Tuition Fees, Student Finance and Access
An Economist's Perspective

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1) Price Theory and Tuition Fees

a. Economic Efficiency

Given the significant amount of resources that governments and other public institutions employ in producing the goods and services that they provide to society, it is important that these resources are employed in an economically efficient manner.

Economic efficiency concerns the way in which resources are allocated among, and used in, the production of the various goods and services produced in an economy. Resources are said to be allocated efficiently when it is not possible to re-allocate resources, producing more of some products and less of others, without making some consumer in the economy worse off than before. There can be many possible allocatively efficient production combinations but each of them is productively efficient, i.e. for each, it is impossible to produce more of one product without producing less of one or more others.

If markets are perfectively competitive, then production will be allocatively efficient if, and only if, the price of every product equals its marginal cost of production. The *marginal cost of production* is the cost of the resources employed to produce the last unit of the product that is produced.

Estimating the Marginal Cost of Production of Instruction at the University of Regina, Faculty of Arts

The student-faculty ratio at the University of Regina is approximately 12.

Suppose that 12 additional students enrolled in the Faculty of Arts.

If the Faculty added 1 new faculty member to teach this increased instructional load, the associated annual costs can be conservatively estimated:

Faculty member's salary	**$56,000**
Benefits (14%)	**7,840**
Utilities, Materials and Supplies	**5,000**
	$68,840
per student:	**$5,737**
Compare with Arts tuition (full load of Art courses)	**$4,413**
	(77%)

Prices represent the relative values that an economy places on resources given their potential uses. If the price of a product is less than its marginal cost of production, then the value that consumers of that product place on the last unit consumed of the product is less than the value of the resources employed in the production of that unit of the product. This means that if these resources were re-deployed to produce some alternative product, the total value of production could be increased. Efficiency could be increased by raising the price of the first product, inducing consumers to consume less of it, and reallocating the freed-up resources to the production of other, more valued, goods and services.

b. Market Failure: Externalities

The foregoing discussion assumes perfectly competitive markets, the ideal situation. Economists use this ideal as a starting point to begin the consideration of the impact of market failure. *Market failure* means the failure of the unregulated economy to achieve allocative efficiency or social goals because of market imperfections, market impediments or externalities. Market failure on any of these grounds provides a situation where government should consider intervention in the market to increase efficiency or address social goals.

Externalities are an important issue in the economics of higher education. *Externalities in consumption* exist when the level of consumption of some good or service by one consumer or group of consumers has a direct effect on the welfare of another consumer, other than indirectly through the price mechanism. There is some evidence, albeit disputed, that the overall rate of growth and welfare of an economy is positively correlated to the level of educational attainment of the population, or at least the labour force, beyond the effect that increased education has directly on individual incomes. If this effect is significant, then government might want to encourage individuals to consume more education, since without some intervention externalities are not reflected in market prices and, therefore, are not taken into account in the consumption decisions of market participants.

Similarly, there might be externalities in production if, for example, the universities' certification of the skills and abilities of its graduates results in cost savings to business who, as a result, need not undertake substantial screening, testing, training, and attrition of new employees. Or if higher levels of education lead to decreased criminal activities or welfare costs.

One possible response to such positive externalities is government intervention to reduce the price of higher education (i.e., tuition fees) and increase its consumption.

c. Market Failure: Imperfect Information

Another possible source of market failure with respect to higher education is lack of information on the part of prospective consumers. To the extent that potential students underestimate the economic returns to university study they will under-consume. This will be economically inefficient, in addition to its negative economic and social effects for the individual. There is strong evidence that students from lower income families have much higher estimates of university fees (almost triple the actual amount) and substantially under-estimate the financial benefits of a university degree.

The direct means of addressing this form of market failure are preferred: information provision, publicity, counseling, etc. However, to the extent that such efforts have incomplete success, market intervention through some form of targeted price reduction (lower fees, grants, loans, etc.) can be considered.

2) Human Capital Theory and Investment in University Education

a. The Private Rate of Return on University Education

Attendance at university may be partially a consumption good, undertaken for the enjoyment of learning and the lifestyle of being a student. Primarily, however, it can be viewed as an investment, the creation of *human capital* through the expenditure of time, energy and money to obtain increased knowledge and skills that are marketable and produce a higher income than would otherwise be achieved.

