

INCOME CONTINGENT LOANS FOR HIGHER EDUCATION: INTERNATIONAL REFORMS

BRUCE CHAPMAN

Research School of Social Sciences, Australian National University

Contents

Abstract	1437
Keywords	1437
1. Introduction	1438
2. Charging students for higher education: Conceptual issues	1440
2.1. Introduction	1440
2.2. Who should pay in theory: efficiency	1441
2.3. Externalities	1442
2.4. Who should pay: equity	1444
2.5. Efficiency and equity: a false distinction?	1445
2.6. The need for government intervention: capital market 'failure'	1446
2.7. Are credit constraints an issue?	1447
3. The case for income contingent loans	1450
3.1. Introduction	1450
3.2. Are ICLs necessary?: the problems with (government guaranteed) bank loans	1450
3.3. The various types of income contingent instruments: costs and benefits	1452
3.3.1. Income contingency with risk-pooling	1453
3.3.2. Income contingency with risk-sharing	1455
3.3.3. Graduate taxes	1459
3.3.4. Human capital contracts	1460
3.4. Summary	1461
4. Income contingent loans: International applications	1462
4.1. Background	1462
4.2. The international experience with ICLs in brief	1463
4.2.1. The Yale Plan	1463
4.2.2. Sweden	1463
4.2.3. Australia (in summary)	1464
4.2.4. New Zealand	1464
4.2.5. The Republic of South Africa	1465

4.2.6. The UK	1466
4.2.7. The US	1467
4.2.8. Chile	1470
4.3. Common factors in the successful adoption of ICLs	1470
4.4. Summary	1472
5. Application issues for income contingent loans in developing countries: The importance of institutional context and administration	1472
5.1. Application issues for income contingent loans in developing countries: background	1472
5.2. The ICL adoption debate in developing countries: case studies	1473
5.2.1. Ethiopia	1473
5.2.2. Namibia	1475
5.2.3. Indonesia	1476
5.2.4. Rwanda	1477
5.2.5. The Philippines	1479
5.2.6. Mexico	1480
5.3. ICL implementation requirements	1481
5.3.1. Introduction	1481
5.3.2. Administrative and legal preconditions	1481
5.3.3. Minimum requirements in summary	1482
5.4. Necessary steps for implementing an ICL	1483
5.5. Summary	1483
6. A detailed case study of a risk-sharing ICL: Australia, 1989–2003	1484
6.1. Introduction	1484
6.2. HECS described	1485
6.2.1. Background	1485
6.2.2. HECS tuition charges described	1485
6.2.3. HECS repayment parameters	1486
6.2.4. HECS repayments by age for typical graduates working full-time	1487
6.2.5. HECS repayments by age for graduates not working full-time	1489
6.2.6. HECS revenue	1489
6.3. The effect of HECS on the access of the disadvantaged	1490
6.3.1. Background	1490
6.3.2. The literature	1490
6.3.3. The research on HECS and access: conclusions	1493
6.4. Summary	1494
7. Conclusions and suggestions for further research	1495
7.1. Summary	1495
7.2. Suggested areas for future research	1496
Acknowledgements	1499
References	1500

Abstract

It is well known that higher education financing involves uncertainty and risk with respect to students' future economic fortunes, and an unwillingness of banks to provide loans because of the absence of collateral. It follows that without government intervention there will be both socially sub-optimal and regressive outcomes with respect to the provision of higher education. The historically most common response to this market failure – a government guarantee to repay student loans to banks in the event of default – is associated with significant problems.

Income contingent loans offer a possible solution. Since the late 1980s ICLs have been adopted in, or recommended for, a significant and growing number of countries, and it is this important international policy reform that has motivated the chapter.

An ICL provides students with finance for tuition and/or income support, its critical and defining characteristic being that the collection of the debt depends on the borrowers' future capacity to pay. ICL have two major insurance advantages for borrowers over more typical arrangements: default protection and consumption smoothing.

With reference to countries with both successful and unsuccessful ICL, the chapter illustrates that the operational and design features of such schemes are of fundamental importance with respect to their potential efficacy. It also seems to be the case that in many institutional and political environments there is not yet the administrative sophistication to make ICLs viable, although for reasons documented this is unlikely to be the case for the vast majority of OECD countries.

For one country, Australia, there is now a significant amount of research into the consequences of an ICL, and the evidence is explored in some detail. The investigation into the Australian experience helps in the development of a research agenda.

Keywords

income contingent loans, student loans, higher education financing, HECS

JEL classification: I00, I2, I20, I21, I22, I28, J2, J24

1. Introduction

What follows is an examination and analysis of what is, by historical policy standards, a new phenomenon in the financing of higher education: income contingent loans. The broad concept of income contingent loans (ICL) can be traced to the pioneering work of Friedman (1955), in which a particular form of the instrument, a graduate tax, was promoted as a possible response to the capital market problem associated with higher education financing. But it was not until the 1980s that arrangements of this form began to be adopted.

An ICL for higher education funding takes the following form. Borrowers, students, are provided with finance for tuition and/or income support, usually with the resources being provided by the public sector, although there is no reason why funding could not come from commercial banks. The critical and defining characteristic of an ICL is that the collection of the debt depends on the borrowers' future levels of income. Capacity to pay, and not time, defines the repayment obligation.

Yale University offered a particular type of ICL in the 1970s, but in national terms it happened first in a very blunt way in Sweden, with respect to a limited form of student income support in the early 1980s. This was followed by the adoption in Australia in 1989 of a national income contingent charging mechanism where, for the first time, repayments were collected through the tax system. New Zealand implemented an ICL in 1991 with a similar, although more market oriented, scheme which covered living costs as well as tuition.

An unusual form of an ICL was put in place in the US in 1993, but its take-up has been very low, for reasons explained below. The concept was also introduced in Chile in 1994, with the conversion of its existing conventional bank loan scheme to an income contingent form. South Africa followed in 1996 with arrangements designed mainly for tuition, as was the case in Australia, but with a small proportion of students being allowed additional funds for living expenses.

The UK government instituted an ICL for the recovery of student loans in 1997, and this was a complicated version of the original Australian system for tuition. This has been changed in 2006 to more closely resemble the form of the New Zealand initiative. Ethiopia changed its higher education financing arrangements with an unusual variant of ICL in 2003, and Thailand is on track to introduce a close variant of the Australian system in late 2006.

It is clear that over the last decade or so governments, researchers and policymakers of many countries have been engaged in public debate concerning the potential of ICL to replace existing higher education financing arrangements. They include Canada, Hungary and a host of developing countries, with a significant number in the last group exploring ways in which an ICL scheme for higher education could be implemented. With the encouragement of the World Bank and other international aid agencies, these ideas became a major part of active debate for developing countries in the late 1990s and early to mid-2000s, including in: Indonesia, Namibia, Nepal, Mexico, Rwanda and

the Republic of South Korea.¹ As well, in March 2003 the World Bank sent a mission to the Philippines to explore tertiary education financing, including the viability of ICL. Further, international aid agencies and national governments are (at least in informal ways) in the process of examining possible similar avenues for higher education financing reform in Slovakia, Bulgaria, Bosnia, Germany and Colombia.

This chapter is an attempt to describe and explain the background to, and provide the analytical basis of, these policy debates and international reforms. It begins with an exploration of the case for both public sector university charges for students and taxpayer subsidies. A critical issue relates to the role of government beyond just the provision of a subsidy, which can be traced to market failure in the provision of private sector finance for higher education.

The essential issues for policy can be understood to be the result of uncertainty and risk with respect to students' future economic fortunes, and the understandable lack of willingness of banks to provide loans in the absence of collateral in the event of former students' defaulting. It is clear that without government intervention of some kind there will be both socially sub-optimal and regressive outcomes with respect to the provision and outcomes of higher education.

A key point in the discussion is that the historically most common response to this market failure – a government guarantee to repay student loans to banks in the event of default – is associated with significant problems. Alternative approaches to the problem, such as the provision of means-tested scholarships to individuals from poor backgrounds, are also flawed for several reasons, and these are explained. Something different is needed as a response to the traditional policy mechanisms.

The conceptual basis of income contingent loans as an alternative approach to higher education is explained in detail. ICL have two major advantages over more typical borrowing arrangements involving bank loans with government guarantees. Both benefits involve the provision of insurance, and can be traced to the fact that ICL repayments are defined by the borrower's capacity to repay debt.

The first insurance benefit of ICL concerns default. That is, because repayments are not required in periods of low income, borrowers are never in a financial situation in which they are unable to meet their loan repayment obligation. This will not be the case with respect to normal bank loans.

The second insurance benefit of ICL for borrowers is that they can eliminate expected future hardships associated with repayment. Compared to bank loans ICL provide consumption smoothing, which is again the result of repayments being determined by capacity to pay. When incomes are low ICL payments are not required, the tradeoff being that when incomes are high repayment obligations are greater.

¹ In Rwanda there have been active steps toward this type of policy initiative but it seems to be the case that in many countries implementation and administrative challenges are considerable, and this issue is examined in detail in Section 5.

It is argued that so long as they are designed sensibly, and can be made operationally efficient, ICL schemes have significant potential as a solution to higher education financing challenges. The chapter illustrates that the operational and design features of such schemes are of fundamental importance with respect to the potential efficacy of funding reforms.

There are many forms of income contingent financing instruments, and in what follows the different variants are compared and contrasted with respect to a host of economic issues, such as adverse selection, moral hazard, allocative efficiency, equity and administrative feasibility. It seems to be the case that a particular form of ICL, using the public sector as the insurer (a 'risk-sharing' ICL), has more attractive properties than other types of ICL. For reasons that are easy to understand, this particular variant is the form now emerging as the preferred type of ICL in many countries. There is also a growing interest, and expanding practice, in the use of income related instruments for higher education financed through the private sector, so-called human capital contracts.

The nature of schemes that have been tried in different countries is documented, and the essential characteristics of the various approaches are compared and contrasted. However, the available data and evidence on the effects of ICL are limited, the reason being that in most countries ICL have been adopted only recently. Even so, for one country, Australia, there has now been a significant amount of research into the consequences of a risk-sharing ICL, and the evidence is explored in some detail. The nature of the investigation into the Australian experience helps in the development of a research agenda for other national environments.

The essential policy challenges of administration and collection are raised through an examination of the nature of the issues concerning the adoption of ICL in developing countries. The bottom line in this context is that efficient collection lies at the heart of this type of policy reform. It also seems to be the case that in many institutional and political environments there is not yet the administrative sophistication to make ICLs administratively viable, although for reasons documented this is unlikely to be the case for the vast majority of OECD countries.

For a chapter in the Handbook of Economics series, the discussion following has a strong policy focus, and this can be traced in part to the absence of a major theoretical and empirical literature in the area of ICL. This is good news for research, since it implies that there is considerable potential with respect to ICL in all areas: theory, evidence and policy implementation. Promising avenues of research are documented in a final section.

2. Charging students for higher education: Conceptual issues

2.1. Introduction

What now follows presents the basic cases for some fundamental aspects of higher education financing. These include the division of payment between individual beneficiaries and society, and the justification for government intervention.

2.2. Who should pay in theory: efficiency

The conventional way of analyzing efficiency issues with respect to public expenditure uses a proposition well known in welfare economics concerning allocative efficiency. This is that, if there are no market distortions, goods and service should be priced at: $P_x = M_x - E_x$, where P_x is the price of good or service x ; M_x is the marginal cost of producing x ; and E_x is the marginal value of the externalities associated with the production or consumption of x .

Figure 1 helps explain the basis of this pricing rule for higher education [Chia (1990)]. The curves are all given in present value terms, and an understanding of their bases is as follows. The marginal benefit curves slope downward since the higher is the number of tertiary students the greater will be the supply of graduates and thus the lower are graduate wages. The distance between the social and private benefit curves reflects the value of the externalities, a topic considered below. It is assumed in the diagram that the marginal value of the externalities is invariant to the number of students, meaning that the social benefit curve is drawn parallel to the marginal private benefit curve. However, it is arguable that as the number of graduates increases, so too will the value of the externalities fall, a point used in Barr and Crawford (1998) to justify fee increases as enrollments increase.

In the figure the marginal private cost curve is shown for a zero-fee regime, and slopes upward since there will be increasing opportunity costs to enrolling the more

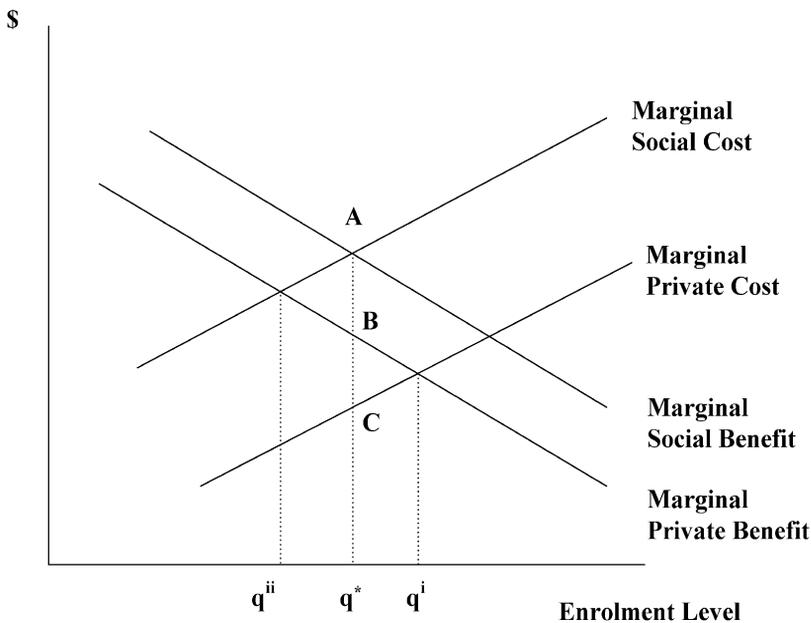


Figure 1. Private and social costs and benefits of higher education.

enrollments there are, given that additional enrollments decrease the supply and thus the wages of nongraduates. The difference between the marginal private and marginal social cost curves reflects the extent of the subsidy implicit in a no-fee regime.

As drawn the figure shows a situation characterized by over-investment in higher education ($q^i > q^*$), since it is assumed that there is no tuition fee. However, if all the direct costs are paid for by students (a full-fee regime), then the marginal social costs and marginal private benefits would be identical, but this then leads to an under-investment of higher education ($q^{ii} < q^*$). Thus the optimal fee is given by the distance BC which is derived from AB, the value accorded the marginal value of the externalities and thus the level of government subsidy.

Of some interest for policy issues considered below, the marginal cost pricing rule explained here suggests that financing arrangements that do not reflect the interaction of marginal benefits and marginal course costs will not deliver allocative efficiency. It is explained below that several variants of student charging are of this genre.

It should be noted that while the issues raised from analysis of Figure 1 sit comfortably with mainstream economics, this does not necessarily mean that the conclusions drawn with respect to allocative efficiency and taxpayer subsidies are obvious and easily analyzed. Instead it might well be the case that, at least with respect to public sector institutions, the higher education market is supply-constrained and is thus characterized by excess demand at given tuition and income support levels.

In the above context, [Finnie and Usher \(2006\)](#) argue that the framework presented above misses an important part of adjustment processes in public sector higher education. That is, if governments typically do not provide sufficient resources to allow all 'qualified' prospective students to enter higher education, the role of admission scores as an adjustment mechanism to changes in funding and demand is paramount. If this is the case the strength of the allocative efficiency issues concerning price adjustments raised above are necessarily weakened.

2.3. Externalities

Critical issues for policy concern the nature of social benefits and their likely size, given that economic theory suggests that answers to the latter should form the basis of the level of government subsidy. With respect to policy, significant issues are: what, and how valuable, are higher education externalities?

The externalities have been argued traditionally to include, among other things: reduced criminal activity, more informed public debate, better informed judgments with respect to health, and more sophisticated voting behavior.

However, the value of these particular externalities is likely to be small and debatable relative to the externality effect of education on economic growth. Since the early 1960s it has been argued that in a world of rapidly changing information more highly-educated workers have an advantage in adapting to different environments, in 'dealing with dis-

equilibria' – the capacity to adjust to unanticipated shocks [Schultz (1975), Huffman (1974), Fane (1975), Wozniak (1987)].²

Related issues have emerged in new growth theory, which stresses the role of endogenous technical change, and the connections between and interdependencies of knowledge, innovation and human capital investments. The role of higher education with respect to productivity growth is highly complex with educational improvements seen to facilitate technological progress, which is the engine of growth.

There are several (highly-related) ways education is seen to impact on technological change:

- high levels of formal education are necessary for the successful introduction of capital equipment [Bartel and Lichtenberg (1987)];
- the above connection encourages physical capital investments [McMahon (1999)];
- during periods in which a population is undergoing increases in education there will be an effective increase in the size of the labor force, so long as education raises productivity [Barro (1991)]; and
- education disseminates information and through this adds to growth because death does not result in knowledge loss [Lucas (1988)].

These notions have received wide acceptance in the economic research community. However, the increasing consensus with respect to the conceptual importance of these factors, and the likely role of education in them, has not been matched with an emerging agreement concerning the empirical evidence.

Measuring the impact of higher education on economic growth is not straightforward. An important reason is that the growth impact of education on the skills of the labor force will be determined by both its quantity (that is, higher participation rates) and its quality (that is, the amount of knowledge imparted at any given schooling level). Understandably, given data availability, most analyses focus on the former.

The role in economic growth of both the quality and quantity of education internationally are compared in Hanushek and Kimko (2000). They test the extent to which educational quality as measured by standardized scores for mathematical and scientific literacy has contributed to economic growth differences averaged over thirty years across 139 countries. The test results are compared with the effect of changes in schooling quantities (as measured by the number of years of schooling).

They find that increases in workforce quality have a profound influence on economic growth. For example, on average a one standard deviation increase in test scores adds about 1.0 percent to a country's GDP per capita annual growth rate, which is arguably a very high impact. By contrast, increases in the quantity of schooling required to match this growth rate change seem to be very much higher: that is, to achieve a one per cent increase in the annual growth rate of a country's GDP per capita requires on average that workers had nine additional years of education.

² For education to result in social as well as private gains requires that the rents from the process are not captured completely by the educated individuals or the firms employing them. However, this will be the case if technological change flows easily from one workplace to the next [Romer (1994)].

The Hanushek and Kimko analysis does not address the sources of labor force quality, that is, in their context, the determinants of test scores. And it is very possible that these have been correlated over time with rising school participation rates. As well, there is little direct role played here with respect to higher education. To argue that the Hanushek and Kimko result supports the role of higher education as a direct growth determinant requires a link between higher education and labor quality, an issue not tested.

Barro and Sala-I-Martin (1995), Gemmel (1996) and McMahon (1999) attempt to measure the direct role of education on economic growth. The former finds that a one standard deviation increase in the ratio of public education outlays to GDP of the order of 0.3 percentage points, with relatively high effects from the tertiary education sector. For the UK, Gemmel finds that a 15 percentage point increase in educational enrollments leads to just over half a percentage point higher rate of productivity growth. These broad results are supported in Englebrecht (2003), which emphasizes in particular the positive role of human capital as a catalyst to technological diffusion.

An essential problem with these types of studies is capturing the obvious complexities in the relationships between human capital investments, innovation, knowledge and technical change. Issues of measurement and of timing loom large, with most empirical exercises being constrained to use annual data; however, there are no apparent statistical guides as to the length and nature of these dynamic processes.

While the case in theory for the importance of links between economic growth and higher education investments is strong, its statistical basis is not as yet compelling. The bottom line is that there is an argument for government subsidy of higher education, but with respect to its size there is no agreement.

