425	18,150	187,876
	7%	42,054	200,450	13,460	16,936	170,054
	10%	42,054	183,157	12,597	15,850	154,710
With a University Degree and Loans/Debt *assumed extra costs of $10,000 per year	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	42,054	220,451	14,425	36,299	169,726
	7%	42,054	200,450	13,460	33,872	153,118
	10%	42,054	183,157	12,597	31,699	138,860

that many of those additional costs of attending university would have been incurred if the individual had been working.

These averages have accounted for the probability of employment, however, not everyone that attends a post-secondary institution completes a degree. This means that there is a certain element of risk involved because many of the financial benefits accrue only if the degree program is completed.

As most people graduate before the age of twenty-five, the twenty-year horizon shown in Table 6 is much more realistic than the ten-year one. Using the same discount rates, average salaries, and average tuition, the present value obtained by attending university is much higher than not, even when additional costs of $5,000 and $10,000 per year are included.

Cousinequ (1984), Vaillancourt and Henriques (1986), Cousineau and Vaillancourt (1987), Vaillancourt, Carpentier and Henriques (1987), and Stager (1989) have all reported on private and social rates of returns to university degrees, and all have found that these rates to be positive and above 6%, ranging up to 15% (Vaillancourt 1985). Vaillancourt shows that while university returns are not as great as those for high school, private rates of returns are all positive for all levels of post-secondary education and different fields of study. Vaillancourt's research also shows that rates of returns are, for the most part, higher for females than for males. This fact is a reflection of choices according to Vaillancourt, as the number of women studying at the post-secondary level

TABLE 6
Present Value of Funds (Income and Tuition) After Twenty Years

No University Degree	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	25,838	351,146	0	0	351,146
	7%	25,838	273,727	0	0	273,727
	10%	25,838	219,974	0	0	219,974
With University Degree	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	42,054	490,025	14,425	0	475,600
	7%	42,054	397,267	13,460	0	383,807
	10%	42,054	329,017	12,597	0	316,420
With a University Degree and Loans/Debt *assumed extra costs of $5,000 per year	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	42,054	490,025	14,425	18,150	457,450
	7%	42,054	397,267	13,460	16,936	366,871
	10%	42,054	329,017	12,597	15,850	300,570
With a University Degree and Loans/Debt *assumed extra costs of $10,000 per year	*Discount Rate*	*Average Salary*	*PV of Total Salary*	*PV of Total Tuition*	*Loan PV*	*Total*
	4%	42,054	490,025	14,425	36,299	439,301
	7%	42,054	397,267	13,460	33,872	349,935
	10%	42,054	329,017	12,597	31,699	284,721

has been increasing since the 1980s. Vaillancourt also points out that while rates of returns tend to decline with the level of schooling, they may not be an accurate depiction of the benefits of post-secondary education given that things such as "participation in democratic institutions and growth generating externalities" increase with each obtained level of education (Vaillancourt 1995, 549). Even more general statistics, such as the ones released in *National Post Business*, state that the implicit rates of return in Canada (1995) for bachelor's degrees are fairly high, 20% for women and 17% for men (inflation- adjusted) (Watson 2000, 47).

4.1.4 Public Social Benefits

Public social benefits are those that pertain to groups of individuals or to society that are not directly related to economic, fiscal or labour market effects. The first public social benefit is reduced crime. Prison statistics show that there are fewer prisoners with a post-secondary education than those with a high school certificate or less. However, it may be true that the criminals not in prison are simply too smart to get caught. As Puzo (1969) notes, "lawyers can steal more money with a briefcase than a thousand men with guns and masks." The second public social benefit is increased charitable community service. Merisotis' (1998) research has shown that the majority of individuals who perform volunteer work and make financial contributions to charities have a post-secondary education. The third benefit is an increased quality of civic life, because a higher percentage of post-secondary graduates vote in elections (Merisotis 1998). Fourth is the benefit of social cohesion (appreciation of diversity), which suggests that individuals with a post-secondary education have more trust in social institutions and

participate more in civic and community groups. Lastly, there is the public social benefit of improved ability to adapt to and to use technology, which creates dynamic efficiency. This suggests that post-secondary-educated individuals contribute more to research and development of products and services that increase the quality of lives and promote the circulation of technology to benefit others.

