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Global Higher Education Financing

The Income-Contingent Loans Revolution

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Introduction[1]

When the first official university in Europe was established in the late eleventh century in Bologna, loans were provided to some students. The first student loan system was formalized in 1240, by the Bishop of Lincoln at the University of Oxford. Many other universities followed suit, but it took until 1951 for the Colombian government to initiate the world's first national student loan scheme which is still in (faltering) operation.

Student loans can take two very different forms depending on how borrowers are obliged to repay their debts. First, and most common, loan repayments are determined with respect to time (a certain amount of money is repaid over a set number of years). This is known as a 'time-based repayment loan' (TBRL). Second, loans can be repaid when and only if a debtor's income exceeds a certain amount per period, and this is known as an 'income-contingent loan' (ICL).

Since 1989, when Australia first adopted ICL nationally, the use of ICLs in other countries has been remarkable, including universal coverage of all domestic students in New Zealand (1992), England (1998) and Hungary (2001), and partial coverage in the United States (1994), Thailand (2006), South Korea (2011), Brazil (2015) and Japan (2017). Currently there are legislative reforms underway for introducing ICLs in Colombia, Thailand, Brazil, Japan and Malaysia.

To appreciate why these changes have happened, this chapter

- examines key conceptual student loan issues, concluding that the essential economics of student loans suggests major advantages of ICLs over TBRLs for borrowers, lenders and government;

- explains some important recent empirical methodological work originating from the Centre of Global Higher Education which has provided many governments with the evidential ballast and persuasion to move away from TBRLs and towards ICLs; and
- highlights a critical feature of ICL design, namely that when adopting ICLs, governments have substantial flexibility with respect to parameter choices to ensure that an ICL can be shaped efficaciously to suit the idiosyncratic characteristics of their country's unique context.

The Economics of Higher Education Financing

This section focuses on fundamental issues related to the role of government in subsidizing and providing higher education. We consider the equity of imposing a charge on students; the effects of charging on public-sector decisions concerning the provision of higher education places; the necessity of student loans; and the relative effects of different approaches to the collection of student debts.

Tuition and Equity

Should students contribute towards the costs of public higher education, or, should governments cover all the costs? While most governments charge tuition fees for public university services many in Europe do not, including Germany, Sweden and Denmark. These countries do not offer 'free higher education', since there is no such thing as 'free'. Universities are free to the students because there are no tuition fees but instead all the costs are borne by taxpayers.

Recent political experience illustrates this as a potent issue. For example, it is plausible that promises of university tuition fee abolition by both the UK and New Zealand Labour oppositions in recent (2017 and 2018) general election campaigns were important to their relative success. Furthermore, the state of New York has removed college tuition for the majority of students, and a recent US Democrat presidential candidate, Bernie Sanders, proposed this for public colleges.

What does economics have to say about so-called 'free' higher education? For economists, this is a clear equity issue. Not charging tuition fees for public higher education is regressive, because the majority of taxpayers financing it, non-graduates, are financially disadvantaged over their lifetimes compared to graduates. This observation pervades contemporary economics literature (e.g. Barr 1989) but was also made nearly 150 years ago by Karl Marx (1875).[2]

Unsurprisingly, many on the left of politics argue for tuition-free higher education, because of concerns that tuition fees limit the participation of the poor. But we believe that this concern can be overcome so long as there are no tuition fees *at the point of university enrolment*, and that after graduation loan repayments are only required when debtors' incomes are sufficient to facilitate payment. Thus there can be a resolution between the heart of the left and the distributional logic of economics, which is to require loan repayments if, and only when, graduates receive relatively high incomes; this is what an ICL achieves.

Charging Tuition and the Provision of Public University Places

The introduction of, or an increase in, tuition fees might encourage governments to provide the finances to sustain and expand the number of public university places. From an economics perspective, tuition fees mean the financing of higher education costs the government less per place, implying that *ceteris paribus* tuition fees result in better funded universities.

Some English empirical evidence supports this. Murphy, Scott-Clayton and Wyness (2019) show that the increases in both enrolments and per capita student funding, after tuition fees were first reintroduced in 1998, and when fees were increased to £3,000 in 2006 and £9,000 in 2012, were supported by ICLs. Murphy et al. (2019) argue that, despite these tuition increases, there was no diminution in access to higher education for those from disadvantaged backgrounds. This implies that an ICL system mitigates concerns about participation that might otherwise have existed from debt aversion associated with a TBRL.