2.4. *Who should pay: equity*

There is a commonly expressed lifetime income distribution argument for charging for higher education. The appropriate way of analyzing this issue is with respect to after-tax rates of return to higher education. There have always been a host of interpretation problems in this literature, including: the role of unmeasured ability and motivation; the significance of measurement error; and the seemingly strong assumptions associated with the use of cross-sectional data to predict the true future return to an educational investment.

However, through possibly the most pervasively used tool in applied micro-economics, the earnings function [Mincer (1974)] it is by now fairly clear that these rates of return are high [Krueger (1999)], and arguably as high as are the returns found for a host of other investment processes. This commonly found result is able to be juxtaposed with data on students' parents, which invariably find that those enrolled in higher education are much more likely on average to come from relatively advantaged families.³ This suggests that, on average, government subsidies to higher education re-

³ The evidence is compelling in all countries for which data exists. As examples, see Greenaway and Haynes (2003) for the UK, Carneiro and Heckman (2002) for the US, Chapman (1997) for Australia and Finnie and Schwartz (1997) for Canada.

distribute tax resources to individuals who as children are from privileged backgrounds and who as adults receive high individual economic returns from the higher education investment process. Barr (2001), Chapman (1997), Belfield (2000) and many others argue this proposition generally, and with respect to a host of countries. That is, a social implication of a large public sector financial support of the beneficiaries of higher education is that such approaches are regressive and undesirable.

Such a judgment is underwritten by the view that a role for government is to redistribute toward and not away from the lifetime poor. It is also based on the judgment that it is desirable to diminish the strength of the already strong nexus between childrens' lifetime economic opportunities and the socio economic standing of their parents. In these contexts the equity case for a charge is clear.

2.5. Efficiency and equity: a false distinction?

In general, analyses of public sector involvement in particular areas of economic activity treat efficiency (usually interpreted to mean the optimal use of scarce resources) and equity (which concerns fairness and income distribution) as if they are conceptually distinct. That is, it is often the case that efficiency and equity are characterized as trade-offs, with a role for government being to find an acceptable position between these goals.

However, with respect to higher education the distinction between efficiency and equity is not clear-cut. This point is clarified through consideration of the notion of equality of opportunity, which is usually seen to be a major goal for higher education policy. What the expression means is not always clear, but in the higher education context it can be interpreted as highlighting the value of policy ensuring the absence of barriers to the participation of disadvantaged prospective students in higher education. In an economic policy context, the notion of equality of opportunity underscores the point that the distinction between efficiency and equity is in many senses artificial.

That is, there are both economic and social reasons for governments to act in ways that ensure that the higher education system does not exclude talented but poor students. The reasons are as follows.

Poor prospective students can deliver important social benefits given access to higher education. That is, if able and motivated people cannot participate in higher education for financial reasons the whole economy is worse off, because talent is being wasted; there will be a less than optimal delivery of spill-overs, as well as foregone private opportunities for the excluded poor. Both Barr (2001) and Palacios (2004) emphasize these issues.

In terms of equity and distributive justice, it needs to be recognized that there is already a strong nexus between the family circumstances of children and their lifetime income prospects. Thus, if a society values equality of opportunity it should ensure that the strength of this nexus is not reinforced by education policy.

With this as background it is now useful to explore the shortcoming of the market that constitutes an overwhelming case for some sort of government intervention.

2.6. *The need for government intervention: capital market 'failure'*

Given that a critical aim of a higher education financing system is to not erect barriers to the participation of talented but poor students, what problems would arise in the absence of government intervention? That is, is the right approach for the government to decide the size of the per student subsidy, pay this to higher education institutions which would then require students to pay fees on enrollment?

There are major problems with this arrangement, traceable in most instances to issues of uncertainty and risk, an issue first raised by [Friedman \(1955\)](#). The argument can be best understood with reference to the nexus between labor markets and human capital investments. The essential point is that educational investments are risky, with the main areas of uncertainty being as follows [[Barr \(2001\)](#)] and [[Palacios \(2004\)](#)].

- Enrolling students do not know fully their capacities for (and perhaps even true interest in) the higher education discipline of their choice. This means in an extreme they cannot be sure that they will graduate and, in Australia for example, around 25 percent of those enrolling end up without a qualification.
- Even given that course completion is expected, students will not be aware of their likely relative success in the area of study. This will depend not just on their own abilities, but also on the skills of others competing for jobs in the area.
- There is uncertainty concerning the future value of the investment. For example, the labor market – including the labor market for graduates in specific skill areas – undergoes constant change. What might have looked like a good investment at the time it began might turn out to be a poor choice when the process is finished,⁴ and
- Many prospective students, particularly those from disadvantaged backgrounds, may not have much information concerning graduate incomes, due in part to a lack of contact with graduates.

These uncertainties are associated with important risks since if future incomes turn out to be lower than expected, the individual is unable to sell part of the investment to finance a different educational path, for example. This is critical in an understanding of capital market failure, and explains why banks will not be interested in unsecured loans for higher education investments: in a non-slavery world there is no collateral to be sold in the event of default. And even if it was possible for a third party to own and sell human capital, its future value might turn out to be quite low taking into account the above possibilities. The point is taken up further below.

Thus, given these uncertainties, very risk-averse potential students will be reluctant to finance higher educational investments. It is likely that those with relatively low access to finances – that is, prospective students from poor backgrounds – are particularly influenced by these realities, given a relative lack of financial resources, an underlying assumption being that there are binding credit constraints for some potential borrowers. It is instructive to examine briefly the related empirical literature.

⁴ [Freeman's \(1971\)](#) 'cobweb' model of college training is apposite in this context.

2.7. *Are credit constraints an issue?*

The borrowing problem described above takes on a very serious form if it is actually the case that there are in reality constraints on the borrowing for individuals interested in bank financing of higher education investments. The evidence with respect to the extent to which access to credit limits human capital investment takes several forms.

The first area of research seeks to establish the strength of the relationship between family income and educational outcomes. The argument is that if there are no borrowing constraints to finance skill investments, there should also be no relationship between family income and an individual's level of education. This turns out to be a difficult research assignment because of the complicated relationships between family income and its likely association with the plethora of factors associated with educational choice. These include the quality of compulsory schooling, inherent ability, educational motivation and the transfer of values between parents and children associated with education. Recent important attempts to disentangle these relationships are found in [Cameron and Taber \(2001\)](#) and [Carneiro and Heckman \(2002\)](#).

Carneiro and Heckman make the valid point that long-run environmental and family factors are likely to be critical determinants of a young person's interest in and capacity for college education. In other words, credit constraints will not be the only determinant of access to college. They provide evidence suggesting strongly that family income is not correlated with college attendance given proper control for individuals' educational abilities (as proxied by test scores). They suggest that the main factor behind the family income-schooling relationship is ability, although they identify about 8 percent of the population "who seem to be facing short run credit constraints" [[Carneiro and Heckman \(2002\)](#), p. 732]. That is, credit constraints might matter, but it is important not to overstate their role in an understanding of the nexus between family income and enrollments.

Cameron and Taber provide similar evidence for the above result. With the use of instrumental variables and structural equations estimations, they explore the issue of whether or not estimates of the foregone earnings faced by groups differing with respect to family income have different effects on educational outcomes. Their range of different approaches comes to the same conclusion: there is no relationship between family background and educational outcomes.

There are empirical issues associated with interpreting the weakness of the relationship between family income and enrollments as strong evidence that there are in general low or even no credit constraints. The first, recognized by Cameron and Taber, is that empirical tests of the role of family income with respect to college choice are typically undertaken in a policy environment with programs designed to mitigate the effects of credit constraints.

[Cameron and Taber \(2001\)](#) write: "... it is important to keep in mind that [the results do] not necessarily mean that credit market constraints would not exist in the absence of the programs currently available" (p. 32). That is, if programs in operation are an

effective solution to the lack of borrowing opportunities for poor prospective students no systematic credit constraint evidence will emerge with the use of data including program participants. Carneiro and Heckman acknowledge that the credit constraint results apply in the context of the existing policy environment, it following that their analysis should not be interpreted as evidence that credit constraints are not generally an issue for access to higher education.

This point matters for policy assessment, now explained. Suppose there is no significant evidence for the existence of credit constraints conducted in an environment in which there is policy intervention targeted on those from low family incomes. Such analyses might well reveal no, or at least low, levels of credit constraints (as do the above reported exercises).

However, the policy issue concerns the effective use of public sector resources to break down barriers to participation, and it might be that current arrangements could be improved in this context. For example, grants or loan subsidies to children from poor families, while mitigating the impact of credit constraints, may not be the best forms of intervention, a matter explored further later.

The second issue is also recognized by Carneiro and Heckman (2002). They observe that: "... children from higher income families still depend on the goodwill of their parents to gain access to funds" (p. 708). This point is critical to an interpretation of the relationship between family income and educational outcomes, because it raises the possibility that some prospective students from high income backgrounds are unable to gain access to college if their parents are unwilling to finance the investment. Under the assumption that a lack of parental support from some higher income families has the effect of precluding the participation of educationally qualified children there is a potential for underestimation of the true size of the relationship between family income and participation.

The different type of approach provided in analyses of credit constraints asks whether or not there is a relationship between family income and individuals' investment strategies. Kane and Rouse (1999) explore these issues with respect to both rates of return to education and the relative role of increases in tuition. With respect to the first, the idea is that credit constrained individuals will under-invest in college and this will result in relatively high rates of return for members of these groups. In support of this proposition they cite the evidence from Card (2000), which suggests that those from poor backgrounds receive relatively high returns to college.

Kane and Rouse also provide evidence that increases in tuition costs, compared to increases in relative graduate wages, impact relatively highly on the educational choices of the poor. They interpret these findings as evidence for the existence of credit constraints.

There might be an issue here with their conclusions suggesting the existence of credit constraints from these data. With respect to rates of return, the fact that average rates of

return to higher education for members of disadvantaged groups are high does not necessarily mean that marginal returns are also high, although this potential seems likely. Unfortunately marginal returns are unable to be measured from the data.

Second, as with the Cameron and Taber, and Carneiro and Heckman, exercises, it is important to interpret relationships concerning the role of tuition in the context of the policy environment. That is, at the same time as tuition increased it might be the case that access to, and the generosity of, PELS grants for the disadvantaged also changed. In other words, analysis of college choices with respect to family income and costs of attendance needs to condition on the policy environment. Even so, the Kane and Rouse work casts doubt on a view that credit constraints are insignificant.

In a different approach to the issue using the National Longitudinal Study of Youth, Hazarika (2002) finds that the proportion of youth from wealthier families increases in a recession, as measured by local unemployment rates. This is attributed to poorer families having lower incomes, from lower employment probabilities, in recessions, implying that in hard times they are less able to afford the college enrollment of their children.

The size of the above effect is reported as follows: "...among teens with family permanent incomes below the median, a one percentage increase in the county unemployment rate is associated with a 5.8 percent decrease in the relative probability of two-year college attendance as opposed to a 3.8 percent decrease in the relative probability of four-year college attendance" (p. 141). However, another interpretation is that there is an added worker effect, such that families require their youth to take employment to supplement family incomes in recessions. But even this latter interpretation might be consistent with a credit constraint story.

Chapman, Crossley and Kim (2003) report direct tests of the role of credit constraints for an unusual sample of unemployed Canadians, surveyed in the mid-1990s. Respondents who had not undertaken training after job loss were asked the reasons. Around 12 percent replied that they wanted to participate in formal training but could not afford to, and (implicitly) were unable to borrow the financial resources to do so. The authors argue that this implies credit constraints influence human capital investments for a small, but significant, minority of disadvantaged people.

Overall, it would appear that there are many factors behind the fact that children from poorer families are less likely to attend higher education, which means that this stylized fact alone is not sufficient evidence for the existence of credit constraints. However, there is now considerable research taking into account the influence of nonfamily background factors related to access to higher education. A reasonable conclusion is that, at some points in time, it is very likely that the existence of credit constraints constitutes a financial barrier for a minority of the potential student population. In the absence of existing targeted policy aimed at decreasing the role of credit constraints there is little doubt that the problem would be measured larger.

3. The case for income contingent loans

3.1. Introduction

This section examines the case for income contingent loans for higher education. It begins with an analysis of why conventional approaches to the credit market failure explained above have important limitations. Income contingent loans take many different forms, and these differences are explored. An important part of this analysis considers the costs and benefits of different types of ICL.

3.2. *Are ICLs necessary?: the problems with (government guaranteed) bank loans*

A possible solution to the capital market problem described above is used in many countries, such as the US and Canada [Finnie and Schwartz (1997)]. It involves higher education institutions charging up-front fees but with government-assisted bank loans being made available to students on the basis of means testing of family incomes. Public sector support usually (for example, in Canada) takes two forms: the payment of interest on the debt before a student graduates; and the guarantee of repayment of the debt to the bank in the event of default. Arrangements such as these are designed to facilitate the involvement of commercial lenders, and the fact that they are internationally a common form of government financial assistance would seem to validate their use.

This form of assistance seems to address the capital market failure problem. With this approach banks do not need borrowers to have collateral because the public sector assumes the risks and costs of default. However, solving the problem of the provision of finance from the perspective of the banks is not the end of the story. Government assistance of this type is associated with significant other problems, now considered.

The first inadequacy of government guaranteed bank loans relates to the fact that the loans are typically not universally available.⁵ That is, usually loan provision is means-tested on the basis of family income, although for many countries there are also complex sets of rules associated with age and the presumed independence of students from parental circumstances. This raises the important issue explained above and noted by Carneiro and Heckman (2002), concerning the role of the sharing of financial resources within families. If students are in families not qualifying for a subsidized loan from a bank, and yet are still unable to access household financial resources to pay an up-front fee, they face the same credit market failure as they would in the absence of a government guarantee of a bank loan. Means-testing the availability of loans must mean that some prospective students will be unable to access the system because they do not have sufficient finances to enable them to pay up-front tuition.

This problem could be addressed by making the loans available to all prospective students, since in this situation the sharing of financial resources within families becomes

⁵ Canada Student Loans, for example, are offered to less than half of the student population [Finnie and Schwartz (1997)].

irrelevant to a student's capacity to pay fees. However, universality in the provision of loans of this type would be very expensive, given the high public costs associated with governments paying the remaining debts of those in default⁶ [Barr and Crawford (1998)].

The issue of default lies at the heart of higher education financing policy. The default problem has different dimensions depending on the perspective of those involved in the process: banks, government and students.

The problem of default risk for banks is the reason that government guarantees are necessary to make commercial bank loans practical for higher education financing. But, perhaps ironically, government guarantees increase the probability of default, since with this type of insurance there is little incentive for a bank to ensure and chase repayments. And since the repayments are guaranteed by the public sector this aspect of such schemes potentially imply relatively high subsidies from taxpayers.

A critical set of related issues concerns the potential costs for prospective students with loan repayments required in regular installments, and not sensitive to a person's future capacity to repay. There are two significant problems.

The first is that some borrowers faced with obligations to repay loans that are not sensitive to their financial ability to meet these obligations might be concerned with the prospect of default. Defaulting on a student loan has the major cost of damage to a borrower's credit reputation, and thus her or his concomitant lack of eligibility for (or higher costs associated with) other prospective loans, such as for a home mortgage [Chapman (1997)].⁷ It follows that particularly risk-averse prospective students may prefer not to take the default risk of borrowing. Moreover, there is important empirical evidence to suggest that those borrowers experiencing the costs of default are disadvantaged in a lifetime context, and this is now considered.

Dynarski (1994) used the National Post-Secondary Student Aid Study to explore the characteristics of debtors and finds strong evidence that earnings after leaving formal education is a strong determinant of default; those in financial difficulties are found to be much more likely to be unable to meet their loan repayment requirements. Importantly, Dynarski found that borrowers from low-income households, and minorities, were more likely to default, as were those who did not complete their studies. Her evidence offers important support for the use of ICL instead of bank loans, since the latter could discourage the participation in higher education of the relatively disadvantaged, and has the potential to punish those students who eventually become disadvantaged.

Compared to bank loans, a major advantage of ICL is that they diminish the prospect of borrowers defaulting. A properly designed ICL has as its major characteristic complete default-protection for borrowers and thus the capacity to solve an important part of the essential capital market failure for human capital investments.

⁶ Harrison (1995) notes that in US Propriety Colleges the default rate is as high as 50 percent. The average default rate for student loans is around 15–30 percent [Wran Committee Report (1988)].

⁷ This prospect is made very clear in the poster designed to encourage loan repayments for students borrowing in the Canada Student Loan scheme. It is stated that a major reason for students to meet repayments is that in the event of nonpayment they will 'risk damage to their credit reputations'.

The second problem with bank loans as a solution to the capital market financing problem is also related to their time nature of repayments. It is that, faced with the prospect of repaying a loan with a fixed level of obligations, prospective borrowers might well be concerned with future hardships in the event that their income circumstances turn out to be poor. ICL solves this problem because repayment obligations are minimized or eliminated in periods of future financial adversity. That is, ICL can deliver the important benefit of consumption smoothing, a point explained further below in a theoretical context provided by both Grout (1983) and Quiggin (2003).⁸

A final possible advantage of ICL compared to bank loans is particularly pertinent to US higher education financing policy debate over the 1990s, and is not directly related to issues of risk and uncertainty. It is instead the concern that graduates with very high levels of bank debt will be forced to undertake employment associated with relatively high earnings in order to be able to repay comfortably their college debts. A concern that this would adversely affect the supply of graduates for low pay public interest employment encouraged the Clinton administration to introduce an ICL option in the US in 1993.⁹

In summary, it seems clear that government intervention is required for optimal and equitable outcomes with respect to higher education financing. A government guarantee to cover losses for banks in the event of default solves the financing problem for the lender, but there are important problems with this approach. The costs and benefits of the alternatives are as follows:

- (i) Restricting the availability of bank loans on the basis of means-testing on household income (which is the usual form taken with such assistance) has the potential to exclude some prospective students because of their lack of access to family resources.
- (ii) Unlike bank loans ICL repayments are defined by the borrower's capacity to repay and this feature has the potential to deliver two critical benefits to borrowers: insurance against default, and consumption smoothing.
- (iii) Of particular importance in the US is that commercial debt repayments unrelated to a capacity to pay have the strong prospect of influencing career choices in ways that might be seen to be socially undesirable.

However, it is important to recognize that there are different forms of income contingent financial instruments, and, even within genres, there are very distinct ways in which they can be made operational. The nature of these differences and their effects are now examined.

3.3. *The various types of income contingent instruments: costs and benefits*

It is important to understand that there are quite different forms of ICL, and that they have the potential for considerably different economic and social outcomes. Broadly,

⁸ Chapman (2006b) illustrates the extent to which an ICL can deliver consumption smoothing benefits and this is discussed further below.

⁹ The Clinton ICL policy initiative is analyzed in detail in Section 4.

the different forms are known as: income contingency with risk-pooling; income contingency with risk-sharing; graduate taxes; and human capital contracts. Within these broad categories there are myriad designs differentiated by parameters such as: the level of the charge; the percentage of income to be repaid; interest rates; forgiveness of the debt; and income thresholds. Even so, the broad categories are open to meaningful comparisons and analysis, and this now follows.

3.3.1. Income contingency with risk-pooling

An ICL with so-called 'risk-pooling' is one with a fixed total debt for members of cohorts involved, usually defined by students' year of enrollment. With this approach students are obligated to take some financial responsibility for debts that are not paid by others in their cohort.

Like all ICL, the risk-pooling variety offers default protection and consumption smoothing but repayment obligations are adjusted *ex post* to take into account the repayment experience of others in the borrowing cohort. This means that borrowers with high future incomes, the 'winners', will repay more than is repaid by those with low future incomes, the 'losers', and that the former pay more the less is repaid by members of the latter group.