4.1.5 Private Social Benefits

Private social benefits are those that relate to individuals or groups that are not directly related to economic, fiscal, or labour market effects. Merisotis (1998) lists a variety of benefits. First, there is the benefit of improved life expectancy. It seems that those with a post-secondary education exercise and play sports at a higher rate than other individuals in society. Second, there is the private social benefit of improved quality of life for one's children. If a child's parents attended a post-secondary education institution, Merisotis believes that they are more likely to obtain a higher level of education themselves along with higher levels of "cognitive development." Third is the benefit of better consumer decision-making. Merisotis notes that individuals with higher levels of education have increased abilities to make "informed, efficient decisions as consumers." Fourth is the private social benefit of increased personal status as a result of having a more prestigious job, and a greater sense of satisfaction from doing work considered to be of greater importance. Finally, there is the benefit of more hobbies and leisure activities. It seems that individuals with higher levels of education are more likely to read literature and to partake in other leisure activities. This is partly due to the increase in income that allows them to work fewer hours on average and

obtain jobs with more benefits (vacation time, etc.).

4.1.6 Research and Development

Expenditures on research that is conducted in post-secondary education institutions, like all expenditures, results in money being spent in other areas of the economy. The economic activity that results from research and development expenditures includes the following: the salaries and wages paid to university employees, purchases made with that income, purchases by suppliers of goods and services used in research, graduate student purchases of goods and services, and the expenditure by the institutions' employees and those of their suppliers. According to Martin and Trudeau (1999, 49), in 1995 the university research enterprise was responsible for nearly $5-billion of Canada's GDP and more than 81,000 jobs.

A major source of error in this calculation is that certain basic expenditures (rent and food) of graduate students would occur whether or not they attended university. GDP would increase if these students held jobs instead. Also, government subsidies for research and development must be financed from taxes, debt or the reduction of other government expenditures and, finally, there are induced effects. According to Martin and Trudeau, the net static economic impact of universities is $1.507-billion dollars in GDP and 13,577 jobs. They make the point that while the results may seem small, the very fact that there is a positive net static economic impact is a sign that university research has a more significant economic impact (higher rate of return) than other sectors of the economy (Martin and Trudeau 1999, 51).

Groundbreaking firms and individuals are often seen as being crucial components of any wealthy economy. The production of these firms is affected by three main factors: hardware (anything physical), software (knowledge, technology and information- all that can be reused), and wetware, which is described as knowledge and information "stored in the wet computer of the brain, which includes the traditional notion of human capital found in the new economic growth theories" (Martin and Trudeau 1999, 51). Post-secondary education produces software and also provides students with the wetware needed to function in a knowledge-based economy. It is this software and wetware that are then used to make the hardware more productive and, therefore, increase GDP. Post-secondary educational institutions are also important as they aid innovation by spreading knowledge to various parts of the economy.

Knowledge and technology are accumulated from foreign imports of intellectual technology and capital, through imports of goods and services, and derived from domestic research and development conducted by firms, governments and universities. So research and development results in knowledge and technology, which increase productivity, which increases GDP.

4.1.7 Innovation

There are many examples of university research nurturing innovation (which is the foundation of a growing economy), such as the stretch of high technology companies in Boston down Route 128 from MIT, and the computer industry in Silicon Valley

(Stanford University). However, there are also a number of examples in Canada as well. For example, there is a high concentration of biotechnology and agriculture/food companies in Saskatoon near the University of Saskatchewan, many environmental science and medical companies near McMaster University in Hamilton, and many drug companies near McGill University University in Montreal. The proximity of these clusters of firms to research-oriented universities demonstrates the impact that universities can have on the economics of an area (Martin and Trudeau 1999, 52).

4.2 What Do We Want From This Post-Secondary Educational System and What Are the General Factors That Will Affect its Future?

In order to properly assess the progress of the post-secondary education we need to formulate a realistic objective for the system. Knowledge has become an increasingly valuable commodity, but it is one that must be managed properly. Dr. Jerry Mechling of Harvard University puts forth some key factors for any successful education system. These factors are multimedia and interactivity, remote and asynchronous participation, just-in-time delivery, economies of scale, equity and social cohesion, and access to education at a low cost (EITC 1999).