Figure 6.1 reproduces Murphy et al.'s (2019) indicative evidence. It shows the spurt in enrolments, particularly for the youngest university entrants, following the 2006 and 2012 tuition fee increases. In a cost-sharing world, since the government finances only a proportion of each additional place, any given expansion requires lower government outlays than it would in a 'free'-higher education world. This explains the association between fee hikes and expansion in England.

Consistent with the English experience, the key motivation for the reintroduction of tuition charges in Australia in 1989 (previously abolished in 1974) was to finance a major expansion of university places (Chapman and Hicks 2018). As a result of tuition revenues, paid through an ICL, enrolments between 1989 and 2015 expanded by a factor of 2.5. However, more international evidence on such ICLs effects is needed to establish the policy validity of the presumed association, including examination of university expenditures in countries without tuition fees such as Norway, Denmark, Sweden and Germany.

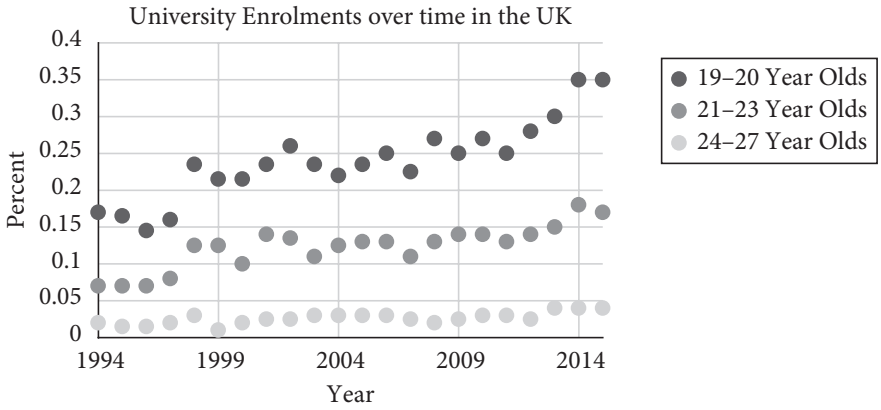

Figure 6.1 Domestic University Enrolment rates by age in the UK.
Source: Murphy, Scott-Clayton and Wyness (2018).

The Necessity for Government-Provided Student Loans

What would happen if countries with tuition fees had no government-provided loan scheme? There are two issues: the first relates to uncertainty and the second to the basic market failure inherent in university funding. With respect to the first Barr (1989), Palacios (2004) and Chapman (2014) highlight that

- enrolling students do not know fully their capacities for higher education – they cannot be sure of graduating;[3]
- students cannot be certain of future success in their area of study; and
- many prospective students, particularly those from low-education backgrounds, will not have much information about graduate earnings, partly because of limited contact with graduates.

Thus, there are important risks for both borrowers and lenders in financing tuition fees via loans. In addition, and critical for prospective lenders, student loans are different to mortgages because of the absence of collateral. If the borrower experiences difficulty with loan repayments or defaults, the lender cannot sell part of the investment to refinance a different educational path.

As a result the market, left to itself, will not deliver propitious outcomes for higher education financing. Credit constrained prospective students will be unable to access commercial loans. Consequently, without government intervention there cannot be equality of educational opportunity (Friedman 1955). Therefore, governments in almost all countries intervene in the financing of higher education through the provision and subsidization of student loans.

Comparing the Effects of Different Forms of Student Loans

What are the essential differences between a TBRL and an ICL, and do they matter? TBRL repayments are set at a constant amount per period for a fixed duration, but ICL repayments depend on an individual debtor's per period capacity to pay as reflected in their income.

With an ICL, no loan repayments are required if a debtor experiences low personal income, resulting from, for example, being unemployed, having a poorly paid job or caring full-time for an infant or aged parent. There is no prospect of loan default or financial hardship as a result of a debtor being unable to keep up repayments in hard times. This security cannot be achieved with a TBRL.

This distinction between the two types of loan is directly supported from a theoretical perspective by Ngo (2019), who, using a model of incomplete credit markets, concludes that an ICL is preferable to a TBRL since the former delivers greater consumption smoothing. Quiggin (2014) comes to the same conclusion with a somewhat different theoretical model.

Furthermore, ICLs have important advantages for government. These include the avoidance of administration and court costs in the event of borrower bankruptcy or default; the fact that more loan outlays can be recovered by not writing off the debts of borrowers who temporarily have low incomes (which can recover later); and the receipt of rapid loan repayments from debtors with high initial incomes. In Australia, for example, the median male graduate repays his debt in about ten years after graduating (Norton 2015).