Thus a risk-pooling ICL transfers some part of the default risks and costs to non-defaulters and thus has the potential to increase the repayment obligations of members of the latter group. This apparently is what happened with respect to the Yale Plan, considered in some detail below.

Nerlove (1975) analyzed risk-pooling ICLs with particular reference to the Yale Plan, and explored the behavioral consequences of such schemes with particular reference to two major micro-economic issues: adverse selection and moral hazard.

With respect to adverse selection Nerlove suggested that risk-pooling ICL are designed to be revenue-neutral; this means that individuals expecting to be winners (future high-income earners) have incentives to avoid being involved, and those potential borrowers with expectations of poor future prospects have an incentive to take such loans, because their repayments will be subsidized by the winners. This implies that the cohort of students willing to borrow from a risk-pooling ICL will on average be made up of individuals expecting their future earnings to be low; for a university such as Yale, hoping to attract the highest-quality students, the scheme has the perverse effect of encouraging those students who expect to be successful in the labor market to seek enrollment at universities offering non-ICL financial assistance.

The effects of risk-pooling ICLs have also been analyzed by Hanushek, Leung and Yilmaz (2004). They use a general equilibrium approach to examine the implications of different types of college aid, including risk-pooling ICL, on the efficiency of the economy, intergenerational mobility and income inequality. They find that, compared to both needs-based and merit-based aid, a risk-pooling ICL potentially can result in more equal distributions of income, but similarly to the conclusions of Nerlove, such schemes are likely to result in adverse selection. They raise the possibility that this form

of ICL might mean that: "...the smart poor end up subsidizing the other participants, including the lower ability rich kids" (p. 26).

The above conclusion from the Hanushek, Leung and Yilmaz (2004) analysis leads the authors to promote an ability cut-off for ICL eligibility. This idea relies on the assumption that prospective students with relatively low measured ability at the point of entry have higher chances of relatively low lifetime incomes, but no evidence is offered for this proposition. An alternative policy response to the problem of adverse selection would be to make ICL borrowing mandatory, which is obviously not possible if loans of this type are available only in some universities.¹⁰

The second problem for risk-pooling ICL, also identified by Nerlove, involves moral hazard, and relates to repayment behavior. The issue is that since risk-pooling ICL in effect taxes the successful on the basis of declared income, the incentive is for debtors to arrange their incomes, or make job choices, to minimize repayment obligations. This could take the form of graduates choosing jobs with nonincome benefits.

The implication of this form of moral hazard behavior is that, if successful, it has the effect of requiring those debtors who have done relatively poorly in the labor market paying more than would have been expected on the level of incomes they earn. That is, there is a built-in incentive for risk-pooling ICLs not to achieve the promised levels of protection for unsuccessful debtors.

In relation to these conceptual points Raymond and Sesnowitz (1976) explores the extent to which repayment obligations from those involved in risk-pooling ICLs might be considered burdensome. Through a series of simulation exercises they found that under most sensible parameters of potential repayment, ICLs of these types would still leave most borrowers better off in terms of the effect of the repayments on rates of return to higher education.

However, even if graduates are 'better off' than not undertaking higher education in terms of retaining average high rates of return, the moral hazard point with respect to the labor/leisure choice remains. Responding to Nerlove's lament concerning the paucity of empirical evidence on the potential size of the behavioral effects from risk-pooling ICLs, Feldman (1976) conducted a series of simulations of the effects of ICL financing arrangements with respect to different medical specialty incomes. Under a range of plausible assumptions concerning labor supply, his major finding is that there would be a 6.6 percent fall in weeks worked, equivalent to an effective overall loss of about 725 new physicians in the US per year (in the mid-1970s).

The issues of adverse selection and moral hazard raised by Nerlove constitute serious challenges for those advocating risk-pooling ICLs as a solution to capital market failure and as an answer to the problems associated with government guaranteed bank loans. This seems to be particularly likely with respect to the ex post implications of risk-pooling ICL. Once graduates begin to earn relatively high incomes it should be expected

¹⁰ Interestingly, risk-sharing ICLs successfully operating in some countries, and considered conceptually in the next section, are able to avoid the adverse selection essentially because they are mandatory.

that there would be some behavioral responses to what are effectively high levels of marginal tax rates.

There is an additional issue concerning the efficacy of risk-pooling ICLs not raised by Nerlove or more generally in the academic literature. It concerns transaction costs concerning how the debt is to be repaid.

As noted above, a critical aspect of ICL schemes is that of collection. Barr (2001), Palacios (2004) and Chapman (2006b), point out that there are several important conditions that have to be met in order for an ICL to be workable. While this is considered in detail below, basic points are that the collection agency has to have the capacity to accurately assess a former student's lifetime income, and to be then able to deduct debts in accordance with these incomes in a low cost way. This suggests that private institutions – such as Yale University – are likely to face major difficulties, and these may be significant enough to render nongovernment schemes unworkable.

That is, in principle, while an ICL with risk-pooling could be operated within or outside the public sector, the public sector has the distinct advantage of administrative efficient collection of debt using the internal revenue service (or tax office). This is likely to be critical for the operation of such schemes, since the probability of default of a risk-pooled ICL will determine in part how much winners compensate losers and thus reflects the extent of unequal distributions of repayments between different borrowers. Collection of ICL, and more generally ICL design, is an important matter considered further below.

3.3.2. *Income contingency with risk-sharing*

A different form of ICL, and one typically associated with public sector financing,¹¹ is known as 'risk-sharing'. With risk-sharing ICLs borrowers are obligated to repay a maximum amount in present value terms but the extent of the obligation is unrelated to the actual incomes received, and thus the repayment levels, of others contemporaneously involved in the scheme. That is, the risks of nonrepayment – the costs of income contingency – can be shared with taxpayers; consequently they will necessarily differ between loan cohorts, defined at different points in time, because of time dependent labor market exigencies.

This is a critical difference to risk-pooling ICL, particularly with respect to the implications for both adverse selection and moral hazard. That is, it is less likely for a risk-sharing ICL to repel relatively more students expecting to do very well in the labor market, and less important for those eventually repaying to attempt to avoid the obligation if the number in the cohort 'defaulting' turns out to be higher than expected.

To understand how a risk-sharing ICL might work, and in so doing clarify some of the behavioral implications of these approaches (particularly why adverse selection and

¹¹ There is no reason that risk-sharing ICL could not be provided by the private sector, however, an issue explored below with respect to human capital contracts.

moral hazard are likely to be less important problems), consider the following hypothetical example, of how a scheme might work. All the discussion is in present value terms.

The government puts a marginal value on the externalities of x , and for reasons of economic efficiency (see Section 2 above) sets tuition for a public sector university at t , where $t = MC - x$ (with MC being the marginal cost of the course). Let us assume that the government knows that with respect to all students undertaking an ICL, some proportion, d , of total loan outlays, has not been repaid in the past. So, in order to cover this exigency, on average the government requires a student undertaking a tuition ICL to commit ex ante to repaying $(1 + d)t$. Ex post, if the parameters have been set accurately, the government receives in total the full tuition payment t .

With this arrangement some former students (the successful ones) will pay more than t , and some former students (the unsuccessful ones) will obviously pay less than this (including a small number who repay nothing).¹² If the parameters have been set incorrectly, and total repayments lost through default turn out to be higher than dt , taxpayers cover this additional cost. This is the sense in which taxpayers are 'sharing' the risk and, in this circumstance, taxpayers in aggregate will lose. If the parameters have been set incorrectly in the other direction, and repayments lost through default turn out to be lower than dt , taxpayers receive this windfall. In this circumstance taxpayers in aggregate will win.

The critical point is that, unlike with respect to a risk-pooling ICL, with risk-sharing ICL there are no down side risks for any of the borrowers. That is, if the government receives lower than expected repayments there are no associated penalties for borrowers.¹³ Nor are there any rewards to borrowers if the opposite turns out to be the case.

The advantage of this type of ICL is that some part of the adverse selection and moral hazard associated with risk-pooling ICL can be avoided. However, even with risk-sharing ICL there is an element of adverse selection, since some prospective borrowers, those who expect with confidence to be high earners, may prefer to undertake different financing strategies to avoid paying the additional impost, dt . Because of this it is in the interest of the policymaker to have in place mechanisms and collection parameters resulting in a small d . The importance of adverse selection issue can also be minimized through the mandatory ICL collection of tuition, such as happens in Australia.

The examples of risk-shared ICLs best known are those initiated in Australia in 1989, New Zealand (1991) and the UK in 1997 (extended in 2006). But even within this category, it is clear that the forms of ICLs in these countries differ in important dimensions and thus with respect to their likely economic and educational consequences. With this important caveat in mind, there are still significant broadly based theoretical insights available with respect to risk-sharing ICLs.

¹² Note that the arrangement can still be attractive to all potential students because ICL offer default-protection and consumption-smoothing.

¹³ The point is made in different terms by Johnstone (1972).

Conceptual issues are important to this discussion. As background, it is useful to understand that before the 1990s research on the return to education or human capital investments had proceeded in two directions. Labor economists were building increasingly sophisticated models based on expected utility maximization [e.g., [Levhari and Weiss \(1974\)](#), [Eaton and Rosen \(1980\)](#), and [Paroush \(1976\)](#)]. Most researchers, however, continued to use rates of return calculations [e.g., [Psacharopoulos \(1973, 1985\)](#)] with scant attention being paid to the private and social risks associated with the investment.

[Chia \(1990\)](#) attempted to combine these two strands of research by developing a simple framework whereby the risks associated with investment in higher education can be readily incorporated into conventional measures of profitability, such as the net present value. Coming at the issue of rates of return in this way allowed Chia to develop a framework robust enough to calculate the benefits to the borrower of risk-sharing ICLs, now explained.

The essence of Chia's work was to use an expected utility framework to estimate an uncertainty premium, which was then used to adjust the net present value resulting from investment in higher education. This allowed him to quantify the 'insurance content' of an ex post income-contingent fee scheme (of the risk-sharing variety) and to compare this calculation with the payment of fees with no insurance for both given levels of uncertainty and with respect to a range of risk aversion.

Chia found that if individuals are uncertain of their ability (and thus face greater uncertainty in potential income streams as a result) they would prefer an income-contingent fee scheme to paying up-front fees. The 'insurance content' of the income-contingent scheme could, in some instances, amount to more than the equivalent of a year's fees. On the other hand, if individuals are fully aware of their abilities, then those with high abilities would prefer to pay their fees up-front while the less able would opt for the income-contingent scheme. It should be recognized that there are, of course, forms of uncertainty unrelated to an individual's ability, such as the future state of the labor market, meaning that even those fully aware of their individual capacities will not be able to predict their lifetime incomes.

[Grout \(1983\)](#) presented a version of the [Arrow \(1973a, 1973b\)](#) discrimination model with imperfect information and showed that "... an element of income contingency will offset to some extent the misallocation of educational resources resulting from imperfect expectations". Similar to Chia's result concerning ability, he showed that the benefits of risk-sharing ICLs are greater the less certain individuals are of their future incomes and the greater is risk aversion. From Grout's simulation exercises ICLs seem to have the most propitious leverage in terms of the reduction of the costs of uncertainty. That is, the effects of ICLs on welfare even given a significant range of risk aversion are relatively small compared to their benefits in terms of minimizing the effects of uncertainty.

[Quiggin \(2003\)](#) extends these results, showing that educational financing schemes with income-contingent repayments provide a mixture of consumption-smoothing ben-

efits and insurance against the uncertain outcomes of risky educational investments. Using a conventional two period modeling approach with risk aversion and imperfect information, Quiggin establishes that educational financing schemes with income-contingent repayment will enhance welfare relative to the alternative of up-front fees yielding the same revenue in present value terms.

Quiggin also demonstrates that the form of ICL with the best welfare properties has a threshold below which no repayments are required, since the threshold delivers the highest level of consumption smoothing. However, there is a critical trade-off with respect to the design of an ICL, at least with respect to risk-neutral individuals: there is an insurance effect, which is welfare improving, and there is a subsidy effect, which is welfare reducing. This promotes for policy consideration the critical role played by the choice of collection parameters: if they are insufficiently generous there will be inadequate insurance provision; but if they offer considerable protection the associated subsidies will be too high. This is a critical trade-off for the design of such schemes.

Moen (1998) analyzes variants of risk-sharing ICLs using an equilibrium search model of the Diamond–Mortensen–Pissarides variety. His analysis begins with the familiar point that human capital investments are irreversible, and he shows that given this irreversibility, investments will be less than optimal unless ex post those investing are able to share the costs of job search.

He illustrates that this is possible with an ICL in which the interest rate on the debt is zero in periods of unemployment. In this model the costs of job search are shared and the essential financing problem is addressed. The question of whether or not this is a large or small issue for policy should be addressed by noting that graduates in fact spend very little time over their lifetimes in unemployment, even though they may be involved in extensive periods of search for preferred employment. It is arguable that the Moen result could be generalized to other periods of graduate job search characterized by the receipt of relatively low wages.

The overall conclusion from these somewhat different modeling approaches is the same: an ICL risk-sharing system is in general welfare increasing compared to either bank loans or up-front fees. The greater are both risk-aversion and uncertainty, the stronger are these results. Moreover, these analyses focus on economic efficiency with the conclusions implicitly giving no weight to the potential for ICLs of this type to contribute propitiously in equity terms. This suggests that the relatively high welfare properties of risk-sharing ICLs implied understate the overall social benefits of these types of approaches to higher education financing.

There is a caveat to the general thrust of the analytical results. This is that the greater is the insurance protection offered (through, for example, having a very high first income-threshold of repayment, or a very low nominal rate of interest on the debt), the less likely is an ICL to achieve a social optimum. This is the result of risk-sharing arrangements offering relatively higher taxpayer subsidies as a trade-off to the provision of default-protection for borrowers.

3.3.3. Graduate taxes

A very different form of an income contingent instrument, and one that has yet to be implemented, is known as a graduate tax. A GT takes the following broad form.

Graduates (or former students, more generally) agree to repay a proportion of their incomes, say 2 percent per year, for a given length of time (which could be as long as a lifetime). Thus they share the essential ingredients of both risk-pooling and risk-sharing ICLs, which is that 'loan' payments are made in such a way as to ensure default-protection. They can be designed to raise considerable revenue, even at the same time as their influence on returns to higher education are not affected significantly, a point made by [Lincoln and Walker \(1995\)](#) through some plausible simulations.

However, there are significant differences between GTs and ICLs. The most obvious is that the former are in no sense based on cost-recovery. This can lead to the so-called 'Mick Jagger' problem, as explained in [Barr \(2001\)](#). The lead singer of the Rolling Stones rock band studied for a short time at the London School of Economics. If a GT was applied to his income for life (and if it could be collected), Mr Jagger's payments would massively exceed the direct costs of his higher education, even by several hundred fold. The example is very extreme, but serves to illustrate that the revenue collected can be seen to be excessive in many cases, and also unrelated to the benefits accruing from higher education.

A second and related difference is that for very high earners the fact that the GT is on-going, that is, an addition to income tax, suggests that there are much higher work disincentives from this form of payment than there would be for a risk-sharing ICL [[Barr \(2001\)](#)]. This is a variant of the moral hazard problem associated with risk-pooling ICLs raised by [Nerlove \(1975\)](#) and given empirical content by [Feldman \(1976\)](#).

Third, the revenue from GTs will not reflect marginal cost pricing rules, and nor do the resources received have the any allocative implications – instead they are essentially a device designed to raise money from the direct beneficiaries of higher education. The incapacity of GTs to influence economic efficiency is highlighted in both [Barr \(2001\)](#) and [Greenaway and Haynes \(2003\)](#) as a major reason to prefer different forms of income contingent instruments, such as a risk-sharing ICL.

The major possible benefit of a GT is that the arrangement has the potential to deliver considerable resources to the public sector, much more than is the case with respect to ICLs. As well, and associated with this, if collected efficiently and fairly, GTs will generally provide the highest level of progressivity in a lifetime sense since graduates with the highest incomes will pay more than they would under alternative financing arrangements. On the other hand, the fact that GT payments will exceed public sector outlays for many graduates suggests that they are unlikely to have propitious resource allocation implications.

A final point concerning the efficacy of a GT is also related to the pricing rules, and has a critical administration challenge as well. That is, should there be any attempt to have repayments reflect the time and other higher education resources absorbed by the student? While this is a general issue for courses of markedly different length, the point

applies also to the issue of whether or not identical repayment rates should apply for students enrolling in one course only, or not graduating, compared to those completing a degree (or several degrees). In one sense this is a similar issue to that raised above concerning marginal cost pricing.

3.3.4. *Human capital contracts*

There has been recent interest in whether private firms could be involved in financial arrangements in which payments are tied to the borrower's income. Proponents of these arrangements question the notion that it should only be the public sector, and not the private sector, sharing in the risk involved with ICL schemes. That is, some analysts argue that there are circumstances in which governments could let the investment and risk-taking of investments in education be placed solely in private hands. Moreover, private involvement could take place with or without a framework of national higher education financing assistance.

The most common incarnation of the above idea is a contract that specifies a percentage of income to be paid over a predetermined time period. With such an arrangement the instrument takes a form similar to a GT (with the additional twist that the percentage is determined by the amount paid in the 'borrowing' period). This way, a high earner would pay more than was borrowed and a low earner would pay less. From the investor's perspective, the loan resembles a significant investment in the borrower's earning power. In the spirit of recognizing the nature of the lender's investment, arrangements of this type have been called human capital contracts (HCC) by those interested in private investments in education.

Palacios (2004) argues that these instruments would promote efficiency in the higher education market by increasing the information available about future earnings with respect to different universities and fields of study. The contracts would therefore reflect market expectations of students' future earnings, thereby creating an observable 'market value' for different types of education or different cohorts of individuals. He adds that this information would also create a market instrument for measuring the value of the insurance implicit in ICLs, thereby introducing a market measure of the extra d that governments should ask students to pay to compensate the repayment losses on an ICL.

Recognizing the possibility that using loans whose payments are tied to income may mitigate income risk, there have been a few attempts to understand the personal financial impacts from the borrower's perspective. Rather than using aggregate data to infer the needs of borrowers, these studies have applied financial decision theory to the market for loans.

Carver (2004) creates a model of individual choice for loans to explore preferences among different loan alternatives. In the model utility maximizing borrowers with uncertain income prospects consider the effect of both standard debt and percentage of income loans (HCC) on the probability distribution of the NPV of future income. The borrower receives funding from a risk neutral lender who offers prices for debt and HCC funding. The model shows that according to Pareto criteria, optimal contracts can

consist of: (i) all standard debt; (ii) all HCC funding; or (iii) some combination of debt and HCC.

The type of contract that is optimal depends on the lender's beliefs about the borrower's income prospects, the borrower's beliefs about his own income prospects and also the borrower's degree of risk aversion. Carver then goes on to suggest that the individual borrowing decision can be made in a manner similar to the corporate borrowing decision. The results indicate that borrowers who are more uncertain about future income or who are risk averse about future income prospects will choose to raise money by pledging percentages of income rather than taking on standard debt. Carver's model can be adapted to arrive at the same conclusions for HCCs as Chia reaches with respect to risk-sharing ICLs.

HCC are now in operation, with the first business formed known as MyRichUncle, founded by Vishal Garg and Raza Khan, in the US in 2002. MyRichUncle began with a subset of engineering students at the University of California, San Diego. To minimize problems of adverse selection, eligibility for the contract is determined in part through academic merit. Repayments of the obligation are remitted directly to the company, with amounts validated through the provision of income information made available to the IRS. This is bound to be less efficient than would be a direct deduction, as operates in Australia, New Zealand and other countries, but the principle of default protection remains intact.