Multimedia can be used to advance knowledge and to stimulate more interaction between students and teachers. Remote and asynchronous participation is a factor that addresses the issue of demographics. In recent years more students are studying part-time while working full-time. Such students will need flexible course times, and more and more students will be interested in correspondence courses or other learn-at-home

options. Just-in-time delivery means that in order to increase quality, education and training will have to be based on the current and future requirements of industry. Economies of scale will result in the use of multimedia and interactive courses, but these programs will cost more to create and distribute. In order to ensure that all people have access to post-secondary education, institutions and/or the government will need to look at barriers to university entry and try to eliminate them. Some concepts such as correspondence courses are already being tested by many universities, and some believe that they could be a more effective tool for training than traditional educational institutions. However, it seems that these courses are more directed towards mature students than younger ones. For recent high school graduates, the traditional post-secondary education experience is still in high demand. To offer education at a low cost, countries or systems will have to stay on the 'information highway' in order to reap the benefits of lower costs and maintain innovation-induced growth (EITC 1999).

5. Alternatives

In order to address the general question of how to improve Canada's post-secondary education system, three alternatives will be examined. The first is a 'no user fee' approach to higher education, the second is an income-contingent repayment plan for student loans, and the third is a tuition based on academic performance approach. Although all three ideas would improve equity in a higher education system, the first option fails to improve efficiency as much as the last two approaches.

5.1 No User Fees

Having no user fees may be a radical idea in North America, but free access is provided in countries such as U.K., Germany, Cuba, France, Sweden, Finland, Denmark, Norway and Costa Rica. Canada does have a history of providing free post-secondary education to veterans, members of the Canadian Forces, Aboriginal peoples, unemployed people in retraining programs and convicts in prison, but never for the nation as a whole.

A 'no tuition plan' would be equitable in that it allows everyone to obtain a post-secondary education regardless of financial background; essentially it is a call to eliminate the monetary barriers to post-secondary education. On the other hand, it would be somewhat inequitable as people who do not attend university would still pay for it through taxes. To many in Canada it seems that the government has been moving towards a post-secondary education system that is based more on user fees than on

public funds, and many observers feel that user fees in general are unjust and inequitable (Delmore 1997, 13). Today, many Canadians cannot afford to go to university, although they do pay taxes that support the system. In this way the imposition of fees for post-secondary education serve as a form of regressive taxation (explained in more detail below). In previous decades, rates of increase of student user fees were similar to increases in the costs of other goods and services as measured by the Consumer Price Index (CPI), but in recent years that has not been the case (Delmore 1997, 13).

Perhaps the biggest drawback of the 'no tuition' plan is that it would result in a misallocation of resources. Students better-suited to other pursuits would be induced to attend a post-secondary institution. Although overall enrolment numbers and costs would increase, there is no evidence to suggest that the academic achievements of students would follow suit. Some suggest that with very low or zero tuition, entrance standards would be set high because, with no tuition, there would be excess demand and high entrance standards would be the most likely immediate solution to counteract this misallocation.

There are costs involved with a 'no tuition plan', but perhaps of more concern are the transfers that would occur. It is at best a progressive plan (if the tax system stays as it is): the taxes paid by the wealthy will probably amount to 'tuition' for many students, while those in a lower tax bracket will not actually pay for the entire cost of their education. However, as countries such as the U.K. have discovered, the tuition costs of

post-secondary education are often minor compared to the other costs of attending and, therefore, it is the wealthy who fully exploit such a plan. Zero tuition plans are often described as subsidizing the wealthy, and critics of these plans say that in the long run it is the rich who benefit. There is also the cost to the government which will be raised through taxes, meaning that essentially the education is not free but paid for over one's lifetime in taxes. With no user fees, there will be a decrease in the use of student account offices and administrators, which will provide more transaction cost savings. While it is an expensive plan for a government to implement, supporters of this plan feel that, in the long run, the country would see positive results. The general benefits are that the knowledge base in Canada should expand and, hopefully, an increase in 'quality'. Due to the misallocation of resources and the costs involved with no tuition, this plan is not viewed as a viable alternative. Two other plans with more encouraging benefits and fewer drawbacks will be examined in the following sections.