In addition, so long as ICL debts are collected through employer-withholding (like income tax), the administration of ICLs is extremely simple. In Australia, England and New Zealand, the estimated costs of debt collection are less than 2 per cent of the annual revenue collected (Chapman 2014).[4] These costs are far lower than the public-sector administrative costs of TBRL systems, involving hundreds of officials mostly chasing delinquent borrowers, such as in Colombia, Thailand, Malaysia and the United States.

Student Loan Effects: Measurement

Empirical analyses of student loan-related issues have grown considerably over recent years, with positive implications for country-specific debates about student loan reform. This section examines two important aspects of these developments in concept and practice: the projection of graduates' lifetime incomes and the measurement of loan repayment burdens.

The Critical Importance of Predictions of Graduate Lifetime Incomes

A critical element of student loan analysis concerns graduate debtors' income, which determines whether and how much they can repay debts and how much the government needs to subsidize. Graduates at the bottom of the income distributions are more likely to face difficulty in repaying their debts. And since income varies over a debtor's life course, their risk of default or experiencing consumption hardship due to excessive repayment obligations is not constant over their lifetime. Therefore, reliable projections of graduates' lifetime incomes are essential for analysing student loan systems and the effects of loans on debtors' well-being.

There has been much recent methodological debate and progress within this area. Following Chapman and Lounkaew (2015), many analyses adopted a rather restrictive approach that employs the unconditional quantile regression method to project graduate lifetime incomes (Chapman and Sinning 2014; Chapman and Liu 2013; Chapman and Suryadarma 2013). However, Dearden (2019) explains that restrictions inherent in this approach can result in misleading inferences, and promotes instead the use of simple smoothing of raw income quantiles over a flexible polynomial function of age.

Furthermore, Dearden (2019) stresses that it is vital to account for the dynamics of income across the life course and to show the extent of changes in an individual's income over time which are critical to understanding loan effects. Studies often use cross-sectional (i.e. static) data to calculate lifetime incomes and therefore implicitly assume that debtors' incomes by sex and age remain unchanged over their lifetime, which cannot be accurate. An obvious way to address this is to use longitudinal data, but such data are unavailable in many countries.

When longitudinal data are available, several different approaches are possible (Chowdry et al. 2012; Crawford, Crawford and Jin 2014; Belfield et al. 2017; Britton, van der Erve and Higgin 2019). More recently Dearden (2019) explains a methodological approach which enables approximation of lifetime incomes even when there are just two observations for an individual.

A technical and detailed discussion of these methods is beyond the scope of this chapter. However, it is important to document these advances in the derivation of lifetime incomes and their significant policy implications. Specifically, they help both to demonstrate the adverse consequences of TBRLs and to explain the recent interest shown by several governments in the insurance benefits of ICLs.

Measuring Repayment Burdens in Concept

Accurate projections of graduate lifetime incomes methodologies are significant for calculations of loan repayment burdens, too. The 'repayment burden' (RB) is the most used empirical concept with respect to TBRLs which allows measurement of debtors' difficulties. It is conventionally measured as

$$\frac{L_{it}}{Y_{it}}$$

where L_{it} is the repayment amount of the loan in period t for debtor i and Y_{it} is debtor i's own income in period t. The ratio thus represents the financial consequences for individuals as a result of repaying the debt, and it has been an empirical norm in understanding the potential impact of TBRLs on debtors' financial well-being.

However, the ratio has important limitations in reflecting an individual's financial loan stress. Doan's work (in preparation, 2019) points out that by measuring RB as a proportion of debtor's own income, the repayment-to-income ratio relies on three critical assumptions that are quite restrictive and unlikely to hold in practice. They are: the borrower's own income is the only resource available to repay their debt and the role of intra-household allocation of resources is ignored; loan stress depends only on the size of income relative to the debt and does not depend on the absolute level of income; and, the possibility of a debtor being responsible for repaying both their own student loan and a family member's loan.[5]

In addition to the need for more accurate measurements and interpretations of RBs, there remain unexplored conceptual and behavioural issues behind RBs. For instance, the potential impacts of TBRL collection rules on various decisions made by young graduates, such as occupational choice, leaving their parental homes, getting married and having children. These aspects of how TBRLs affect debtors' welfare are clear candidates for future research, and matter for economic research and policy assessments of student loans (See de Gayardon et al. in this volume for a discussion of the consequences of student loan debt on graduates' lives).