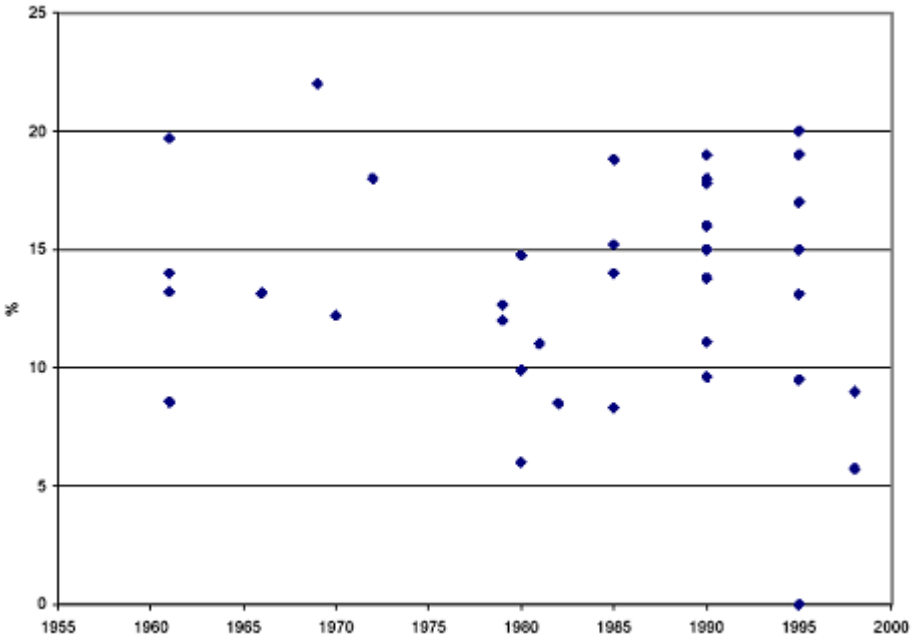
Many studies have been undertaken to estimate the rate of return on human capital investment at the university level. A full approach takes into account costs such as tuition, book expenses, other fees, any increased living costs, and foregone after-tax earnings that reflect the extent to which earnings are reduced during the period of university study. It examines the after-tax income differential between those with university education and those with only high school completion. This difference combines both higher salary and wage levels (or earnings from self-employment and business ownership) and higher employment rates (less unemployment). The "university premium" in Canada is about 40%, i.e. the age-adjusted average weekly earnings of full-time workers who are university graduates is 1.4 times the average weekly earnings of their counterparts with no university degree (Morissette et al.). This premium has changed little in the last thirty years.

More importantly, the expected private rate of return[1] on investment in an undergraduate university education in Canada is substantially higher than can be expected on virtually any form of financial investment generally available in the marketplace. Studies from 1960 to the most recent time typically show annual rates of return ranging from 10 per cent to 20 per cent. Chart 1 presents a compilation of the results from various such studies. An analysis of these results, using regression techniques, finds that the rates of return peaked in 1990 at about 12 per cent for males and 17 per cent for females and have declined by less than two percentage points since then, despite rising tuition costs (Emery). Compared to typical real rates of return available historically in the financial marketplace, say 4.5 to 5.5 per cent, an investment in university education is an extremely attractive proposition for those to whom it is available.

One study in 2002 estimated that it would take an increase of over $10,000 in annual tuition fees for social science programs to reduce the private rate of return to 4.25 per cent.

[1] By "private" rate of return, we mean the return to the individual student.

Chart 1: Private Returns to Bachelor's Degrees Results from Various Studies, Canada, 1960-1998



Source: Herb Emery, "Total and Private Returns to University Education in Canada: 1960 to 2030 and in Comparison to other Post-Secondary Training", John Deutsch Institute for the Study of Economic Policy, Queen's University, Feb 2004, 25

b. <u>The Market Response</u>

Normally when one form of investment opportunity offers a substantially higher expected rate of return than do others the market response is that investors sell off the low return investments and flock to the high return investment, bid up its price and exhaust the best opportunities so that its rate of return falls while conversely the rates of return of other types of investment increase. This process continues until the rates are equalized, subject to appropriate risk premiums.

The market for university education is obviously different. An individual investor can normally only buy one undergraduate degree to any benefit. There are capacity limitations, in some parts of the country with respect to numbers of available places in university and generally in terms of the number of potential investors, i.e. most typically, recent high school graduates with suitable ability. Immigration policies and practices with respect to the recognition of foreign degrees limit the ability of those educated elsewhere to move to Canada and capture the benefits of their investment in university education, thereby reducing the education premium.