5.2 Income Contingent Repayment Plans

One financing solution is an income contingent repayment plan (ICR). An ICR plan consists of a pool of funds established by the government from which qualified students can acquire tuition loans (McDonough and Wright 1998, 44). In such a plan, loan repayments are treated as capital expenditures and are therefore fully tax deductible, and repayment of student loans is linked to post-graduation income (Haggart 1997, 9). The repayment plan is said to be income-contingent because the additional tax rate or repayment rate would rise with income, and there would also be an income below which no repayment would be required (McDonough and Wright 1998, 43). Although

this approach would delay payments until individuals were employed, interest would accrue while in school, and if a person were successful later in life, then both the principal and interest would have to be repaid. In Canada there has been much discussion specifically concerning the Private Income Contingent Repayment Plan (PICP). Under such a plan, financial institutions would supply loans and administration on an individualized basis. These loans would be registered with the tax authority to ensure compliance, and then would be guaranteed by the government. The program or plan would be based on the following elements: a PICP would provide coverage of the full cost of tuition and a fixed amount for living expenses; post-secondary education institutions would be permitted to set differentiated fees; all loans would be financed through normal commercial channels, and eligibility would be based solely on attendance at a post-secondary education institution; an insurance component (provided by the public sector) would be implemented to cover the costs of loan defaults and thus ensure a low interest rate on student loans; an insurance component on the loans to cover death and disability, which would be the responsibility of the student; repayment of the loan would be geared to future income; the treatment of the loan (including all accrued interest and other financing charges) would be as an investment in (human) capital for the purpose of income tax; and, there would also be the ability to fall back on the income tax system to aid in collection of the loan if necessary (McDonough and Wright 1998, 45).

There are two ways to view the equity characteristics of an ICR plan. There are those that feel that the largest benefit of the ICR plan is that it would eliminate almost all

accessibility troubles related to monetary constraints, because the personal financial status of an individual would not restrain him or her from getting a loan for a post-secondary education (McDonough and Wright 1998, 42). However, there is also the argument that it is not equitable for two people who go through the same program, with the same size loan to pay back different amounts due to their deviating incomes. An ICR plan essentially says that the cost of one's investment is dependent upon the returns of that investment, and this is viewed as being a backwards approach to loans and investing.

An ICR plan can be efficient in many ways. First, it creates incentives for each institution to improve the quality of its programs by offering financial rewards and ample funding (McDonough and Wright 1998, 43). Like the 'no tuition plan', an ICR plan should be fairly efficient in allocating of resources if its increased eligibility (anyone can receive funds) is coupled with entrance criteria.

In the short term, start-up costs would be high as the system switches over. New forms, training new staff, educating the public, and changing tax forms to incorporate the payback scheme would be some of the transaction costs.

One plan of this type was rejected by the federal government in 1995, and although it is still discussed, it seems that the Ontario government is the only province taking the plan seriously (Ontario accounts for nearly 50% of CSL recipients) (Haggart 1997, 9). Most banks see the proposed plan as being too expensive, and some say that it does not

address the fundamental problem that students' debts are much too high.

5.3 Linking Tuition to Academic Performance

Linking tuition to academic performance is not an entirely new concept; it is reflected in many merit-based scholarships given out by post-secondary institutions. However, creating a direct link between tuition costs and one's academic ability has not yet been done in Canada. With regard to allocative efficiency, entrance standards can be seen almost as a price. If we consider them as such, then we must look for some sort of balance to find the allocatively efficient level — if the standards are too low there will be too much consumption of education and, if too high, there will not be enough. Still, a program that would link tuition to academic performance would be similar to the existing system as entrance to a post-secondary institution would still primarily rest on one's academic achievements. In the current system students have to earn a certain grade average to be accepted at an institution while, under the proposed system, a student who does not meet a certain average could still be admitted, but he or she would have to pay higher tuition. To judge students on factors out of their control is usually viewed as inequitable, but to judge them on their academic ability (which is for the most part in their control) seems fair to many, especially given that the whole purpose behind obtaining a post-secondary education is to improve one's academic abilities. That is, they would be rewarded for doing what they are supposed to do. On the other hand, there is the argument that those with more money will be able to attend private schools and hire tutors, essentially paying to improve their academic performance. Another argument which questions how fair tuition tied to academic performance

would be is that it is not equitable for non-university attendees to pay for university attendees.

This plan has attractive incentive, and thus efficiency, properties. It creates incentives for people to improve their academic performance as the financial benefits would be realized much sooner in life. It would discourage those less academically inclined from attending a post-secondary intuition, therefore eliminating part of the misallocation of resources found in the 'no tuition plan'.

Transaction costs would be somewhat high initially. A system would need to be created that links performance to tuition, which would probably require substantial research in the beginning. Another consideration would be standardized tests nation-wide in high schools to ensure fairness, which would also require a large expenditure. Like some of the other proposals, new forms would have to be created, many people would have to receive training, the public would need to be educated, the loan system would have to be examined, and other start-up costs would all be incurred.