3.4. *Summary*

Market failure in the provision of resources for human capital investments is a critical issue for higher education financing policy. Given the presence of credit constraints associated with a lack of collateral to underwrite human capital investment borrowing, there is a case for government intervention. One typical way in which this issue is addressed takes the form of guarantees for bank loans.

However, there are important shortcomings with this approach. One, loans will not be universally available, suggesting that some students with unwilling families will not be able to borrow, and will thus face the inequities and difficulties associated with the payment of up-front tuition. Two, the costs for the public sector can be high, due to student default. Three, some risk averse potential students will not be prepared to undertake loans with repayment burdens which are insensitive to a student's future capacity to pay. And four, there might well be socially unproductive career choices made by graduates facing very high loan repayments that are not sensitive to capacity to pay. These shortcomings imply strongly that some other approach to the capital market problem is required.

Income contingent loans offer a potential solution. An ICL requires a student to repay a debt depending on the level of their future incomes. Their essential benefit is that, if properly designed, they can eliminate the prospect of default and in so doing address the basic capital market failure.

It has been explained that here are several forms of income contingent financing instruments: risk-pooling, risk-sharing, graduate taxes and human capital contracts. The discussion has illustrated major differences between, and complexities within, all genres.

ICL with risk-pooling are characterized by adverse selection in terms of who chooses to be involved in such schemes, and moral hazard with respect to the labor/leisure choice once the repayment period begins. ICLs with risk-sharing can avoid these problems, but are associated with trade-offs between offering insurance against risk for the student: the greater is the insurance provided, the higher necessarily is the degree of public sector subsidy.

GTs have little prospect of allocative efficiency because there are no economic benefits delivered to institutions from price competition. However, GTs offer what is arguably the most progressive basis of the collection of charges. GTs do not yet exist.

A recent innovative instrument involving only the private sector is known as human capital contracts. These arrangements are between students and a financing company, in which the former is given a sum of money for tuition and living expenses in return for a contractual obligation to pay the lender a percentage of income for a pre-determined period after graduation. HCC thus involve risk-sharing – with the risk burden being assumed by the lender – and are more a form of equity than they are debt. There are now several examples of operating HCC, and a burgeoning research literature [see particularly Palacios (2004) and Carver (2004)].

4. Income contingent loans: International applications

4.1. Background

A typical chapter in the Handbook of Economics series takes the form of offering a description, synthesis and critical analysis of a well-defined body of academic research. While this has been possible with respect to higher education financing theory and the role of income contingent loans, there is a relative paucity of research into the effects of these types of financing policies.

In part this is traceable to the fact that national governments' experience with ICL is both recent and limited, even though it is clear that policy models of this type are increasingly becoming a favored way for higher education financing policy. It is also due in part to the fact that there is often only poor data available, for example with respect to the access of the disadvantaged to higher education.

As well as the relative paucity of both evidence and analysis concerning ICL, there are also research limitations with respect to the effects of particular variants of ICLs. For example, there is only one well-reported example of a risk-pooling ICL, which is the Yale Plan. As well, a graduate tax has not been instituted anywhere at this stage.

Finally, for only one country, Australia, is there a substantial body of research on the operation and effects of the most common ICL, the risk-sharing form.¹⁴

An implication is that the discussion following is uneven in terms of the coverage of recent experience with ICLs. However, significant space is given in Section 6 to the reporting and analysis of Australia's risk-sharing ICL. It is the only example in which there has been considerable research with respect to the many empirical and administrative policy issues raised concerning ICL schemes.

4.2. The international experience with ICLs in brief

4.2.1. The Yale Plan

Yale University introduced an ICL in 1972, extended in 1976 but discontinued several years later. Apart from loans being repaid depending on income, the scheme had the feature of borrowing being of a 'group loans' form, in which there was mutual responsibility between members with respect to the repayment of the total debt. That is, the Yale scheme was a risk-pooling ICL.

Individual repayments were not unlimited, however, with a cap being defined at 150 percent of the borrower's loan. This then became a 'buy-out' option for former students wishing to discontinue in the program [Palacios (2004)]. Even so, risk-pooling necessarily meant that high-income earners covered the unpaid debts of low-income earners and those who defaulted for other reasons.

Initial default rates of 15 percent exceeded expectations, and this had an unfortunate behavioral implication. This was to encourage those remaining in the scheme to avoid repayments as well, increasing the burden further for those not so doing. These effects are close to what would be expected with the moral hazard issue raised by Nerlove (1975).

One of the major problems with the Yale scheme was that the university acted as the collection agency. However, an educational institution is poorly equipped to efficiently enforce the payment of income contingent loans, and this lack of expertise effectively encouraged and reinforced the sense of inequity of those Yale debtors remaining in the scheme. The critical role of administration and collection is taken up further below.

4.2.2. Sweden

In Sweden in 1988 the government's student assistance scheme had both a grant and a loans component [Morris (1989)]. The repayment arrangements were of the conventional type except that at low levels of income former students were allowed to defer repayments. There was evidence of student concerns about repayments at the time [Morris (1989)].

¹⁴ The New Zealand experience is becoming more studied, but is still relatively unknown with respect to questions of access.

The scheme was changed in 1989 to allow a fuller embrace of the notion of income contingent repayment. The arrangement is that former students now repay 4 percent of their average incomes over the previous two years. The collection is done through an education loans office. There is little available evidence of the effect of the scheme.

4.2.3. *Australia (in summary)*

In 1989 Australia instituted the world's first broadly based income contingent charging system for higher education, known as the Higher Education Contribution Scheme. HECS seeks to recover a part of tuition costs, and is not concerned with student income support.¹⁵ It is a risk-sharing ICL and is analyzed in detail in Section 6.

4.2.4. *New Zealand*

The second country to adopt a broadly based ICL was New Zealand, with this happening in 1991. The New Zealand system shares several features of HECS. Specifically:

- loan repayments depend on an individual's income, and are collected through the tax system which made this simple in operational terms; and
- there is a first income threshold of repayment, after which there is a progressive percentage rate of collection.

The New Zealand arrangements differ importantly to those introduced in Australia. In particular:

- the loans are designed to cover both university fees and some living expenses, although there is also a system of means-tested grants for students from poor backgrounds;
- initially the loans carried a market rate of interest, but now interest charges are subsidized and depend on the financial circumstances of debtors; and
- universities were originally free to set their own fees, with a maximum level being introduced in 2003.

There have been more changes to the New Zealand loan arrangements than has occurred with HECS, and most of this has been with respect to the interest rate regimes. While starting with an approximate real rate reflecting market conditions, in 2000 the scheme was changed to incorporate a zero nominal interest rate for the period a student is enrolled, and variations to the application of real rates of interest were determined by graduates' employment circumstances [Warner (1999)].

The administrative sophistication associated with the now complex interest rate regime might have been expected to add to the costs of the scheme, but it still appears to be the case that collection costs are low;¹⁶ LaRocque (2005) reports that in 2004 the annual costs of collection were around (NZ) \$23 million per year, which is even lower than estimates for the collection of HECS.

¹⁵ In Australia income support takes the form of means-tested grants.

¹⁶ LaRocque (2005).

A potential advantage of the New Zealand scheme is that universities receive the tuition revenues directly. This implies that in New Zealand there is the prospect of resource allocation effects within the higher education system. For this reason some commentators, for example [Barr \(2001\)](#), have compared the New Zealand approach favorably with the pre-2005 Australian arrangements, in which ICL revenues accrued to the Treasury with no implications for resource allocation. In the 2005 the Australian system was changed along New Zealand lines in this regard.

There is little direct evidence of the effects of the New Zealand ICL on the access of disadvantaged prospective students. However, both [Maani and Warner \(2000\)](#) and [LaRocque \(2005\)](#) report data on changes in participation with respect to ethnicity at the University of Auckland over the 1990s. The former suggest that there has been a marked relative decrease in Maori enrollments, but the latter points nevertheless to a substantial increase in the proportions of Maoris enrolling over the post-ICL reform period.

4.2.5. *The Republic of South Africa*

The Republic of South African introduced an ICL in 1991, known as the National Student Financial Aid Scheme. NSFAS was motivated essentially by a concern that without assistance the marked racial skewing of the higher education system away from nonwhite students would remain [[Jackson \(2002\)](#), [Ishengoma \(2002\)](#)]. While bursaries could have been used instead of ICL, it was considered that the costs involved "... would not be financially sustainable" [[Jackson \(2002\)](#), p. 83]. The scheme initially provided resources to about 7,500 students, but by 2002 this number had risen to over 100,000, or more than 20 percent of South Africa's higher education students.

Resources are distributed via the universities, with preference going to prospective students who are both poor and academically able. That is, unlike other national schemes, the South African ICL involves means testing on the basis of family income at the point of entry to higher education.

Collection takes the form of former students repaying directly to NSFAS when their income reaches R26,000 per annum, at a rate of 3 percent of income, and this proportion rises to reach a maximum of 8 percent of income per year when income exceeds R59,000. In this sense the collection parameters are similar to HECS in that they are progressive, but there are two major differences between the South African approach and those used in both Australia and New Zealand.

The first concerns the first income level of repayment, which at about \$US5,000 is very much lower than the thresholds used in other countries' ICLs.¹⁷ Second, in the first instance the student repays directly to the lending institution. That is, the taxation system is not the first port of call, but is instead a last resort. Employers are required to be involved only when a student is apparently not maintaining expected debt repayments. It is unclear how much this adds to administrative costs, but it would seem to suggest that

¹⁷ See [Jackson \(2002\)](#).

collection would necessarily be relatively expensive with such an approach.¹⁸ NSFAS loan repayments are ploughed back into the system, so to some extent the arrangements are self-financing.

4.2.6. *The UK*

Higher education financing policy over the last 15 years or so in the UK has been characterized by considerable instability. Until very recently there were no tuition charges, but such charges were introduced in 1997 with the adoption of (a highly modified) version of HECS.

As well, there have been notable changes over time in the value and institutional nature of student income support. In the 1980s grants were offered on the basis of parental income, but the real value of this support eroded significantly and Barr argues that “by the late 1980s [it] was no longer adequate fully to support a student’s living costs”.¹⁹

In 1990 a loan scheme was introduced, but collection was not based on a former student’s income. The loans were designed to replace half of the support previously covered by the grant, but in effect their impact was likely to be smaller than this given that they attracted a zero rate of interest. Barr (2001) notes critically that “It would have been cheaper to give the money away”.²⁰

In 1995 the Conservative Government set up a higher education funding committee, due to report after the election of 1997. Chaired by Sir Ron Dearing, the report²¹ recommended strongly the adoption of a scheme based on HECS. It had the following features:

- a uniform charge of about 25 percent of average course costs;
- the charge to take the form of a debt, with loan recovery to be contingent on income and collected through the tax system;
- the debt to be adjusted over time, but by less than the market rate of interest; and
- revenue from the scheme to flow to the Internal Revenue Service.

The Labour Government, elected in 1997, adopted a heavily modified version of the Dearing Committee’s recommendation. In particular an income test was introduced, and this takes the following form: students from poor backgrounds are excused from paying any tuition, while students from rich families incur the entire debt. In between the debt obligation is determined by means of a sliding scale.²² This decision seemed to reflect a concern by the government that relatively disadvantaged students would be

¹⁸ Jackson (2002) argues that the annual administrative costs are less than 2 percent of the total value of loans distributed. The more important figure however would be costs as a proportion of revenues collected, data not reported.

¹⁹ Barr (2001), p. 202.

²⁰ Barr (2001), p. 202.

²¹ Dearing (1997).

²² Barr (2001).

more likely than others to find an ICL a deterrent to higher education participation, a view at variance with the evidence from the HECS experience documented in Section 6. The important point for ensuing policy development, however, is that the 1997 changes introduced ICL to the UK.

In 2006, the UK Government is implementing further reforms to higher education financing. The major changes are:

- the introduction of price discretion for universities, but with a cap of 3,000 pounds per full-time student year; and
- the introduction of tuition for all students, but with the poorest being provided with subsidies.

An arguable advantage of the 2006 UK system over that of Australia and more consistent with the New Zealand approach is the introduction of some price discretion; universities are able to charge what they want up to a maximum level of about (US)\$5,000 per full-time course, with the resources going directly to the universities. However, it appears that practically all universities have opted for the maximum charge, implying no real consequences for allocative efficiency.

As with the Australian and New Zealand schemes, the UK ICL policy is likely to be relatively inexpensive to administer: that is, income tax collection arrangements greatly facilitate an ICL's operation.

The last is a major conclusion from the adoption of such arrangements in countries with efficient, comprehensive and settled income tax collection mechanisms. As explained in Section 5, this is far from the case with respect to developing countries, where public administrative challenges related to the collection of ICL loom large.

4.2.7. *The US*

In 1993 the Clinton Administration introduced broadly based reforms to student loan programs [Brody (1994), Schrag (2001)]. One noteworthy aspect of the reforms adopted at this time included an option for students to adopt income contingent repayments for some part of their loan obligations, with the ICL obligation being up to 20 percent of an agreed income basis. Given the focus of earlier discussion concerning the advantages of ICL over other loan mechanisms, it is of interest to explain the motivation for the introduction of the US approach. In short, the justification for an ICL option in the US reform can be traced not to risk or uncertainty with respect to the future graduate incomes.

Instead the background to the introduction of an ICL option in the US seems to be the Clinton administration's concern for the job choice of graduates. Specifically the perceived problem was that the very high loan repayment burdens of graduates were such as to make job choices in relatively low paid, but presumably socially productive employment, close to impossible. Brody argues that this was the foundation of the proposal, and quotes President Clinton (who participated in the Yale Plan):

A student torn between pursuing a career in teaching or corporate law, for example, will be able to make a career choice based on what he or she wants to do, not how much he or she can earn to pay off the college debt.²³

This perspective is supported by Schrag (2001), who reports Kramer (1987) suggesting that the effect of escalating costs and debts for law schools is that they would

... be filled with many more students who, as they become lawyers, do so with the single-minded objective of milking the profession for all it is worth in order to be able to pay retrospectively for their legal education.²⁴

Schrag suggests that law graduates in public sector jobs would typically face repayments of conventional loans that were around 40 percent of after-tax earnings.²⁵

In support of the above, a survey²⁶ of Georgetown and Catholic University law students, conducted by Schrag (2001), suggested that up to 70 percent of students who responded that they were interested in public sector law employment said that they would have to choose jobs in more highly paid private practice because of their loan obligations. US Senate hearings at the time, consistent with President Clinton's view, documented that this was the major motivation for the income contingent loan scheme [Schrag (2001)].

That is, ICL was promoted in the US as a result of the perceived problems associated with the very high level of conventional loan repayments, which is certainly not the case with respect to the background to ICL introduction in Australia, New Zealand and the UK. In these countries, the regressivity of having a no-charge system, the importance of default protection in the repayment of loans, and the need for resources to allow expansion of higher education were the principal motivations for the introduction of ICL schemes.

The ICL reforms introduced in the US have not worked. With respect to take-up, for example, in 1999 only 7 percent of the eligible student population had chosen to convert their loan obligations to the ICL option [Schrag (2001)]. The reasons for this are now explored.

The basis for low take-up of ICL in the US seems to have two, arguably closely related, explanations. In broad terms these are: the poor design characteristics of the scheme; and the government's ineptitude in explaining and publicizing accurately the scheme's implications for student debt and repayment obligations. It is possible that both weaknesses reflect a lack of ICL policy experience on the part of those with US policy influence.

²³ President William J. Clinton, Radio Address to the Nation (1 May 1993).

²⁴ Kramer (1987), pp. 240–241.

²⁵ This is very much higher than the repayment proportions of taxable income required in the ICL schemes of Australia and New Zealand, for example, of around 3–6 percent of taxable incomes.

²⁶ It should be noted that the response rate of the survey of around 30 percent was very low, raising the possibility that the data are an inaccurate reflection of general views concerning the scheme.

With respect to design, the US ICL scheme has several anomalies. The first is that the option for students to convert their loans into an ICL did not cover borrowing obligations that could be sourced to their college. This meant that a graduate with other loan repayments would have to repay 20 percent of their income at the same time that they faced high additional loan obligations. That is, for some students choosing the part-ICL option would result in lower future disposable incomes than would have been the case with alternative borrowing choices.

Second, the ICL scheme incorporated an adjustment of a debtor's income to take into account expenditure for necessities, and this was related to legislative assessments of poverty levels. Unfortunately, the adjustment to incomes was insensitive to household composition, the implication being that married debtors in some circumstances faced a far higher burden than would be the case for the unmarried. That is, the scheme implicitly taxed marriage and thus was likely to place particular loan obligations on spouses who have no responsibility for the debt.

Third, the scheme had an unusual arrangement with respect to what is known as 'forgiveness'. That is, debtors who had not repaid their loans after 25 years were not obliged to repay their remaining obligations, a feature of other loan systems (such as Canada Student Loans), known as forgiveness. However, for the US scheme the slate is not wiped clean, with the amount still owed after 25 years being treated as income to be taxed accordingly. This could mean for some ICL debtors that they would face loan repayments in the final year that were a very high proportion of (or in an extreme, even exceeding) actual income. This suggests that the US ICL scheme was not a repayment arrangement completely sensitive to future capacity to repay.

The other reasons behind the poor take-up of the US ICL scheme are related to government information processes. Two points are worth noting.

The first is that, according to the Schrag survey, only a small proportion of students who might have converted into ICL were informed of its existence, with more than two-thirds of respondents saying that they had never heard of it. Further, in a related survey only 14 percent of student Financial Aid Advisers said that they 'Understood the (income contingent loan) option well'.²⁷

Second, while the US government disseminated information about the relative merits of different loan options for students, some of the data were misleading. For example, comparisons of the expected total repayments of alternative loan repayment streams were presented with an implicit discount rate of zero. This error implied that the ICL option was much more expensive than it was and, because the ICL repayment process would usually take more time than other options, it also suggested that it would cost more in total. As well, relative loan repayment comparisons of amounts to be repaid only give no weight to the value of the default protection inherent in ICL, which is arguably a very important feature of an ICL.

In short, it should be no surprise that the US government ICL reforms have not been productive. The basic point from the experiment is that policy design and information

²⁷ Schrag (2001), p. 795.

processes are critical to the success of public sector initiatives. That is, the US scheme does not adequately address the issue of default protection, and has been inaccurately and insufficiently promoted to its potential users.

In the US over the last decade or so, there has also been a move by private universities toward a form of income contingent repayment of the debt of law students. These schemes are known as 'loan repayment assistance programs' (LRAP). The arrangement, now with 56 law schools [*American Bar Association (2003)*], entitles law graduates to some forgiveness of loan obligations who choose employment in '... lower-paying public service jobs – such as legal services programs or some government agencies ...'.²⁸ The motivation behind universities' subsidies of LRAP is clear, which is to facilitate the role for private colleges of enabling more lawyers than otherwise to undertake periods of relatively socially productive employment, the same basis as that which encouraged the Clinton reforms. The effects of these programs are not so far well documented.

4.2.8. Chile

In 1994 Chile introduced an income-contingent loan scheme to replace the previous fixed-payment loan system [*Leiva (2002)*]. The loan carries a real interest rate of 2 percent, and requires from the student annual payments of the lesser between 5 percent of income and a fixed amount [*Palacios (2004)*].