Measuring Repayment Burdens in Practice

Despite TBRLs differing widely between countries in terms of loan size and interest rates, research consistently illustrates that RBs can be excessively high for graduates at the bottom of the earnings distribution across quite different

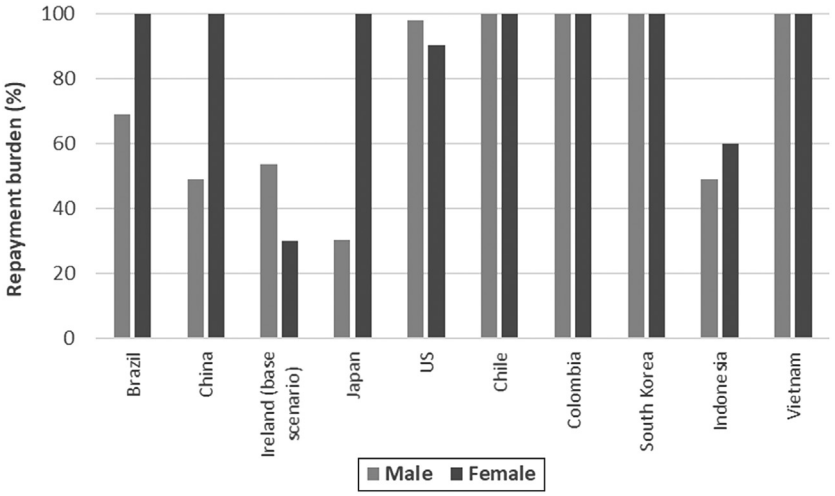

Figure 6.2 Estimated maximum TBRL RBs for the bottom 20 per cent of graduates aged twenty-three to thirty-one.

Source: Reproduced from Chapman and Doan (2019).

national environments. This is illustrated in Figure 6.2, which shows the results of RB calculations from ten countries, with the columns showing the maximum annual RBs for the poorest 20 per cent of young graduates aged twenty-three to thirty-one.[6]

Figure 6.2 shows two things: how very high RBs can be, and the potential for marked differences in RB calculations depending on the design characteristics of TBRLs. As examples, the maximum RBs for male graduates range from 30 per cent in Japan to 98 per cent in the United States; and for females they range from 30 per cent in Ireland to above 100 per cent in Brazil, China and Japan. Although not shown, in all cases bar one, RBs are highest in the first year after graduation, when graduate earnings are at the lowest, except for Japanese females.

In addition to the level of maximum RBs, several papers demonstrate the extent to which graduates might face 'unmanageable' debt, which is defined in some literature as having RBs in excess of 18 per cent of their income (Salmi 2003). Using this benchmark, an estimated 42 per cent of male and 75 per cent of female graduates in Japan will experience excessive RBs for at least one year over the term of their loans (Armstrong et al. 2019), with the corresponding figures in Brazil being 67 per cent for males and 86 per cent for females (Dearden and Nascimento 2019). Similarly, about 70 per cent of male and 67 per cent of female graduates in Ireland would face such excessive RBs in the first year of repayments (Chapman and Doris 2019). While there are limitations to using the repayment-

to-income as a measure of RBs, these results indicate serious adverse effects of TBRLs on debtors' economic well-being.

All these findings suggest that under TBRLs, low-earning graduates are likely to face: significant difficulties in repaying their debts, financial difficulties and higher risks of loan default. In case of default, the consequence for borrowers is a loss of credit reputation and access to future commercial loans. These findings have constituted key data for ongoing policy debates in Ireland (Chapman and Doris 2019), the United States (Barr et al. 2019), Malaysia (Hock-Eam, Ismail and Ibrahim 2014), Brazil (Dearden and Nascimento 2019), Japan (Armstrong et al. 2019) and Colombia (Penrose 2017). In contrast, all ICL schemes, by design, cap RBs at low levels (no more than 8 and 9 per cent in Australia and England, for instance), thus insuring debtors against default and the financial stress arising from adverse employment outcomes.

Undoubtedly, experiences of default have been an important motivation for the emerging interest in student loan reform in many countries with TBRLs. The policy issues for governments are that default significantly damage debtors' lives, and is extremely expensive for the public purse because once a borrower defaults they are unlikely to make future loan repayments.