Still, the response to the high rates of return in university education has been phenomenal. Total full-time university undergraduate enrolment in Canada has grown from 69,000 students in 1956 to over 600,000 students this year. In the past three years full-time

university enrolment has increased by 130,000 (20%). The ratio of full-time university enrolment to the Canadian population aged 20 to 24 has risen from 0.04 to 0.29 over the same period. Since 1980, enrolment growth has exceeded university revenue growth so that the real level of resources per student has fallen. In economic terms, the universities have increased their productivity in order to accommodate expanded demand.

c. Market Failure: Financing Human Capital Investment

These rates of enrolment growth have been possible in large part because governments and others have addressed the principal market failure concerning human capital investment, described variously as the cash, liquidity, credit or financing constraint. Many students would, unaided, face barriers in obtaining sufficient funds to pay for the cash flow requirements of attending university. Banks may lend some funds but then there are debt servicing cash requirements. The amounts available to borrow at affordable rates of interest are small, except perhaps for students preparing for professions such as medicine or dentistry where prospective incomes are high and graduation and employment are almost certain.

A wide variety of student assistance programs address this cash constraint problem and have substantially expanded the potential population of university education investors (students). These support programs provide the means for students to meet their cash requirements while in university either through non-repayable or repayable means.

A second, related barrier that can produce market failure with respect to human capital formation is debt aversion. The discussion is usually that potential students, particularly from low-income families, may be unwilling to go into debt to finance their education fearing that they will be unable post-graduation to pay off their loans. More recently, some research suggests that this is more a middle-class phenomenon and includes a concern that education debt servicing costs will reduce the ability to undertake other expenditures (related to family formation, for instance) after graduation. While the data suggest that these concerns are exaggerated, government programs such as debt remission and interest reduction have been created for those graduates who have the most difficulty in loan repayment.

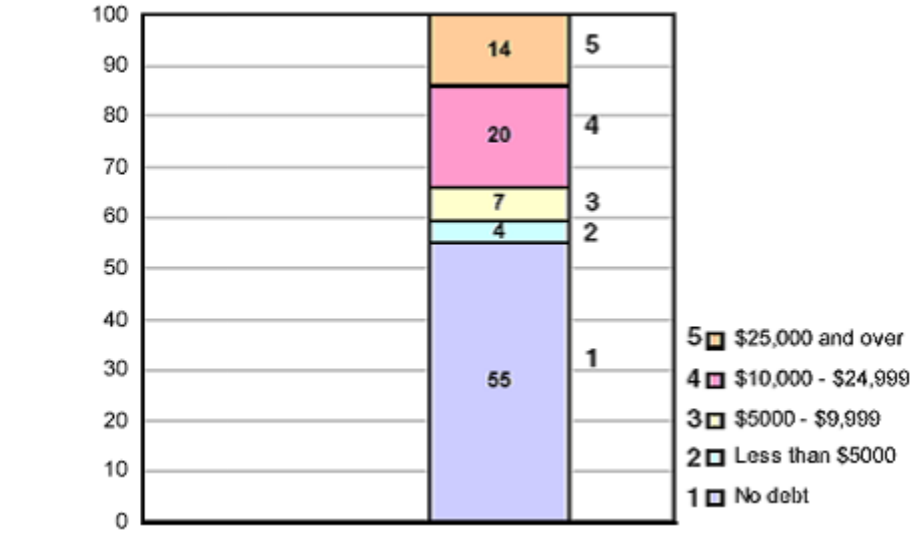
3) Is University Education a Debt Sentence?: Recent Statistics

A report released in April 2004 by Statistics Canada (Allen and Vaillancourt) provides the most recent data on the student debt situation in Canada. This study examines the experience of post-secondary graduates of the year 2000 as reported two years after graduation. Of particular interest, it reports on graduates of university bachelor degrees who did not pursue further education. Unfortunately, it includes in this group graduates of programs in Medicine and Dentistry who have much longer and more expensive programs. As a result, its findings overstate the debt situation of bachelors graduates to some extent.

Here are the key findings of the study respecting university graduates:

- On graduation, 53 per cent of graduates had student debt from some source; 47 per cent had none.

Chart 2: Percentage of graduates with varying sizes of government student debt at time of graduation, Canada, Class of 2000 Bachelor & First Professional Degrees



Note: Graduates who pursued further education after their 2000 graduation are excluded.