Importantly, each university is responsible for collecting the payments from the University Credit resulting in widely varied collection results from institution to institution, with average country-wide cost-recovery levels at around 60 percent, as reported in *Palacios (2004)*.²⁹ *Palacios* also notes that the system is not widely considered to be successful, for the following reasons: cost-recovery levels are low, and the amounts available for lending are far from satisfying student demand.

According to *Palacios*, Chile's example reinforces the notion that universities are poorly suited to debt collecting, a point which seems to follow from the Yale ICL experience. That is, for an ICL scheme to work it is critical that repayment collections use a national tax or social security agency. This issue is taken up in Section 5 following.

4.3. Common factors in the successful adoption of ICLs³⁰

It is interesting to examine some of the circumstances behind the apparent successful adoption of ICL in Australia, New Zealand, the Republic of South Africa and the UK. *Chapman and Greenaway (2006)* record there are several factors shared by these four countries which might help in an understanding of their adoption of ICL schemes

²⁸ *American Bar Association (2003)*, Appendix.

²⁹ This number reflects collection for other types of loans as well, so the collection amount for only the income-contingent ones could be different.

³⁰ The discussion of Section 4.3 follows closely *Chapman and Greenaway (2006)*.

within a similar time frame. Two critical aspects of this relate to shared institutional background.

The first is that the above four countries all have in place taxation systems that could be used to collect efficiently student charges on the basis of future incomes. This is a critical administrative issue, and is fundamental to the prospects of the adoption of ICLs in other countries. It is interesting that in the South African case authorities chose to use the tax system as a back-up rather than the port of first call for loan collection, but it still remains the case that the tax system is available for collection.

Second, in all four countries there is a similar higher education system, essentially inherited from the UK. An important characteristic is that the vast majority of universities are public sector institutions, which has meant that the recovery of a loan designed to pay a charge is uncomplicated if the collection authority is also part of the public sector (the internal revenue service or equivalent). Indeed in the Australian and UK cases the revenue from ICLs were centralized and accrued to the Treasury without reference to, and with no implications for, the direct financing of universities. This has meant that the more complicated problems associated with delivery of a direct revenue base to specific universities are avoided.³¹

It is also worth stressing that in all of these countries there was a clear recognition that the time for 'free' higher education was over (a position not shared for example in the US, since charges were the norm in that country). The expansion of the number of university places, or improvements in the quality of the service, were seen to be desirable, and none of the governments was prepared to finance the required outlays from additional taxation or reduced public services. Chapman and Greenaway argue that this can be traced to a world wide move toward more parsimonious government after about the mid-1980s and, perhaps more importantly, to the recognition that university education financed without direct contributions from the private beneficiaries is in essence regressive and inequitable.³²

It is possible that the apparent successful implementation of the Australian ICL helped motivate administrative change in these directions in some of the other countries. That is, New Zealand policy advisers were aware of developments in Australia, and there is little doubt that direct contact between analysts from Australia and the UK influenced the nature and form of debate in the latter country. Perhaps the policy point is, as Kenneth Boulding once observed: 'If it exists, then it is possible'.³³

While there have been significant reforms in the direction of the adoption of ICLs in the above countries, this has not so far been a shared experience in developing countries. This is the case even though there has been a significant amount of attention with respect to ICL reforms from the World Bank, the UK Department of International Development

³¹ As Chapman (1997), Barr (2001) and others note, this characteristic of ICLs has the important cost of not delivering any resource allocation benefits from price competition.

³² These arguments were part of the explicit policy debate in Australia [Chapman (1997)], New Zealand [Warner (1999)] and the UK [Barr (2001)].

³³ Kenneth Boulding, unpublished lecture, Harvard University, 1972 (as recalled by Glenn Withers).

and other international aid agencies. The following section examines the experience of these countries, and derives conclusions as to the relative lack of successful implementation of ICLs in developing countries.

4.4. Summary

There are several recent applications of the concept of ICL for higher education, and just about all of are of the risk-sharing form, meaning that the public sector bears the costs of uncertainty. There are no national risk-pooling loans, nor is there yet an example of a GT. HCC are just being implemented, but the numbers thus far are small.

There is not a great deal of information or analyses of income contingent financial instruments. This is due in part to the fact that ICL policy initiatives are still new, and also that the data requirements of important aspects of ICL schemes are significant. To address this paucity of information the Section 6 considers in detail the experience of an ICL in which there has already been considerable research and analysis, that of Australia.

Some lessons are already clear. One is that ICL of the risk-pooling variety seem destined to fail, and this can be traced to the adverse selection and moral hazard issues raised by Nerlove (1975) and others. As well, an essential lesson for public policy is that collection, design and information issues seem to be critical to the acceptance and success of loan schemes, a point emphasized in a different form in Section 5.

5. Application issues for income contingent loans in developing countries: The importance of institutional context and administration

5.1. Application issues for income contingent loans in developing countries: background

There have been many missions to developing countries exploring higher education financing reform, with a particular focus on the possibility of introducing ICLs. Specifically and among others, these have been to: Indonesia (1995 and 1998), Papua New Guinea (1996), Namibia (1996), Malaysia (1999), Ethiopia (2000), Rwanda (2001), the Philippines (2002 and 2003)³⁴ and Mexico (in 2003). A major problem seems to be that of implementation and administration.

This section explores the policy debate and intervention with respect to the developing countries noted above. An attempt is made to draw some lessons from what are obviously disparate experiences and different challenges; it does become clear, however, that there are broad points of commonality and shared problems to be addressed in the reform of higher education financing in developing countries. As a practical guide

³⁴ For a fuller description and analyses of these experiences, see Chapman (2006b).

concerning how to go about such reform in a generic sense, a primer is offered to provide a checklist for productive change in a hypothetical developing country, the essence of which is based on the case studies.

Chapman (2006b) argues that developing countries, with some notable exceptions, typically do not enjoy the soundly based, efficient and comprehensive income tax arrangements that characterize the policy environments of Australia, New Zealand and the UK, for example. Most often, alternative potential systems of collection – such as those associated with universal delivery of social security – are also not to be found. As well, many countries are beset by problems of corruption in public administration, and their informal economies are comparatively large. There is intense competition between various priorities for public finances and, due in part to weaknesses in the taxation system, there is little revenue to ensure propitious public administration.

Where government-subsidized student loan schemes, of any description, exist or have been tried, failures and extremely high default rates have induced scepticism about the potential for success of any future programs in this area. The legislative frameworks surrounding the financial sector are often weak, archaic and/or undeveloped, with the practical effect that there is little legal recourse where borrowers default on loans. Furthermore, in some countries a culture has developed among students and former students that relates specifically to student loans: namely, an atmosphere of disregard for the integrity of student loans as legitimate policies.

Much of the contribution of this chapter is far from unique, and there is an emerging literature focusing on administrative and institutional constraints related to education reforms in developing countries. For example, Ziderman and Albrecht (1995), Johnstone and Aemero (2001), Salmi (1999) and others analyze the problems associated with the institution of student loan programs in developing countries. While there has been an increasing emphasis on imposing charges, and moving student income support away from grants and toward loans, the significant problems of administration and collection are an important theme of this literature.

5.2. The ICL adoption debate in developing countries: case studies

5.2.1. Ethiopia

In Ethiopia only 30 percent of children commence primary school. Student numbers fall sharply at upper secondary level, where substantial up-front tuition fees are charged. Until only five years ago, higher education had been located exclusively in the public sector. Ethiopia, however, educates at this level only a minute proportion: 30,000 students are enrolled in subsidized or ‘regular’ places. A similar number is enrolled on a full-fee basis in evening courses and the rapidly burgeoning private sector, however, enrolled 9,000 students in 2001. At that point most students paid no tuition fees and were provided with accommodation, meals and other benefits free of charge.

In 1990 the national government, assisted by the World Bank, began exploring cost-sharing for public higher education students. As was the case for Australia, New

Zealand and the UK, a major justification for reform was the inequity of a no-charge system, it being estimated in the 1990s that private rates of return to tertiary education were very high, possibly as much as 27 percent per annum.³⁵

The necessary support of various government agencies was initially difficult to secure. Furthermore, while Ethiopia has a robust system of public administration, the relationships between levels of government – central and regional – are complex, with taxation arrangements being somewhat convoluted.

Therefore an alternative plan was considered, involving the application of a flat graduate tax collected as a percentage of salary over a set period of years (for discussion of the conceptual characteristics of a graduate tax, see Section 3.3.3). This is the simplest possible version of an income related system of deferred payments, and was introduced in the 2003/04 academic year.

The Ethiopian graduate tax has the following repayment characteristics:³⁶

- payments to be collected from ex-students on the basis of a formula calculated as a percentage (proposed as 10 percent) of annual income, automatically deducted from salaries;
- the exemption of around 35 percent of students from payment of the tax, including teachers and other professionals deemed to be of public interest; and
- there is a discount for an up-front payment for those paying on an on-going basis, which is apparently 5 percent of expected future average payments.³⁷

The World Bank has broadly applauded the new graduate tax scheme, but offers some telling criticisms,³⁸ including that:

- the minimum repayment rate of 10 percent looks to be very high for Ethiopian graduates given their levels of income;
- excusing a large number of graduates from any repayment obligations is questionable, and if they were also subjected to payments the high rate of 10 percent could be reduced; and
- the 5 percent discount for up-front payments seem to be too low to encourage any take-up.

This last point is undoubtedly true, particularly for a scheme in which the collection mechanism is untested and has a high probability of allowing many debtors to escape payments. To help ensure efficient and widespread repayments the following institutional reforms are being initiated:

- a proposed collection mechanism to be established within the Social Security Authority (SSA), whose core purpose until now has been the collection of contributions from provincial and Central Government employing agencies to fund

³⁵ See Project Appraisal Document, Ethiopia Education Sector Development Project, 1998.

³⁶ As described in *World Bank Sector Study (2003)*.

³⁷ It is difficult to understand how this figure was arrived at, or what it means. This is because, unlike a normal ICL in which the debt is obvious, graduate tax obligation levels are not transparent since they depend on future income streams. The documents describing the scheme do not clarify this issue.

³⁸ See the World Bank Sector Study, pp. 23–24.

the retirement incomes of civil servants, utilizing the unique numerical identifiers assigned to public-sector employees by the Authority;

- extension of licensing provisions regulating foreign private companies to require them to register with the SSA for the purposes of collecting repayments from Ethiopian graduates;
- formalization and active encouragement of the extension of the reach of the SSA to privatized former Government enterprises and assets, and, on a voluntary but strongly encouraged basis, into other parts of the private sector including foreign NGOs; and
- restrictions on the issuing of exit visas to graduates to require them to repay their student loans prior to leaving the country.

Even so, there remains uncertainty that a sufficiently accurate record-keeping system can be developed which maintains the records of each former student's repayments and progressive level of indebtedness. On the positive side it is worth noting that most graduates are employed in the public sector and, since their incomes are known with some accuracy, the income stream generated from the measure can be predicted. A virtue of the plan is that, while the amount collected from each graduate will be related to actual income, ensuring the benefits of default insurance and consumption smoothing,³⁹ there is no need to calculate and track the payments and remaining debts of each graduate.

However, implementation remains the big issue, and the Ethiopia case highlights the need for administrative simplicity and promotes to center stage the importance of collection. *Johnstone and Aemero (2001)* argue that the Ethiopian collection difficulties are serious enough to mean that any ICL is unlikely to be workable. To date there is no direct evidence on the success or otherwise of the graduate tax reform.

5.2.2. *Namibia*

A country of two million people, Namibia has been independent from its colonizers, South Africa, since only 1990. The legacy of *apartheid*-based policies is an education system characterized by racial inequality. Namibia has inherited, however, a relatively strong legal and administrative framework.

Namibia achieved independence from South African rule in the early nineties. The country's student financing arrangements were a legacy of the former colonial regime. In 1996, following sustained and widespread student unrest surrounding the nation's selective bursary scheme, the Namibian Government, in conjunction with a wealthy international philanthropic organization, approached the World Bank for assistance. A steering committee, composed of government and nongovernment representatives, was established. This committee selected an Australian consultant (Jane Nicholls), whose visit to Namibia was funded by the Bank. The consultancy resulted in a proposal for a universally-applicable program of financial assistance which was subsequently implemented on a national basis.

³⁹ These are considered in detail in Section 3.

At this time Namibia's higher education system was compromised by a fundamental breakdown of the country's system of student financial assistance. This had consisted of a bursary scheme designed to provide bonded scholarships and grants for students willing to commit to work in the civil service following graduation. Bursaries were allocated on the basis of academic merit rather than need, a consequence being that the system was unpopular with students. Since severe cutbacks in public sector recruitment meant that many bonded graduates could not find work a consequence was that many were required to repay the government an amount equal to their bursary assistance.

The replacement developed for the bursary scheme was based on cost recovery, and represented a radical change in policy. It is universal, rather than selective, and requires those students choosing to take advantage of the assistance to repay the government on an income contingent basis following graduation. The scheme replaces grants with loans.

The policy reform is designed to provide a leverage point, through financial incentives, to encourage students into courses where labor market needs are seen to be greatest. Two types of financial assistance are provided – scholarships, for students in greatest financial need and also for those prepared to undertake courses in areas of high economic priority, and loans for other students. These are in two categories: smaller loans covering tuition fees only, and larger ones that go to living costs. Thus there is considerable flexibility both for students and for the government, and this presumably matters with respect to influencing student choice.

The plan involves establishing the scheme legally as a Fund, with powers to invest and borrow money, but required under its legislation to take the advice of the government on certain policy matters. Namibia does not have a taxation system of sufficient reach to render it suitable for collection purposes as part of the scheme. Instead, the Social Security Commission was identified as a suitable collection agency, because of its potential to track graduates through unique numerical identifiers and a computerized record-keeping system. Repayments will be pegged to graduates' salaries and are payable only when a specified salary threshold is reached.

The scheme is designed to enable students to select the level of financial assistance they need, and the government to adjust financial incentives and assistance levels as necessary. The new program is seen by Chapman (2006b) to be a potentially more effective means of assisting students than the former bursary regime. What is not yet clear is the extent to which the proposed collections system can operate efficiently, but inevitably there will be problems. Again, collection difficulties loom large.

5.2.3. *Indonesia*

In 1995 as a component of its Engineering Education Development Project designed to assist public-sector tertiary education institutions, the Asian Development Bank piloted a small income contingent student loan scheme as part of a student financial assistance package. Design commenced during the project's planning phase in 1995. Due to the

1997 onset of the Asian economic crisis, however, project implementation was delayed until 1998, when an Australian team, including a student financing consultant, Jane Nicholls, commenced work in Jakarta.

Indonesia lacks a sound public administrative infrastructure that might underpin a collection system for an income related student loan program. In [Chapman \(2006b\)](#) it is argued that the country is apparently beset by ongoing economic and political difficulties, its legislative system is weak, and the legal framework surrounding the financial system is particularly so. Thus Indonesia might seem to be a poor candidate for a program of student loans.

In this, as in many developing countries, the history of government-subsidized student financial assistance schemes has been vexed. A previous loan scheme had collapsed, and this was run through a commercial bank with default rates being over 90 percent. Attempts to design and establish an ICL scheme for Indonesia have been associated with an Asian Development Bank (ADB) project concentrating on engineering education in twelve selected public-sector universities and polytechnics. The initial design phase for the program took place in 1995: implementation, originally scheduled for 1997, was delayed until 1998 following onset of the Asian financial crisis in that year.

The central feature of the Indonesian scheme as proposed at the time involves an advance of a lump sum [originally (US)\$3 million] to (BNI) the national bank, which, as the largest public-sector bank, has branches on every university campus. This bank also serves as the vehicle for financial transactions between the government on the one hand and public universities and polytechnics on the other. The funds are advanced subject to a detailed agreement between BNI and the government (established according to a Heads of Agreement signed between BNI and the ADB in late 1995). The essential agreement entails the commercial bank having full access to the funds in return for administering and financing the loan scheme.

Following the financial crisis of 1997–1998 the proposed scheme was replaced by a much less ambitious, small-scale, locally based grant and emergency loan program. Funding for the financial assistance scheme was also reduced. While the government has promoted the intention to implement such a program when economic circumstances permit, it seems unlikely in 2006 that ICLreform will transpire over the next few years.

5.2.4. *Rwanda*

Like many African countries, Rwanda's 7,000 higher education students receive free tuition and grants to cover the cost of board and lodging. Secondary school students, on the other hand, pay tuition fees: therefore those eligible to enter university come from relatively privileged backgrounds. University students receive substantial public subsidies, and as graduates they also enjoy significantly higher average lifetime earnings than do nongraduates [see [Chapman and Fraser \(2000\)](#)].

The UK Department of International Development financed a consultancy to examine proposals for higher education reforms in 1999, involving Bruce Chapman and William

Fraser. It was recognized at the time that there was an apparent need to expand the country's higher education system and sources of finance other than government funding needed to be found. Resources could then be used to eliminate the up-front fees in secondary schooling, seen to be responsible in part for the very low participation of poor young people in any form of post-primary education. Ideally, this would mean the introduction of deferred payment, not only for a share of tuition costs (for example, 20 percent), but also for the grant provided for students' board and lodging. This latter amount represents a sum almost equivalent to the full average course costs per capita.

A UK Department of International Development study [Chapman and Fraser (2000)] suggested that, initially, tuition charges should be imposed, along with a deferred-payment scheme, with the proceeds being used to help move secondary schooling arrangements away from up-front fees. The case has been made that the higher education grants scheme is also in need of reform, and that savings in this area could similarly be used to decrease up-front secondary schooling costs. A movement from grants to loans would seem to be justified if the imposition of an income related repayment system could be established and found to be workable.

Chapman and Fraser (2000) note that the country has a system of unique numerical identifiers available to all from the age of 16, and that this arrangement is mandatory from age 18 years. Their plan suggested that upon enrollment, students would be given the option of paying their tuition charge up front, at a lower rate, or otherwise of deferring payment until following graduation when they would repay on an income-contingent basis. The higher education institution would be required to establish a new record for each enrolling student who has chosen to defer payment, along with the year of study and the course charge applying.

Rwanda has an income tax collection system that could be used to collect repayments from graduates, via deductions from salary made by employers. Graduates could be asked to produce evidence that they have paid their university charge in full. Where they have not done so, the employer would be required to keep a record of the graduate's unique personal ID number and to remit payments monthly, along with income tax, at the rates suggested under the scheme; for example, of 2, 3 or 4 percent of salary, dependent upon taxable annual income.

It was suggested that the tax authority (Rwanda Revenue Authority) could adjust the individual records of graduates and remit the payments in turn to the Government of Rwanda Treasury. A variant on this scheme would involve the establishment of a separate administrative body, which would manage the scheme. The Commissioner General of the Rwanda Revenue Authority has suggested that the organization is administratively able to carry out the functions as specified under the suggested structures. However, by 2006 no concrete advances had been made toward the implementation of a Rwandan ICL and, as with similar cases, there is the real potential that collection difficulties as well as a lack of strong political commitment to change loom sufficiently large to make its successful implementation unlikely.

5.2.5. *The Philippines*

The Asian Development Bank (ADB) has had long-standing concerns about the failure of publicly financed student loan schemes in the Philippines. In connection with a proposed higher education financing reform project, a Filipino consultant produced a design for a program for the public higher education sector in 2001, but this relied exclusively on private-sector funding and was considered unworkable. A subsequent ADB project, aimed at the technical-vocational education and training sector, was implemented on contract by an Australian consultancy company in 2003–2004. The project included a small student loan component, intended as a pilot for a more broadly based scheme. Project design specified that this should, if possible, be based on an income contingent repayment principle.