6. Conclusion

Many countries strive to offer high quality post-secondary education, and it has become something which many individuals want in order to increase their chances of finding success in their chosen career. While there is some agreement concerning the need to design systems with desirable equity and efficiency properties, many nations struggle with the reality of how such a system should be structured and financed.

This thesis has described the current system in Canada, outlining some problems with equity and efficiency impacts such as increasing tuition, the current loan system and accessibility. In addition to outlining the problems in the Canadian system, we have examined the benefits and costs of post-secondary education, in order to emphasize the need for a more equitable and efficient system. Suggestions have also been offered as to how the system could be altered.

The main problems can be summarized by stating that increasing fees for post-secondary education in Canada, combined with our loan system, are creating monetary barriers to entry. As we have seen, these problems affect not only individuals but also the entire nation in the form of the 'brain drain' and a decrease in our nation's long-term competitiveness. The result has been an ongoing debate over how much funding the government should provide the post-secondary educational system and the effect of these increasing tuition fees on the system and our nation as a whole.

The two most viable alternatives presented in this thesis are the income contingent repayment plan and a plan where tuition fees are based on academic performance. Neither plan calls for a complete elimination of government contribution which means a portion of tax revenue will still go towards higher education. However, it is the element of linking tuition fees to academic achievement that is the driving force behind the plans. Both plans create this link by offering monetary compensation for strong academic results, therefore creating incentives to produce high quality work. By creating incentives, these systems also discourage those who cannot or do not want to attend a post-secondary institution from wasting their time and money. These alternatives enhance equity by allowing students of equal ability but unequal financial background to attend the same institution, thereby increasing the opportunity for lower-income students to get ahead.

The debate concerning Canada's post-secondary education system is, at best, a balancing act between private fees and public funding, between private investment and the nation's interests, and between staying competitive and the costs of doing so. For Canadians, the current system is inefficient because its benefits are not maximized, and costs are neither minimized nor allocated in an efficient manner. Although it is likely that a balance that pleases everyone will be impossible to find, an income contingent repayment plan or a scheme that links tuition fees to academic achievement may come closest.

Endnotes

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1. It should be clarified here just what is meant by a post-secondary educational institution as the term can take on different meanings and is used in a wide variety of contexts. In general, post-secondary educational institutions in Canada include colleges and universities. However, in this thesis the data provided is for universities in Canada only, although much of the analysis could pertain to colleges as well.

2. Efficiency and equity are the main considerations. There are three types of economic efficiency, allocative, technical, and dynamic. There are also two types of equity, vertical and horizontal.

3. In this thesis we will generally be talking about vertical equity. The emphasis here is that students be treated equally regardless of their financial standing/ ability to pay tuition fees. In a perfect world, perhaps every student that wishes to attend university would. This would be perfectly equitable, but in this analysis we will assume that some sort of selection based on academic characteristics is equitable, and that a system which has this as its only 'barrier to entry' is an equitable one.

4. The most obvious being some sort of proof of how much the student has to contribute to his or her education.

5. The opportunity cost of spending money on education is the forgone option to spend that money on the next best alternative, such as health care, defence, or social programs.

6. Each institution has a maximum number of students it can accept. Some universities will have no problem filling spots and can, therefore, take the best they can get, while others have a harder time filling the spots and will accept any student that satisfies the minimum requirements. In this way, capacity constraints are somewhat effective in limiting the number of people that attend university (there is not room for every Canadian high school graduate). However, capacity constraints alone do not ensure allocative efficiency.

7. It could be that people who get through university would have earned more than the average had they not attended university, but these figures would not reveal this possibility.

8. PV stands for present value, which is defined as the discounted value of future cash flows. It is calculated using the following equation: $PV = C_1/(1+r_1) + C_2/(1+r_2)^2 + \ldots C_n/(1+r_n)^n$. In this equation, C_i ($i = 1, 2, \ldots n$) is a dollar amount in period i, r_i denotes the discount rate in period i, and n denotes the final time period for which one is calculating the present value.

9. The equation used to calculate present value in Table 6 is the same equation used for Table 5.

10. It is important to note that these taxes are paid by all citizens regardless of whether or not they attend university. This does violate the benefit principle of the public finance literature which holds that those who benefit should pay.

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