Source: Allen & Vaillancourt, Class of 2000: Profile of postsecondary graduates and student debt, Statistics Canada, April 2004, 21

- 45 per cent had debt to a government student loan program, virtually unchanged from the 1990 and 1995 graduates.
- Those with only government student loans had average debt of $19,300; those with only non-government debt owed $9,500; those with debt from both sources, primarily medical and dental students, owed $32,200 on average.
- In constant dollars, the average debt owed by those who owed government loan debt had increased by 30 per cent from the graduates of 1995 and 76 per cent from the graduates of 1990. This is an average annual rate of increase of between 5 and 6 per cent.
- Two years after graduation, 45 per cent of those who owed money only to non-government sources had paid off their full debt, while 22 per cent of those who owed government student loan program had paid off their debt.
- Those graduates who still owed money to government student loan programs had paid off, on average, 24 per cent of their debt within two years.
- 28 per cent of those with debt remaining reported difficulties repaying their debt while 9 per cent of those who had fully repaid their debt reported difficulties.
- Not surprising, those with large debts (over $25,000) were more likely to report difficulties repaying their debt (38%), although even among these 12 per cent had fully repaid their debt and the remainder had paid off 23 per cent of their debt on average, virtually the same percentage as those with smaller debt.

From these results, a number of conclusions can be drawn:

- For the majority of university undergraduates student debt is not an unsupportable burden. Only about half have any debt at all on graduation and most of these will pay off their debts within a reasonable period through increased employability and higher incomes.
- A small percentage (less than 10 per cent) of graduates will experience some difficulties in dealing with their debt and may require assistance in terms of either debt remission or interest payment relief for a period of time.

Unfortunately, data from Statistics Canada on the debt of graduates is not readily available at the provincial level so that the Saskatchewan situation cannot be reported.

4) Student Access by Family Income Level

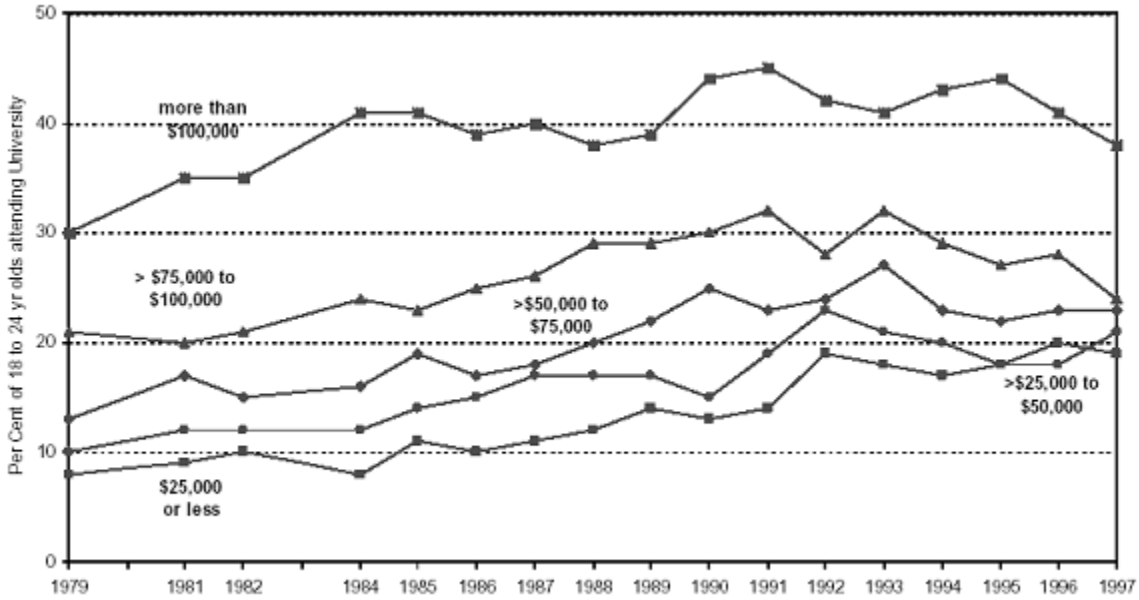
The claim is frequently made that rising tuition fees are making university education unaffordable. Certainly the continuing increases in participation rates and overall university enrolments suggest otherwise. A recent Statistics Canada release announced that 80 per cent of the 18 to 24 year population who had graduated from high school with an average of 80 per cent or better had subsequently enrolled in post-secondary studies.

But are there differential effects by family income class? Another recent Statistics Canada study (Corak et al.) looked at the relationship between family income and participation in post-secondary education. This study found "that individuals from higher income families are much more likely to attend university, but this is a long-standing tendency and the participation gap between students from the highest and lowest income families has in fact narrowed." The study's authors attribute this narrowing to increases in student loan limits and in other forms of student support.