Like many other developing countries, the Philippines has experienced severe problems in the implementation of student loan schemes. The government's 'Study Now, Pay Later' (SNPL) program in higher education, a conventional loan in which repayments are made on the basis of time, is offered right across the sector (including the extensive private college and university system) but the take-up rate is very low. This is due largely to the modest level of funds available to borrowers, and these have not increased since the program was initially established in 1975.

Since its introduction repayment rates have dropped to around two percent. A feature of the climate surrounding loan schemes in the Philippines is that students, their families and even their teachers and lecturers often seem to regard loans simply as handouts. This creates an obvious difficulty for those responsible for policy credibility in this area.

Small-scale loan schemes have been more successful than the SNPL program, especially in private higher education, where institutionally based arrangements have enabled students effectively to stagger the payment of tuition fees over the academic year. Notably more successful – achieving repayment rates of up to 98 percent – have been micro-credit programs in both higher education and the technical/vocational education and training (TVET) sector, where students and trainees have been able to borrow to meet costs associated with practical work and projects.

In 2001–2002 an attempt was made to design a higher education student loan scheme as part of an Asian Development Bank project – the Education Sector Development Project. Design parameters required the program to be financed entirely from the private sector: this factor created severe difficulties and so far no credible, potentially sound model has emerged, although in the longer term it may be possible to establish a program that utilizes the administrative structures and the financial resources of the country's two major pension funds. These organizations, however, were initially involved in the failed SNPL program, a central reason for the failure being that the government provided a 100 percent guarantee to administering institutions against default, thus providing no financial incentive to collect repayments.

In 2003 a small-scale program was proposed for the public TVET sector in the Philippines. Again, this was associated with an ADB project, this time the Technical

Education and Skills Development Project (TESDP). Thus far little progress has been made in its implementation.

5.2.6. Mexico

The current Mexican public higher education system is one in which there are no tuition charges for students, and is characterized by excess demand (a large number of prospective and qualified students are unable to gain public sector places). Moreover, it is very likely to be the case that individuals from the least advantaged backgrounds have less access to the system than do others. There is a compelling case for increasing the financial resources available to allow increased enrollments and improvements in service, and that this should be financed in part by tuition charges.

However, a challenge is how to redress current inequities and facilitate an expansion without diminishing access to the system of talented prospective students. Analysts have argued that a possibly fruitful approach would be through the use of an income contingent loan scheme.

The fact that there is no charge for higher education students in Mexico implies that the system is regressive. There are two aspects.

The first relates to the socio-economic background of students. Data supplied by the SOFES group from the Census suggests strongly that higher education students come disproportionately from the most advantaged parts of Mexican society. For example, as measured by household income, it was suggested that less than 7 percent of the bottom two deciles of youth attend university, but that this figure is around 90 percent of the top two deciles.

The second concerns the private benefits associated with being a university graduate. This has been addressed in the typical human capital approach concerning estimations of Mexican private rates of return to higher education, and the data show that these are apparently very high, upward of around 25 percent.⁴⁰

According to Mexican higher education officials currently there is considerable excess demand by prospective student for public university places. It is apparently the case that up to 80 percent of new prospective students each year are not offered enrollment, and it is considered that around half of this group are qualified for entry and would likely benefit from the investment. Many of those rejected consequently enroll in the private university system where, although there is a small student loan scheme (SOFES) available, a majority pay up-front tuition without student loan assistance.

Together with the data concerning socio-economic background there seems to be little doubt that in a lifetime income sense Mexican university graduates are relatively

⁴⁰ These findings are reinforced in Roman (2003) for Mexico City, using the National Survey of Urban Employment, where it is suggested that in 2002 degree holders earn around 60 percent more than those without.

advantaged, arguably significantly so. Having the public sector cover the vast majority of the direct costs is unquestionably regressive. Thus the basic equity point for charging higher education students for part of the costs is easy to establish in Mexico, as it is in other countries.

It is unclear at this stage if the pre-conditions outlined above can be met in Mexico. The most important of these, the capacity to determine with accuracy students' future incomes, has been explored in discussions with tax officials who have suggested that the potential is there. For example, there is a unique identifier system, with photo ID, which is required for employment and which is used in the collection of income tax. This is an essential pre-requisite, but additional exploration of the possible successful operation of the collection system would be of great value. The reform debate, initiated in 2003 with the assistance of the World Bank, is currently in abeyance, in part because of political concerns with respect to the likely unpopularity of the introduction of a charge even in the context of an ICL system.

5.3. ICL implementation requirements

5.3.1. Introduction

The countries under discussion above are very different. While the differences matter, there are several essential policy anchors that remain central to the successful development of any higher education financing arrangement based on the principle of income contingency. In this section these general points are now considered.⁴¹

5.3.2. Administrative and legal preconditions

In Australia and other countries in which an ICL system has been introduced, this has been a relatively simple matter from an administrative point of view. The reasons for this are that the public administration systems of these countries feature a strong legal framework, a universal and transparent regime of personal taxation and/or social security collection, and an efficient payment mechanism. The last involves computerized record keeping of residents' vital financial particulars and, very importantly, a universal system of unique identifiers (usually numbers, often accompanied by an identity card).

Under these circumstances it is not complicated to identify and track individual citizens over time and space. It is not expensive, moreover, to tack onto some existing tax collection mechanism an additional function: the collection of payments from ex-students, on the basis of a fixed proportion of income.

⁴¹ A useful addition to this discussion is the checklist for deferred repayment schemes offered in Ziderman and Albrecht (1995), pp. 164–167.

In the developing world, however, as we have seen, these preconditions are often lacking. Administrative systems are likely to be weak, and often rely on intensive and inefficient manual record keeping. Taxation regimes may be shaky or even corrupt, and usually no reliable system of unique identifiers exists. Financial regulation, bankruptcy laws and contract laws are often ineffectual. Nevertheless, it is in these countries, where social and economic inequalities are usually profound, that even a modest up-front charge for higher education constitutes a significant barrier to participation for citizens other than the very privileged.

The economic and political rationale, however, for the imposition of at least a low level charge for higher education is compelling: in countries characterized by serious inequality the comparative economic benefit accruing to graduates, compared to other citizens, is clear. And if it can be done efficiently on the basis of income contingency this is preferable in economic terms, as explained in Sections 2 and 3. The major challenge is how to achieve these positive policy goals in the face of the difficulties described.

5.3.3. *Minimum requirements in summary*

The minimum conditions ideally required in order to implement a successful system are:

- a reliable, preferably universal, system of unique identifiers;
- accurate record-keeping of the accruing liabilities of students (while studying);
- a collection mechanism with a sound, and if possible, a computerized record-keeping system; and
- an efficient way of determining with accuracy, over time, the actual incomes of former students.

Some would argue that a further basic requirement for the introduction of ICL is a strong legal framework and functional judicial system. Indeed, it is hard, from a developed-world perspective, to imagine implementing a workable scheme outside this context.

While the above noted four conditions for the implementation of an ICL are hard to achieve, it is worth noting that three apply also to the collection of any kind of loan. The exception involves determining with accuracy, over time, the actual incomes of former students. This particular criterion is likely to be the most difficult institutional barrier to ICL loan and tuition reform in developing countries.

It should also be recorded that political commitment to change is a necessary, albeit not sufficient, condition for change. In Australia, New Zealand and the UK, it was clear, or became clear over time, that the higher education systems would inexorably deteriorate without funding reform, and that the main players were prepared to live with short-term political costs to achieve longer-term social and economic benefits. In some of the countries considered above it is not obvious that this is the case; in the absence of a different political landscape there is little doubt that required funding reforms will not eventuate.

5.4. *Necessary steps for implementing an ICL*

The discussion of different countries' schemes or proposals clarifies what steps might be necessary in a generic sense in setting up an income contingent loan scheme. In theory and in summary the system might work as follows:

- (i) upon enrollment students choose between an up-front payment, or incurring a debt reflecting course costs and living expenses;
- (ii) those paying up-front do not have to be followed further, but might be later if they choose to incur debt in following years of study;
- (iii) those incurring the debt are issued with a social security number by the university (which has access to blocks of unused numbers);
- (iv) the number a student receives is unique and will apply also to that student's future pension arrangement (if applicable);
- (v) the size of the debt is recorded and the information is communicated to the (new) higher education unit in the Ministry of Finance;
- (vi) a higher education debt record is set up, which will be unique for each student;
- (vii) at the time of employment the former student is required to let the employer know what their number is, and the employer is required by law to remit debt repayments (contingent on the employees' annual income and the repayment parameters) to the relevant tax authority (this remittance could take the form of with-holding, as is currently the case with respect to income tax);
- (viii) the relevant tax authority is required to remit the debt repayment to the higher education unit in the Ministry of Finance, where the unique identifier allows a former students' debt to be adjusted accordingly; and
- (ix) after the debt is repaid in full the Ministry of Finance lets the employer know that no further obligations exist, and the employer ceases collection from that former student.

5.5. *Summary*

The systems and structures most resembling those prevailing in the 'template' countries, such as Australia, New Zealand and the UK, will not generally be available. It should be clear that if the right administrative arrangements are not available the institution of an ICL is not viable.

In many countries there are severe difficulties associated with the establishment of ICL policy integrity, credibility and collection. Even so, at the same time there seems to be an important economic and social case for charging tuition. Given this policy context, both [Johnstone and Aemero \(2001\)](#) and [Chapman \(2006b\)](#) suggests that it may be desirable to proceed with the imposition of up-front fees and scholarships instead of ICL. [Johnstone and Aemero \(2001\)](#) offer considerable scepticism with respect to the possibility of applying ICL in developing countries, and the evidence seems so far to be consistent with their perspective.

The case for and against the promotion of ICL policy for higher education financing in developing countries can be expressed with reference to the discussion of both the theoretical issues and the problems of administration examined above. The issues for the policymaker are as follows.

A workable risk-sharing ICL higher education financing policy is the approach most likely to deliver outcomes consistent with economic theory. That is, unlike alternatives such as government guarantees to banks for commercial loans, ICL offer default protection for both lenders and debtors. As well, because a student's loan repayments can be designed to be a relatively low proportion of expected future taxable income, ICL offer the prospect of agents making career choices which are insensitive to debt obligations. An implication would seem to be that this type of debt promotes relatively effective job matching and thus arguably results in higher levels of allocative efficiency.⁴²

These arguments rest on the assumption that an ICL can be instituted in an operational efficient way. However, if this is unlikely to be the case, as still seems to be the case presently in most of the developing countries examined above, policymakers have an inferior set of choices: to charge tuition without adequate default protection for borrowers; or to have highly regressive systems with no tuition. Currently for most developing countries the preferred policy appears to be the latter.

6. A detailed case study of a risk-sharing ICL: Australia, 1989–2003⁴³

6.1. Introduction

The analysis and discussion presented above suggest that, if it can be made operational, a risk-sharing ICL is the higher education financing approach most likely to be consistent with economic (and social) principles. This raises the critical empirical question for policy: what are the effects of such schemes? Addressing this is problematic.

The difficulty relates to the fact that ICLs of this genre are both unusual and historically quite recent. As noted, the first national scheme was introduced in Australia in 1989, and while New Zealand, South Africa, Chile and the UK have adopted broadly-based ICLs of this type, preceding discussion has suggested that there is a paucity of information on the implications of ICL in these countries. With respect to Australia, however, there has been considerable research on the topic. Consequently, this section focuses on the Australian experience.

⁴² To be valid, this assertion would seem to rely on the notion that 'normal' (non-ICL) loans are a nonoptimal financing mechanism. This case has been argued in Section 2.

⁴³ Much of the discussion in this section relies on Chapman and Ryan (2002). Chris Ryan is not responsible for errors and omissions.

6.2. *HECS described*

6.2.1. *Background*

In 1989, faced with a burgeoning demand for higher education services, and a reluctance to finance the required expansion from tax revenue, the Australian government introduced a radical scheme of education charges [described in [Chapman \(1997\)](#)]. The Australian experience with a risk-sharing ICL, the Higher Education Contribution Scheme (HECS), is relatively long-lived in policy terms, in 2006 aged 17. While many other countries introduced ICL after the beginning of the 1990s, HECS is the most studied in all dimensions. These are the reasons that the Australian policy is now reported in detail.

In 1989 HECS was characterized by the following:

- a charge of A\$1,800 (1989), pro-rated by course load, but with no variation by discipline;
- on enrollment students could choose to incur the debt, to be repaid through the tax system depending on personal income; or
- students could avoid the debt by paying up-front, which was associated with a discount of 15 percent (later increased to 25 percent);
- those students choosing to pay later faced no repayment obligation unless their personal taxable income exceeded the average income of Australians working for pay [about A\$22,000 (1989) per annum];
- at the first income threshold of repayment a former student's obligation was 2 percent of income, with repayments increasing in percentage terms above the threshold; and
- apart from the fact that HECS could be paid up-front with a discount, there was no additional interest rate on the debt, although the debt and the repayment thresholds were indexed to the CPI.

While in 2006 its essence remains, HECS has changed significantly from 1989, most importantly in 1997. At this time there were three significant reforms. One, all the charges increased significantly, by about 40 percent on average. Two, differential charges were introduced according to a student's course of study, with the new charges essentially reflecting cost differences. And three, the income thresholds for repayment were reduced significantly.⁴⁴

6.2.2. *HECS tuition charges described*

Students intending to enroll in Australian universities in 2001 faced tuition charges that varied by course. The bands are now shown in [Table 1](#).

⁴⁴ [Chapman and Salvage \(1998\)](#) argue that the last of these changes was the most likely policy variation to affect access.

Table 1
HECS costs by band, 2001

HECS band	HECS cost for each full-time year (A\$)	Disciplines
Band 1	3,521	Arts, Humanities, Social Studies/Behavioural Sciences, Education, Visual/Performing Arts, Nursing, Justice and Legal Studies
Band 2	5,015	Mathematics, Computing, other Health Sciences, Agriculture/Renewable Resources, Built Environment/Architecture, Sciences, Engineering/Processing, Administration, Business and Economics
Band 3	5,870	Law, Medicine, Medical Science, Dentistry, Dental Services and Veterinary Science

Source: Commonwealth Department of Education, Training and Youth Affairs (2001). HECS: Your Questions Answered.

These charges meant that Arts graduates at the time who completed their course in three years would incur a HECS debt of between A\$10,000 and A\$11,000, a Science graduate would have had a debt of just over A\$15,000, and a Law graduate (typically a four-year course) would have incurred of debt of around A\$20,000. Debts are indexed to inflation (the Consumer Price Index), and thus there is a zero real interest rate for those choosing the pay later option, but initially there was a 15 percent discount for those paying up-front.

6.2.3. HECS repayment parameters

Students can choose either to pay their HECS charges at the time of enrollment or defer payment, in which case repayments are collected through the tax system. Those who choose to pay their HECS charges up-front now receive a discount of 25 percent, but the implications of this are not necessarily what they seem. Those opting to defer payment and repay the debt after graduation receive interest rate subsidies equal to the real rate of interest for each year the debt remains unpaid. A consequence is that students who take the pay-later option will receive greater subsidies the longer it takes to repay the debt (that is, the lower their future income).⁴⁵ The ‘discount’ effectively introduces a blunt form of a real rate of interest.

The majority of students choose to defer payment of the HECS charge, and for them repayments commence when individual annual income exceeds a minimum threshold level. In the 2000–2001 taxation year, this minimum threshold was A\$22,346 per annum, or about 65 percent of Australian average earnings. The repayment conditions are shown in Table 2.

What these parameters mean for typical graduates is now described.

⁴⁵ For analysis of the extent of the subsidy see Chia (1990) and Chapman and Salvage (1998).

Table 2
HECS income thresholds and repayment rates, 2001–2002

HECS repayment incomes in the range (A\$)	Percent of income applied to repayment
Below \$23,242	Nil
\$23,242–\$24,510	3
\$24,511–\$26,412	3.5
\$26,413–\$30,638	4
\$30,639–\$36,977	4.5
\$36,978–\$38,921	5
\$38,922–\$41,837	5.5
\$41,838 and above	6

Source: Australian Taxation Office, Repaying your HECS debt 2000–2002.

6.2.4. HECS repayments by age for typical graduates working full-time

It is instructive to illustrate the effect of these charge levels and repayment parameters on the after-tax incomes of graduates working full-time, by age. In what follows the 2001 HECS repayment parameters have been applied for male and female students, assuming: they begin a four year Science degree at age 18, graduating at age 22; and, after graduation take a full-time job earning the average income by age of graduates of their sex. The earnings function data have been derived from the Australian Bureau of Statistics 1995 Income and Household Survey, updated to 2002 Australian dollars.⁴⁶

The results for males and females respectively are shown in [Figures 2 and 3](#).

The data of [Figures 2 and 3](#) illustrate the following: male science graduates earning average graduate incomes for those working full-time will repay HECS in about 8 or 9 years; equivalent females will repay HECS after about 12 years. The above data are offered to illustrate typical HECS repayments. Of course, there will be a large variation in repayment profiles given that annual contributions depend on individual graduates' incomes. Micro-simulation analysis of repayment profiles of HECS illustrates this point [see [Harding \(1995\)](#)].

The main conclusion from the figures is that a male graduate working full-time takes on average around 9, and a similarly employed female graduate around 12, years to repay typical HECS debts. There will necessarily be a large variance with respect to the time taken to repay, a natural consequence of an ICL; this issue is now considered in the context of earlier conceptual discussion concerning the consumption smoothing benefits of an ICL.

⁴⁶ In 2002 the US:Australian exchange rate was about 0.65:1.

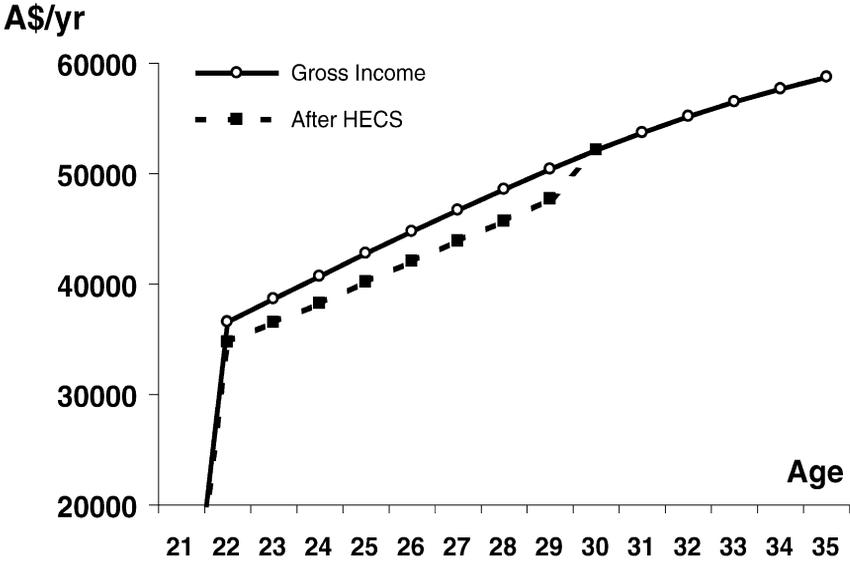


Figure 2. Earnings before and after HECS: graduate males working full-time, 2002 (A\$). Source: Chapman and Ryan (2002).

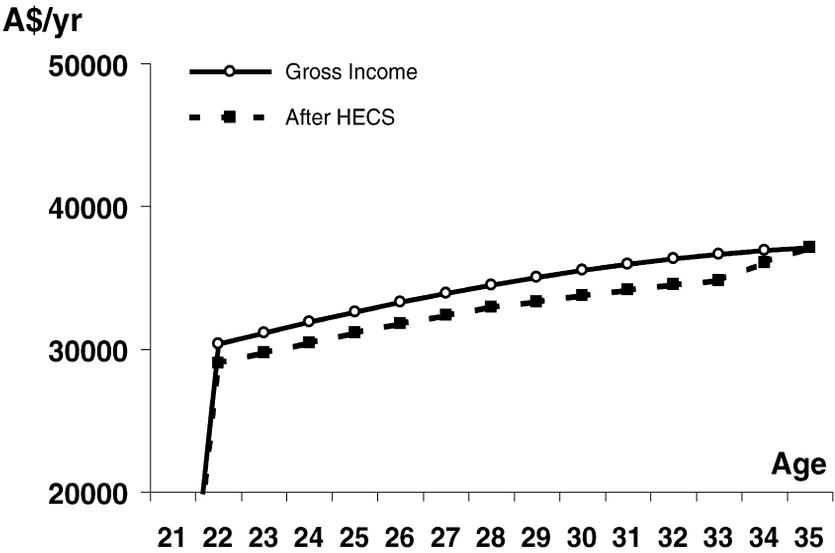


Figure 3. Earnings before and after HECS: graduate females working full-time, 2002 (A\$). Source: Chapman and Ryan (2002).

6.2.5. *HECS repayments by age for graduates not working full-time*

The illustration of the age related repayments of HECS for full-time workers is of policy interest but does not highlight the consumption smoothing potential benefits of ICL. This is because the consumption smoothing benefits of ICL repayments matter most when a graduate's lifetime income stream has a high variance.

Chapman (2006b) illustrates the point by comparing HECS and bank repayments as a proportion of annual income for a hypothetical graduate who experiences significant variations in income in the 10 year period following graduation. In the example, the hypothetical graduate is full-time employed and earning the income of the average graduate from age 22 to age 25, then receives social security for 4 years. Then at age 29 the graduate is assumed to be employed part-time until age 32, after which income is assumed to be the average of full-time graduates of that age and sex.

The exercise reveals that graduates in the above circumstances face extremely different after-debt incomes if they are repaying HECS compared to if their student loan repayments are for a bank loan (with repayments thus being required at a constant level over time). In the example, the HECS repayment obligation is never greater than around 6 percent of income, and zero when income is relatively low, but the bank loan repayments are up to 25 percent of income in periods of low income. The point is clear: ICL can deliver important levels of consumption smoothing.

6.2.6. *HECS revenue*

The discussion following relates to the stream of revenue received by the government from HECS. As noted above, students have the choice of paying their HECS charges upon enrollment, or through the tax system. Figure 4 shows the revenue received by the government from 1989 to 1999, and projections of future payments to 2005.

Up-front ('voluntary') payments and repayments through the tax system ('compulsory') are shown separately in the figure. It is of interest that even in the first year of HECS around A\$100 million was raised from up-front payments encouraged by the (then) 15 percent discount. The policy implications of this are significant: it shows that the introduction of an ICL can provide substantial revenue quite quickly.

Not surprisingly, repayments through the tax system were modest in the early years of the operation of HECS. This is because very few graduates earned incomes high enough to require repayment. However, income contingent repayments increased substantially as more graduates became eligible for repayment, thresholds were lowered and a higher proportion and number of graduates faced higher repayment rates.

Taken together, up-front fee and income contingent repayments through the tax system now represent a very significant and growing proportion of the cost of higher education in Australia. In 2001 students provided over A\$800 million, which is around 20 percent of the total recurrent costs. In 2006 it is projected that this proportion will rise to over 30 percent.

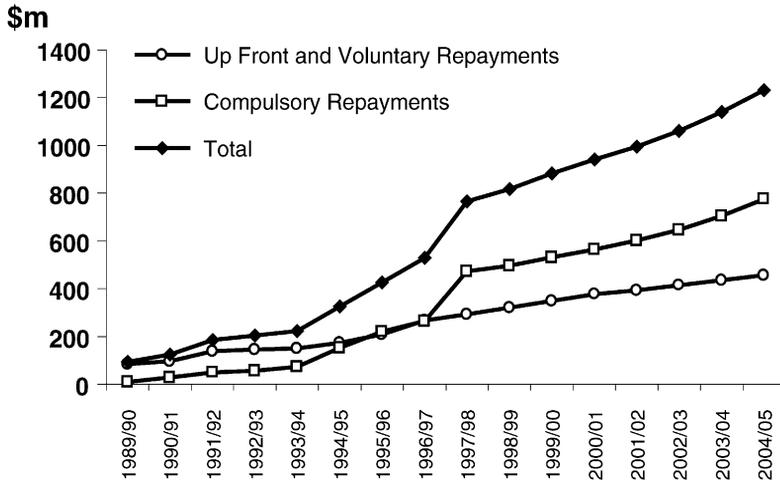


Figure 4. Actual and projected HECS revenue: 1989–2005 (A\$). *Source:* Commonwealth Department of Education, Science and Technology, as reported in Chapman and Ryan (2002).

6.3. The effect of HECS on the access of the disadvantaged

6.3.1. Background

HECS was designed, in part, to minimize the extent to which the imposition of a charge would preclude the participation of poor prospective students. This is a critical issue for policy, and dominated political debate at the time. Fortunately there is now considerable evidence on the effects of HECS on the access of the disadvantaged to higher education. Many researchers, including the author of this chapter, have contributed.

6.3.2. The literature

Two approaches have been used to assess the impact of HECS on the participation of the poor. The first has been to ask prospective students about the factors influencing their higher education participation decisions. The second has been to test statistical relations on the question of whether or not higher education participation behavior differed between socio-economic groups after HECS was introduced, and after the radical changes introduced in 1997. Some of these analyses are now described briefly.

Andrews (1999) measured changes in proportions of first-year higher education students from relatively poor backgrounds, as measured by the average income of their local area. His research showed that the share of students from the lowest income quartile did not change after HECS charges and repayment conditions became less generous for students in 1997. Andrews also analyzed attitudes to debt by individuals according to income, and concluded that patterns in Australia tend to reflect an urban/rural di-

chotomy rather than any variation by income. Andrews concluded that neither higher HECS charges nor the lowering of the income repayment thresholds affected the higher education participation of poor groups.

Other studies concerning the participation of the poor have utilized individually based income measures. Long, Carpenter and Hayden (1999) and Marks, Fleming, Long and McMilan (2000) use panels of longitudinal data from the Youth in Transition Survey conducted by the Australian Council for Educational Research to identify the extent to which education participation changed in Australia from the 1980s to the late 1990s. These studies use an indirect wealth index constructed from responses by individuals to questions about the presence of material possessions in their houses at around age 14.

Not surprisingly, the results of the above studies suggest that wealth is strongly positively related to individuals' higher education participation. While Long et al. (1999) found also that higher education participation differences by wealth widened initially, they suggest that this trend was evident in the earlier cohorts, and not obviously related to HECS. The Marks et al. (2000) research added a new cohort to the same panels employed by Long et al. Their research suggests that socio-economic status became less important in determining higher education participation in the late 1990s than was the case for earlier cohorts. That is, HECS did not seem to be associated with lower higher educational participation of relatively poor prospective students.

There are a number of methodological and measurement questions in both the Long et al. and Marks et al. exercises. These issues are considered in Chapman and Ryan (2002) in exercises using the same data sets, and this research is described below.⁴⁷

As well as the analysis of Andrews (1999), the Australian government has undertaken recent research focusing in particular on the potential effects on applications and commencements as a result of the 1997 HECS changes. Aungles, Buchanan, Karmel and MacLachlan (2002) explore time series relationships concerning university applications, and find a small but significant decrease after 1996, when HECS charges and repayment rules became much less generous for students. However, there are only 14 observations in the data, and very few controls.

The same authors use local area averages concerning education and occupation [the same approach adopted by Andrews (1999)] to explore the possibility of there being an effect on commencements of the relative disadvantaged from the 1997 HECS changes. In general there does not seem to be an issue, except for a small number of males with respect to the courses in which the HECS charge increased the most. Chapman and Ryan (2005) found a similar effect in direction terms, but it was not statistically significant.

With what is arguably an improved approach, Chapman and Ryan (2002, 2005) address the following questions. What was the level of university participation with respect to family wealth of 18 year olds: before the introduction of HECS (as measured in 1988); sometime after this (as measured in 1993); and after the marked changes to the scheme in 1997 (as measured in 1999).

⁴⁷ Background technical explanations are not apposite here: what matters for the current exercise are the additional insights into the effects of HECS on the access of poor prospective students.

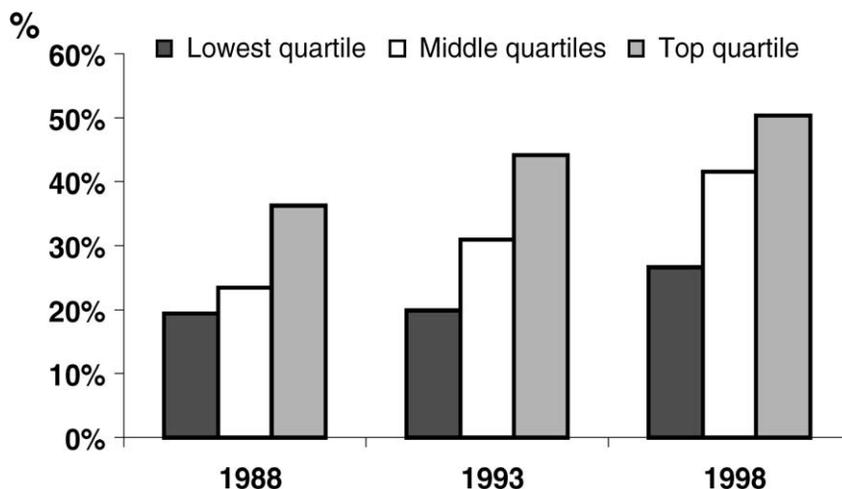


Figure 5. Proportion of 18-year-olds undertaking a degree by family wealth, persons. *Source: Chapman and Ryan (2002).*

For each year [Chapman and Ryan \(2002\)](#) considered only 18 year olds and these groups were classified into three wealth categories: those from the bottom quartile; those from the top quartile; and those from the middle two quartiles. These classifications allowed measurement of the proportion of young people enrolled in higher education from different wealth backgrounds. [Figure 5](#) shows the results.

The data of [Figure 5](#) should be interpreted as follows. For each of the years 1988, 1993 and 1999 the bars show the proportion of those aged 18 who were enrolled in higher education from the three wealth categories. There are three significant results.

First, before the introduction of HECS, there was a clear relationship between enrollment in higher education and measures of family wealth. Specifically, the proportions enrolled from the lowest, middle and highest groups were respectively around 19, 24 and 36 percent. Second, the data show that higher education participation rates did not fall for students from any family wealth group after the introduction of HECS. Even so, the increase in the proportion of young people attending university was clearly larger for those from the middle and highest wealth groups. Third, the large changes to HECS introduced in 1997 had no adverse effects on participation for members of any wealth group; indeed, there were large higher education participation increases for those from all family wealth backgrounds.

[Chapman and Ryan \(2005\)](#) report parametric tests of these relationships, differentially by sex, and allowing nonlinear effects of policy changes over time. As well, they explored the effects of policy announcements on high school students' intentions to enroll. Their conclusion is essentially that reached by other research: there is no evidence that the introduction of, and changes in, HECS have affected significantly the socio-economic composition of the higher education student body.

Hume (2004) also explores the issue of socio-economic mix changes after the radical changes introduced to the Australian system in 1997. Hume used different data sets – the Australian Longitudinal Survey in 1995, and the Australian Youth Survey in 1998 – to determine if there were changes in the socio-economic mix of (different) students with respect to enrollments in particular types of courses. The important point is that the charges had changed markedly in 1997, so this ‘natural experiment’ allowed an innovative and indirect tests of the extent to which the changes affected enrollment behaviors. Hume concluded that there were not discernible differences in enrollment patterns between the two survey dates. The result is consistent with all other research on enrollment patterns and the role of HECS.

6.3.3. *The research on HECS and access: conclusions*

The conclusions from the Australian research with respect to socio economic mix and access are as follows.

- (i) The relatively disadvantaged in Australia were less likely to attend university even when there were no student fees. This provides further support for the view that a no-charge public university system (that is, financed by all taxpayers) is regressive.
- (ii) The introduction of HECS was associated with aggregate increases in higher education participation.
- (iii) HECS did not result in decreases in the participation of prospective students from relatively poor families, although the absolute increases were higher for relatively advantaged students.
- (iv) There was a small decrease in the aggregate number of applications after the 1997 changes, but no apparent decreases in commencements of members of low socio economic groups;
- (v) The significant changes to HECS introduced in 1997 were associated generally with increases in the participation of individuals irrespective of their family wealth.
- (vi) There was a small decrease in enrollments in the most expensive courses of relatively poor males after the significant charge increases introduced in 1997, although in one of the exercises reporting this result the effect was not statistically significant.

These conclusions raise some important points. First, with respect to the effects of the scheme on participation, it does not follow that HECS per se resulted in an increase in the demand for higher education. Indeed, if this were the case it would constitute a curiosity for economic theory, since the result would suggest that increasing the price of a service increases also the quantity demanded.

Understanding the positive relationship between the introduction of tuition and higher education participation is assisted through consideration of the theoretical framework of Finnie and Usher (2006). The critical point they make is that typically many public higher education systems are supply-constrained, and this was certainly the case in

Australia at the time of the introduction of HECS. The effect of the introduction of the scheme was to encourage the government to outlay substantially more resources for university places given the promise of higher future revenues.

Second, the apparent finding that neither the introduction of, or changes to, HECS had no apparent effects on the access to the system of poorer students should not be interpreted to mean that risk-sharing ICL schemes have a unique capacity to protect the disadvantaged from any adverse effects of tuition. Indeed, an important finding from the disparate case studies examined in [Teixeira, Johnstone, Rosa and Vossensteijn \(2006\)](#) is that the socio-economic mix of higher education students seems fairly insensitive to funding regimes. That is, marked changes in the levels, incidence and nature of grant and loan support systems (and tax and other fiscal incentives) do not seem to affect significantly the proportion of enrollments of students from different family wealth backgrounds.

It follows from the above that claims suggesting particular financing systems are special because they do not affect the socio-economic composition of higher education should not be taken at face value. This implies that the findings of [Carneiro and Heckman \(2002\)](#) reported above are robust: access to tertiary education is determined in the main by lifetime educational circumstances. If this is so it implies that the relative advantage of ICL lie in their consumption smoothing properties rather than their implications for access only.

6.4. Summary

There are several significant findings from this detailed investigation of the effects of ICL in the only country in which such a scheme has been closely examined with respect to a range of economic and social outcomes, Australia.

First, HECS has turned out to be very inexpensive in administrative terms [[Chapman and Ryan \(2002\)](#)]. That is, while around (2001) A\$800 million is currently collected per annum, it costs less than 2–3 percent of this to administer. This is traceable to the facts that students' debts, and their collection, were faICLy straightforward given the mechanisms of the Australian Taxation Office – a point emphasized in ensuing discussion of other countries' administrative arrangements.

Second, HECS has been associated with the delivery of considerable revenue, of the order of (2001) A\$8 billion over the 14 years after its introduction. It is projected that the system will provide around (2001) A\$1.2 billion per year by 2005, which will be about 20 percent or more of annual recurrent costs.

Third, it appears that from a range of different approaches there have apparently been no consequences for the accessibility to higher education for students from relatively disadvantaged backgrounds. Broadly speaking, the socio-economic make-up of the higher education student body was about the same in the late 1990s as it was before HECS was introduced.⁴⁸

⁴⁸ See [Chapman and Ryan \(2002\)](#).

Four, higher education enrollments in Australia have increased considerably, by around 50 percent, since the introduction of HECS. This has happened for two reasons: there were no obvious overall deterrent effects from the new system; and in response to the expectation of high future revenue, the government substantially increased higher education expenditure.

Overall, HECS has essentially operated as originally envisaged, implying that risk-sharing ICL can be designed to achieve the basic objectives of higher education financing policy. However, it is critical to note that the findings concerning revenue, access and growth could also be true with respect to other non-ICL changes to higher education financing.⁴⁹

7. Conclusions and suggestions for further research

7.1. Summary

This chapter has critically examined higher education student financing, with a particular emphasis on loans for tuition (and/or student income support) that are repaid in a manner depending on students' future income. Income contingent loans became a reality in the 1970s, but it was not until the late 1980s that their potential was tested in a national context. A rudimentary form was adopted in Sweden and was followed by the institution of a fully-fledged ICL operated through the income tax system in Australia in 1989. Since then New Zealand, Chile, the Republic of South Africa, the UK and the US have all adopted variants of ICL, with differing levels of success with respect to a range of consequences.

In conceptual terms several issues have been explored: the need for government intervention in higher education financing; the case for both a tuition charge and a taxpayer subsidy; and the costs and benefits of different approaches to funding. It is clear that government intervention is necessary, but it has been argued that there are important weaknesses associated with the most common form of government intervention, that of guarantees to repay loans to commercial banks in the event of a former student's default.

The discussion has concentrated on issues of policy, and in this context it is critical to understand that the process of investment in higher education is associated with uncertainty and risk for prospective students. Because of the risk and uncertainty with respect to students' future incomes, an ICL approach is suggested to have the potential for delivering efficacious economic and social outcomes. The essential benefit is that, if designed properly, ICL is the only form of financing that offers both default insurance and consumption smoothing.

It is important to understand that there are several different types of ICL and with associated diverse implications. The approach most likely to deliver desirable outcomes

⁴⁹ This is an important point made consistently by Bruce Johnstone.

is that known as a risk-sharing ICL, in which the public sector acts as an insurer for default risk. Within that category of ICL there are apparently trade-offs between the extent of insurance offered and the extent of public subsidy.

On the other hand, risk-pooling ICL, in which all members of a cohort are responsible for the total debt of the group, have major problems associated with adverse selection and moral hazard. As well, graduate taxes have little resource allocation potential but could nevertheless be designed to raise significant revenue and to be very progressive. Neither a risk-pooling ICL nor a GT are currently in existence, for reasons analyzed.

The international experience with ICLs has been examined in some detail. Outcomes have been diverse, reflecting the very different design and other policy parameters of countries' arrangements. In Australia and New Zealand, for example, ICL have been successfully instituted, and this is likely to be the outcome in the UK when that country moves comprehensively toward ICL. In the US there is an ICL option, but there has been little take-up, for reasons that can be traced to poor design, and as a result of inadequate public promotion.

The chapter explored several developing countries' experience with ICL. While the World Bank and other agencies have actively pursued this financing option in a number of countries, particularly in Africa, there has so far been little success with respect in terms of implementation. The associated factors are explained, the major point being that the administrative requirements for the institution of ICL are significant, and in many cases unlikely to be met without important reform.

The Australian experience with an ICL is analyzed in depth, since this country has been the most studied in part because of its relative longevity. In administrative terms, and with respect to revenue, access and income distribution, HECS can be seen to have worked, although this does not necessarily mean that different approaches would have delivered inferior outcomes. Even so, it seems that the apparent success of HECS has contributed to the international reforms in higher education financing toward the adoption of ICL.

7.2. Suggested areas for future research

What now follows is a list of potential areas of future research. The approach is to recognize an issue, pose a research question, and offer a suggested method or approach to address the subject. The discussion follows the order of topics examined in the chapter.

- (i) One of the alleged externalities from higher education investment is its contribution to economic growth. How should this issue be addressed in the context of the existing empirical growth literature, recognizing that there has been little recognition thus far of the role for economic growth of different levels of educational attainment? Suggested method: a replication of conventional approaches to GDP determinants across both countries and time [following, for example, [Hanushek and Kimko \(2000\)](#), and [Dowrick and Nguyen \(1987\)](#)], with

the addition of measures of both levels of and changes in stocks of higher education levels.