Chart 3 depicts one surprising result from this study that shows a convergence in recent years of the participation rates among students from families in all but the highest income levels. (This result is surprising because previous studies have suggested that factors other than family income, but related to family income, also affect participation rates: parental education, family membership, distance from university, etc.)

The Corak study also found that the majority of university students (58% in 2002) do not work, i.e., in paid employment, during the school year, down only modestly from the 63 per cent figure of the mid-1980s.

Chart 3: University Participation Rates of 18 to 24 year olds by Parental Income, Canada.



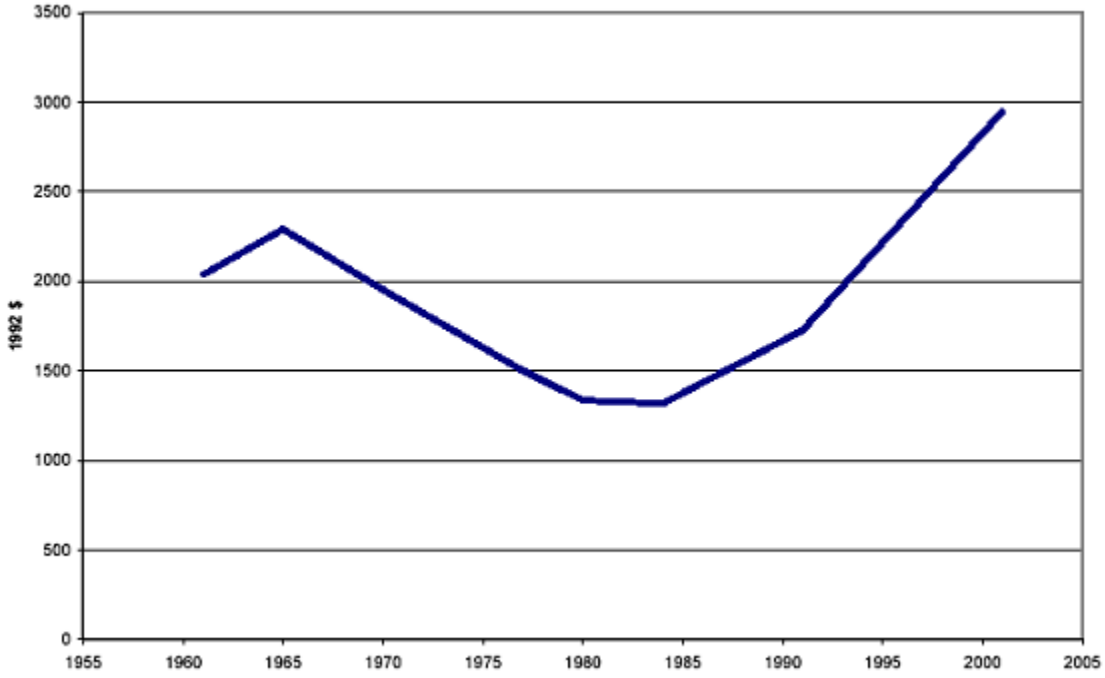
Source: Corak, Lipps and Zhao, Family income and participation in post-secondary education, Statistics Canada, October 2003, 33

A second Statistics Canada study (Finnie et al.) also found that overall participation rates increased during the 1990's, the period of rapid fee increases (see Chart 4). It found that the pattern of participation rate increases varied by province in a manner not related to the level of tuition: Quebec experienced relatively small participation increases despite its low tuition levels while some of the higher tuition provinces (e.g., Nova Scotia) had the greatest enrolment increases.

This study, however, found that parents' education levels had strong and growing effects on university attendance during the 1990's. In contrast the participation gap between two parent and mother only families actually narrowed.

A variety of other recent studies have examined the impact of various factors on post-secondary and university attendance. While a number have found that family income and factors affecting or related to family income have an influence, the majority have concluded that tuition fee increases by themselves have had little or no negative influence on university participation rates or access to university.

Chart 4: Average Tuition fees in 1992 $, 1961 to 2001, Canada



Source: Herb Emery, "Total and Private Returns to University Education in Canada: 1960 to 2030 and in Comparison to other Post-Secondary Training", John Deutsch Institute for the Study of Economic Policy, Queen's University, Feb 2004, 18

5) Equity in Student Support Provisions

If tuition increases over the last decade have had little influence on university participation, it is because the education premium for an undergraduate degree has changed little so that the return on investment in university studies remains very attractive and because various forms of student assistance have addressed the cash constraint issue with reasonable success. However, there is considerable evidence that student support mechanisms could be significantly improved. The Millennium Scholarship Foundation (MSF) has documented that government loan programs have maxima that are set too low to meet all of the reasonable costs of university attendance and that they also presume a level of parental support that is frequently not realized, particularly in middle-income families.