- (ii) Some commentators argue that graduates pay for the public sector outlays for their education through the extra tax revenue provided from the higher income tax paid by this group. What is an appropriate conceptual framework in which to understand the correct level of taxpayers' subsidies for higher education in this context? Suggested method: a modeling of the returns to both graduates and society (through taxation) of higher education investments.
- (iii) Competing, perhaps extreme, interpretations of the relationship between earnings and higher education are: one, that the process simply identifies those with high ability and motivation ('screening'); and two, that higher education endows individuals with greater skills and thus higher incomes (human capital theory). What do these different perspectives imply for the extent to which taxpayers should subsidize the process? Suggested method: an examination of the literature with respect to the conceptual basis and empirical evidence concerning screening versus human capital literature, and an exploration of what the results imply for the role of externalities.
- (iv) A conventional argument for government intervention in the process of higher education investment is that there is a 'capital market failure' – banks are alleged to be unprepared to provide loans to prospective students because there is a high risk of default and no collateral insurance for the lender. What is the empirical basis of this claim, and how important is the issue in an overall assessment of the supposed role for government intervention? Why should the argument be based on the unwillingness of banks to lend excluding the possible willingness of capitalists to invest? Suggested method: an examination of the conceptual basis for capital market failure and an investigation of evidence concerning the supposed reluctance of banks to provide unsecured finance (a survey and analysis of banks might be a useful research exercise in this context) and the supposed asymmetry of information between students and lenders (do students really have a better idea about their future earnings than lenders?).
- (v) Case studies in political economy. What are the important factors behind a government's willingness and capacity to implement higher education financing reform? Suggested method: an examination of the importance of the institutional and political constraints concerning the adoption of ICL [see [Johnstone and Aemero \(2001\)](#) and [Ziderman and Albrecht \(1995\)](#)].
- (vi) In policy design terms it is useful to develop a conceptual framework which allows the costs and benefits for the public sector of alternative approaches to be analyzed. What issues should such a framework take into consideration, and what form should it take? Suggested method: the documentation and justification of alternative government utility functions, paying attention to the rationales behind the weights and forms of their nature in the context of public choice and other theoretical frameworks.

- (vii) Comparisons of the relative costs and benefits of alternative approaches for government intervention with respect to higher education financing need to address the consequences of policy design for student behavioral responses; this should canvass, among other issues, adverse selection and moral hazard. What light can economic theory cast on these issues generally, and how should this best be addressed with the use of a conceptual framework? Suggested method: the development of a model allowing analysis of student choices of the effects of different policies on graduate outcomes, taking into consideration different dimensions of risk and uncertainty [perhaps following, or comparing and contrasting, the approaches outlined in Nerlove (1975), Chia (1990), Grout (1983) and Quiggin (2003)].
- (viii) The nature and form of government approaches to higher education financing will likely have important consequences for the access of those from disadvantaged backgrounds. What is the empirical evidence concerning the participation of the disadvantaged in higher education with respect to different government approaches concerning conventional financing schemes? Suggested method: an examination of panel data in particular countries with respect to the socioeconomic characteristics of disadvantaged individuals participating in higher education, specifically given the occurrence of a ‘natural experiment’ involving policy changes [such as adopted by Chapman and Ryan (2002)].
- (ix) The reluctance of the private sector to be involved in the financing of education. What are the circumstances under which private investments exist for education? Suggested method: find a place where there is active participation of private financing of education and analyze the circumstances under which it developed.
- (x) Hanushek, Leung and Yilmaz (2004) develop a general equilibrium model to analyze the effects of different college aid approaches on economic efficiency, intergenerational mobility and income inequality. However, their modeling of ICL is restricted to risk-pooling schemes, and the only type of uncertainty allowed relates to the probability of a student completing college. What outcomes would result with extensions of their approach to cover risk-sharing ICL, and with additional types of uncertainty, such as with respect to future graduate incomes?
- (xi) It is likely that different types of loan schemes affect graduate career outcomes as a result of the different consequences of repayment obligations. What are the conceptual issues, and how can they best be modeled, pertinent to an understanding of job choices given expected variations in future consumption patterns as a result of the timing and nature of student debt repayment? Suggested method: the specification and analysis of different utility functions conditional on both levels and variances of future consumption patterns in-

- fluenced by alternate paths of loan repayment obligations [see [Browning and Crossley \(2001\)](#)].
- (xii) Documentation and analysis of the recent experience of countries implementing, or attempting to implement, ICL (this could be done with respect to a host of economic and policy issues, such as administration, revenue and access). What have been the effects of ICL of different forms? Suggested method: an exploration in detail of the design and (actual and likely) effects of a particular country's ICL policy, perhaps in a comparative context, with the use and improvement of the approaches taken with respect to the best documented example, Australia. There are by now many candidates warranting further research, including New Zealand, Chile, South Africa and the UK.
 - (xiii) An exploration of the administrative and political economy factors behind the unsuccessful implementation of ICLs in the US. Why is it that ICL policies are seemingly a successful alternative to traditional policy approaches to higher education financing in Australia, New Zealand and the UK, but have not evolved in the similar institutional environment of the US? Suggested method: an examination and documentation of both the influence and nature of US vested interests (specifically the commercial beneficiaries of student loan arrangements), and the design weaknesses of the US ICL approach. If there was to be an informed political economy analysis of the lack of success of the US scheme, it start with the role of commercial vested interests in opposing reform of this type, as implied in [Schrag \(2001\)](#).
 - (xiv) The lessons for research of the Australian experience with respect to the effects of ICL. What has been the experience of other countries' higher education financing approaches with respect to the major economic variables? Suggested method: a replication of the Australian research in countries experiencing changes to financing policy, including documentation of the consequences for internal rates of return and enrollments, revenue, and access [see [Chapman and Ryan \(2002\)](#)].

Acknowledgements

A version of this paper was presented at a meeting of the Handbook authors in College Station, Texas, on 22 March, 2003. The author is grateful for feedback from participants, Peter Dolton and Eric Hanushek in particular, and for suggestions from Miguel Palacios, Andrew Carver, Bruce Johnstone, Chris Ryan, Deborah Cobb-Clark, Nicholas Barr and participants at seminars given at the World Bank and the Australian Nation University. Some aspects of the discussion have drawn upon material in [Chapman \(2006a\)](#), [Chapman \(2006b\)](#), [Chapman and Greenaway \(2006\)](#) and [Chapman and Ryan \(2002\)](#). All errors remain the author's responsibility.

References

- American Bar Association (2003). "Lifting the burden: Law student debt as a barrier to public service". The Final Report of the ABA Commission on Loan Repayment and Forgiveness. ABA, Chicago, IL.
- Andrews, L. (1999). "The effect of HECS on access". Research report. Department of Education, Employment, Training and Youth Affairs, Canberra.
- Arrow, K.J. (1973a). "Higher education as a filter". *Journal of Public Economics* 2 (3), 123–132.
- Arrow, K. (1973b). "The theory of discrimination". In: Ashenfelter, O., Rees, A. (Eds.), *Discrimination in Labor Markets*. Princeton University Press, Princeton, NJ, pp. 3–33.
- Aungles, P., Buchanan, I., Karmel, T., MacLachlan, M. (2002). "HECS and opportunities in higher education". Research, Analysis and Evaluation Group, Commonwealth Department of Education, Science and Training, Canberra.
- Barr, N. (2001). *The Welfare State as Piggy Bank*. Oxford University Press, Oxford.
- Barr, N., Crawford, I. (1998). "Funding higher education in an age of expansion". *Education Economics* 6 (1), 45–70.
- Barro, R.J. (1991). "Economic growth in a cross-section of countries". *Quarterly Journal of Economics* 106, 407–444.
- Barro, R.J., Sala-I-Martin, X. (1995). *Economic Growth*. McGraw-Hill, New York.
- Bartel, A., Lichtenberg, F.J. (1987). "The comparative advantage of educated workers in implementing new technology". *Review of Economics and Statistics* 69, 1–11.
- Belfield, C.R. (2000). *Economic Principles for Education*. Edward Elgar, UK.
- Brody, E. (1994). "Paying back your country through income-contingent student loans". *San Diego Law Review* 31, 449–518.
- Browning, M., Crossley, T.F. (2001). "The life-cycle model of consumption and savings". *Journal of Economic Perspectives* 80 (1, Summer), 3–22.
- Cameron, S., Taber, C. (2001). "Borrowing constraints and the returns to schooling". Working Paper w7761. NBER.
- Card, D. (2000). "The causal effect of education on earnings". In: Ashenfelter, O.C., Card, D. (Eds.), *Handbook of Labor Economics*, vol. 3. Elsevier, Amsterdam, pp. 1801–1863.
- Carneiro, P., Heckman, J.J. (2002). "The evidence on credit constraints in post-secondary schooling". *The Economic Journal* 112 (482), 705–730.
- Carver, A. (2004). *Income Collateralised Loans: Market and Policy Explorations*, PhD. thesis, Stanford University.
- Chapman, B. (1997). "Conceptual issues and the Australian experience with income contingent charging for higher education". *The Economic Journal* 107 (42), 1178–1193.
- Chapman, B. (2006a). "Income related student loans: Concepts, international reforms and administrative challenges". In: Teixeira, P.N., Johnstone, D.B., Rosa, M.J., Vossensteijn, J.J. (Eds.), *Cost-Sharing and Accessibility in Higher Education: A Fairer Deal?* Springer-Verlag, Dordrecht, The Netherlands, pp. 79–105.
- Chapman, B. (2006b). *Government Managing Risk: Income Contingent Loans for the Social and Economic Progress*. Routledge, London.
- Chapman, B., Crossley, T.F., Kim, T. (2003). "Credit constraints and training after job loss". Centre of Economic Policy Research Discussion Paper 466. Australian National University.
- Chapman, B., Fraser, B. (2000). "Reforming Rwandan higher education financing". Report to the UK Department of International Development, UK.
- Chapman, B., Greenway, D. (2006). "Learning to live with loans? International policy transfer and funding of higher education". *The World Economy* 29 (1), 1057–1075.
- Chapman, B., Ryan, C. (2002). "Income contingent financing of student higher education charges: Assessing the Australian innovation". *The Welsh Journal of Education* 11 (1), 64–81.
- Chapman, B., Ryan, C. (2005). "The access implications of income contingent charges for higher education: Lessons from Australia". *Economics of Education Review* 24 (5), 491–512.

- Chapman, B., Salvage, T. (1998). "Changes to Australian higher education financing from the 1996/97 budget". In: Harman, G. (Ed.), *Australia's Future Universities*. University of New England Press, Armidale, pp. 49–63.
- Chia, T.T. (1990). "Returns to higher education in Australia". PhD. thesis. Economics Program, Research School of Social Sciences, Australian National University, Canberra.
- Dearing Sir, Ron (Chairman) (1997). *Higher Education in a Learning Society*. UK Government, London, UK.
- Dowrick, S., Nguyen, T. (1987). "OECD economic growth in the post-war period: Catch-up and convergences". *American Economic Review* 79 (5, December), 1010–1030.
- Dynarski, M. (1994). "Who defaults on student loans? Findings from the national post secondary student aid study". *Economics of Education Review* 13 (1), 55–68.
- Eaton, J., Rosen, H.S. (1980). "Taxation, human capital and uncertainty". *American Economic Review* 70 (4), 705–715.
- Englebrecht, J. (2003). "Human capital and economic growth: Cross-section evidence for OECD countries". *The Economic Record* 79, S40–S51 (Special Issue).
- Fane, G. (1975). "Education and the managerial efficiency of farmers". *Review of Economics and Statistics* LVII (November), 452–461.
- Feldman, R. (1976). "Some more problems with income-contingent loans: The case of medical education". *Journal of Political Economy* 84 (6), 1305–1311.
- Finnie, R., Schwartz, S. (Eds.) (1997). *Student Loans in Canada Past Present and Future*. C.D. Howe Institute, Toronto.
- Finnie, R., Usher, A. (2006). "The Canadian experiment in cost-sharing and its effects on access to higher education, 1990–2002". In: Teixeira, P.N., Johnstone, D.B., Rosa, M.J., Vossensteijn, J.J. (Eds.), *Cost-Sharing and Accessibility in Higher Education: A Fairer Deal?* Springer-Verlag, Dordrecht, The Netherlands, pp. 159–188.
- Freeman, R.B. (1971). *The Market for College-Trained Manpower*. Harvard University Press, Cambridge, MA.
- Friedman, M. (1955). "The role of government in education". In: *Capitalism and Freedom*. Chicago University Press, Chicago, IL, pp. 123–144.
- Gemmel, N. (1996). "Evaluating the impacts of human capital stocks and accumulation on economic growth: Some new evidence". *Oxford Bulletin of Economics and Statistics* 58, 9–28.
- Greenaway, D., Haynes, M. (2003). "Funding high education in the UK: The role of fees and loans". *The Economic Journal* 113 (485), F150–F166.
- Grout, P. (1983). "Education finance and imperfections in information". *Economic and Social Review* 15 (1), 25–33.
- Hanushek, E.A., Kimko, D. (2000). "Schooling, labor force quality, and the growth of nations". *American Economic Review* 90 (December), 1184–1208.
- Hanushek, E., Leung, C.K., Yilmaz, K. (2004). "Borrowing constraints, college aid, and intergenerational mobility". Working Paper 10711, August. NBER.
- Harding, A. (1995). "Financing higher education: An assessment of income-contingent loan options and repayment patterns over the life cycle". *Education Economics* 3, 173–203.
- Harrison, M. (1995). "Default in guaranteed student loan programs". *Journal of Student Financial Aid* 25 (2), 25–42.
- Hazarika, G. (2002). "The role of credit constraints in the cyclicity of college enrollments". *Education Economics* 10 (2, August), 133–144.
- Huffman, W.E. (1974). "Decision making: The role of education". *The American Journal of Agricultural Economics* (56 February), 85–97.
- Hume, N. (2004). "What has been the impact of changes in the level of HECS charges on low socio-economic status participation in higher education in Australia?". Term paper. University of Sydney Bachelor of Economics course, the Economics of Education.
- Ishengoma, J.M. (2002). "Financing higher education in post-apartheid South Africa: Trends, developments, and challenges ahead". *The International Comparative Higher Education Finance and Accessibility Project*. University of Buffalo and The State University of New York.

- Jackson, R. (2002). "The South African student assistance scheme". *The Welsh Journal of Education* 12 (1), 63–79.
- Johnstone, D.B. (1972). "The role of income-contingent loans in financing higher education". *Educational Record* (Spring), 161–168.
- Johnstone, D.B., Aemero, A. (2001). "The applicability for developing countries of income contingent loans or graduate taxes, with special consideration of an Australian HECS-type income contingent loan program for Ethiopia". *The International Comparative Higher Education Finance and Accessibility Project*. Buffalo, NY.
- Kane, T., Rouse, C. (1999). "The community college: Educating students at the margin between college and work". *Journal of Economic Perspectives* 13 (1), 63–84.
- Kramer, J.R. (1987). "Will legal education remain affordable, by whom, and how?". *Duke Law Journal* (240), 242–268.
- Krueger, N. (1999). *Education Matters*. Princeton University Press, Princeton, NJ.
- LaRocque, N. (2005). "The New Zealand student loan scheme". A Presentation to the KEDU World Bank International Forum Financing Reforms for Tertiary Education in the Knowledge Economy, Seoul, the Republic of Korea, April.
- Leiva, A. (2002). "El financiamiento estudiantil para la educacion superior". *Cobecion Ideas* 3 (2). Santiago: Fundacion Chile 21.
- Levhari, D., Weiss, Y. (1974). "The effect of risk on the investment in human capital". *American Economic Review* 64 (6), 950–963.
- Lincoln, I., Walker, A. (1995). "Graduate taxes as an answer to higher education financing". *Education Economics* 1 (3), 211–226.
- Long, M., Carpenter, P., Hayden, M. (1999). "Participation in education and training: 1980–1994". *Longitudinal Surveys of Australian Youth Research Report No. 13*. Australian Council for Educational Research, Melbourne.
- Lucas, R.E. (1988). "On the mechanics of development". *Journal of Monetary Economics* 22, 3–42.
- Maani, S.A., Warner, A. (2000). "The economic implications of tertiary fee rises in relation to student welfare and the policy environment". Report to the University of Auckland Council. Auckland, July.
- McMahon, W.W. (1999). *Education and Development: Measuring the Social Benefits*. Oxford University Press, Oxford.
- Marks, G.N., Fleming, N., Long, M., McMillan, J. (2000). "Patterns of participation in year 12 and higher education in Australia: Trends and issues". *Longitudinal Surveys of Australian Youth, Research Report No. 17*. ACER, Melbourne.
- Mincer, J. (1974). *Schooling, Experience and Earnings*. Columbia University Press, New York.
- Moen, E.R. (1998). "Efficient ways to finance human capital investments". *Economica* 65, 491–505.
- Morris, M. (1989). "Student aid in Sweden: Recent experience and reforms". In: Woodhall, M. (Ed.), *Financial Support for Students: Grants Loans or Graduate Tax?* Kogan Page, London, pp. 85–109.
- Nerlove, M. (1975). "Some problems in the use of income-contingent loans for the finance of higher education". *Journal of Political Economy* 83 (1), 157–183.
- Palacios, M. (2004). *Investing in Human Capital: A Capital Markets Approach to Higher Education Funding*. Cambridge University Press, Cambridge.
- Paroush, J. (1976). "The risk effect and investment in human capital". *European Economic Review* 8, 339–347.
- Psacharopoulos, G. (1973). *Returns to Education: An International Comparison*. Elsevier, Amsterdam.
- Psacharopoulos, G. (1985). "Returns to education: A further international update and implications". *Journal of Human Resources* 20 (4), 583–597.
- Quiggin, J. (2003). "The welfare effects of income-contingent financing of higher education". *Faculty of Economics Working Paper No. 428*. Australian National University, Canberra.
- Raymond, R., Sesnowitz, M. (1976). "On the repayment burden of income-contingent student loans". *Public Policy* 24 (3), 423–436.
- Roman, D. (2003). "Higher education and income in Mexico". Mimeo. Universidad Tecnologica de Mexico, MEX.

- Romer, P.M. (1994). "The origins of endogenous growth". *Journal of Economic Perspectives* 8 (1), 3–22.
- Salmi, J. (1999). "Student loans in an international perspective: The World Bank experience". The World Bank.
- Schrag, P.G. (2001). "The federal income-contingent repayment option for law student loans". *Hofstra Law Review* 29, 733–862.
- Schultz, T.W. (1975). "The value of the ability to deal with disequilibria". *Journal of Economic Literature* 13 (3, September), 827–843.
- Teixeira, P.N., Johnstone, D.B., Rosa, M.J., Vossensteijn, J.J (Eds.) (2006). *Cost-Sharing and Accessibility in Higher Education: A Fairer Deal?* Springer-Verlag, Dordrecht, The Netherlands.
- Warner, A. (1999). "Student loans in New Zealand". Master of Commerce thesis. University of Auckland, Auckland.
- World Bank Sector Study (2003). *Higher Education Development for Ethiopia: Pursuing the Vision*, January.
- Wozniak, G.D. (1987). "Human capital, information and the early adoption of new technology". *Journal of Human Resources* 22, 101–112.
- Wran Committee Report (1988). "Report of the Committee on Financing Higher Education (1988)". Australian Government Printing Service, Canberra.
- Ziderman, A., Albrecht, D. (1995). *Financing Universities in Developing Countries*. The Stanford Series on Education and Public Policy, vol. 16. The Falmer Press, Washington.