A recent study by Alex Usher, formerly with the MSF and now with the private Educational Policy Institute, has examined the equity of distribution of the full range of government subsidies for post-secondary education (university and college) in Canada. While the data are lacking to make exact calculations, Usher has made an excellent first attempt at identifying all forms of support funding and their distributional effects by family income class.

Usher has found that governments in Canada devote close to $5 billion per year in transfers to individuals for higher education financing. These include the following:

- The cost of loan programs ($943 million): this includes in-school interest subsidies, interest relief programs and loan defaults, but not the value of loans themselves (about $3 billion per year).
- Grants and remissions ($1,070 million): all need-based non-repayable assistance, including Canada Savings Grants, provincial grant and remission programs, and the Canada Millennium Scholarship Bursary Program.
- Tax expenditures ($1,989 million): income tax deductions for educational expenditures, including those deferred or transferred, and the tax shelter for Registered Education Savings Plan (RESP) use.
- Canada Education Savings Grants ($360 million): the "top-up" provided for contributions to RESPs.
- Student Employment ($392 million): wage subsidies, funded positions, subsidized loans for student business start-up, etc.

The first two items in this list can be termed "needs-based" while the remainder are "universal", the latter being larger in total. Usher finds that the needs-based assistance is mildly progressive, with an estimated 60 per cent of funding going to students from families with below median incomes. On the other hand, universal assistance is regressive, with over 62 per cent going to students from families with above median incomes. As a result, the total effect is regressive and "inconsistent with a strategy to help low-income families."

The implication of Usher's analysis is that less government assistance should be channeled through education savings plans and tax deductions, and more should take the form of needs-based assistance, with a package of loans and remission programs providing the most effective use of resources.

Usher also examines the implicit subsidy to university education from provincial government grants to institutions. He estimates that the full elimination of tuition would provide upper income families with a $2.2 billion windfall. Top income quartile families would receive, on aggregate, over $2 for every dollar going to families in the lowest income quartile. In the long run, if the reduced fees enabled more students from low-income families to attend university, a portion of this inequity in distribution would be reduced but the large subsidy to high-income families would still remain.

Usher also finds that the subsidy to students "hidden" in government grants to institutions is highly regressive. This is an artifact of the family income distribution of university students. He ignores, however, that a significant portion of university funding from the provinces supports the research enterprise, rather than teaching and learning. As well, some of the funding can be attributed to the externalities of consumption and production that universities generate, as well as their service activities. Thus Usher substantially overestimates the regressive effect of the government funding of universities.

6) Tuition Fee Increases and the Demand for University Education

University administrators across the country and perhaps around the world, at least those who are not economists, are constantly concerned at fee-setting time that another tuition fee increase will result in a dramatic drop in enrolments: "we'll fall off the cliff" is an oft-heard phrase. This is a fallacy based on lack of understanding of markets and the nature of demand.

Certainly, a university that raises fees substantially above those of its competitor institutions and is not providing services and value that, in the minds of students and prospective students, merit the price premium risks losing a significant percentage of its enrolment to its competitors, if there is room elsewhere.

However, as a collective, universities can raise fees in reasonable amounts without anticipating a calamitous response. First, the return on investment in university education is highly attractive. Second, tuition is only a part of the costs of university attendance, foregone earnings being considerably more, so that fee increases of even two or three thousand dollars would still leave the returns to university education at a high level of around 10 per cent per annum. As long as students are aware of the size of the benefit and the cash constraint does not become a barrier for many, no large reduction in enrolments will occur.

Finally, and most significantly in this context, is an understanding of the nature of demand. The demand curve for university education, which describes the relationship between numbers of students applying and tuition rates, is the sum of the individual demand curves of all potential students. Each of these has his or her own set of circumstances, preferences, financial situations and alternatives. They are not uniform. As a result, each individual has his or her own tuition level at which the decision to attend university is compromised. Students and prospective students will not respond in mass in the same way to a higher fee level. Certainly, fee increases deter some students, failing appropriate responses from student financial assistance programs, but a precipitous, calamitous withdrawal from university attendance by many students will not result from fee increases like those in recent years. There is no cliff.

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