It is no coincidence that the countries moving towards universal ICLs have experienced high levels of default with their poorly functioning TBRLs. As evidence shows, defaults as measured by the proportion of borrowers unlikely to repay their TBRLs are as follows: 25 to 30 per cent for the United States (Best and Best 2014), 60 to 70 per cent for Thailand (Lounkaew 2014), 35 to 50 per cent for Malaysia,[7] 50 to 60 per cent for Colombia (Penrose 2017) and 30 to 50 per cent for Brazil (Dearden and Nascimento 2019).

ICL: Subsidies and Design

ICL and Interest Rate Subsidies

International student loan policy reform involving moves to replace TBRLs with ICLs requires analysis of the interest rate subsidies associated with particular design features of ICLs. This is critical because protecting borrowers against loan repayment hardship needs to be traded off against the costs of taxpayer subsidies.

Government subsidies arise when debtors do not repay their debt in full and/or when the amount they are obliged to repay is less than the true value of loan

outlays. That is, when the present value of all their repayments is less than the present value of the government's loan outlays.[8]

Britton et al. (2019) calculate the ICL subsidy in an international comparative context which takes into account income dynamics by using simulations based on British panel data. Their results from the creative technique of imposing the collection parameters of different countries – England, Australia and New Zealand – to the British graduate income structures allow an isolation of the empirical characteristics of the graduate labour market from country-specific ICL parameters.

Britton et al. (2019) find that the extent of subsidies provided by governments and the distribution of such subsidies among debtors are the result of several factors: the level of debt relative to graduate earnings (influenced by the level of tuition fees); the variance of graduate earnings; and interest rates on ICLs relative to the government's cost of borrowing (particularly an issue in New Zealand where real interest rates on ICLs are negative). These findings are also supported by the results for the United States (Barr et al. 2019).

Designing Country-Specific ICLs

Many design parameters need to be considered when implementing ICLs including the level of tuition fees, the rate of interest, the level of loan surcharge and the first annual income level for the collection of the repayment (Barr et al. 2019). Consequently, governments can make fairly precise choices when balancing the generosity of the system for borrowers with taxpayer subsidies.

Importantly, propitious ICL design has critical country-specific dimensions, which is largely associated with the idiosyncratic characteristics of countries' graduate labour markets, budget constraints and public administration. A powerful example is the unique character of the Japanese female-graduate labour market (Armstrong et al. 2019). Because of the extraordinarily low incomes of married Japanese women, using the parameters of the English ICL system, for instance, would result in major shortfalls in the collection of ICL revenue in Japan. Armstrong et al. (2019) illustrate that for an ICL to be viable in terms of minimal subsidies, the first annual income threshold of debt repayment needs to be relatively low to maximize the prospect of Japanese female graduates repaying much of their debt before marriage.

A final important point for policy consideration concerning loan parameters is that countries with long-standing ICL systems (Australia, New Zealand and

England) have made considerable changes to their ICL features since their ICLs were originally introduced. The following are noteworthy:

Australia: The first income threshold of repayment was initially set at $A21,000 per annum, but in real terms this was decreased by around 30 per cent in 1997, increased from the 1997 level by around 20 per cent in 2012 and decreased again in 2018 by around 15 per cent. The first rate of repayment was 1 per cent of annual income, which changed to 2, 4 and back to 1 in 1990, 2009 and 2018 respectively.

New Zealand*:* The annual rate of interest on ICL debt began at price inflation plus 3 per cent in 1992, changed to a lower and hybrid rate depending on income in 2000, and was set equal to zero in nominal terms in 2007.

England*:* Tuition fees were £1,000 for every full-time student year for a subset of undergraduate students in 1998, but this charge was increased to £3,000 in 2006 for all full-time undergraduates, to £9,000 in 2012, and is currently £9,250.

There are three broad conclusions concerning ICL parameter design: First, between countries there can be a divergence in myriad arrangements with respect to desirable combinations. Second, the variation in parameter values highlights an important policy issue in ICL student loan reform, which is that there is no single generic best scheme; instead, for propitious ICL reforms, design parameters need to be customized to optimize country-specific objectives and institutional characteristics, and ICL reform allows for this. Third, even within a particular country there have been major changes over time in ICL design settings, reinforcing that political and policy circumstances and dynamics often make any suggestion of a specific all-purpose ICL uninteresting.

Conclusion

There has been a quiet international transformation in approaches to student loan policy. This chapter has sought to explain, from a conceptual basis, why governments are moving away from TBRLs and towards ICLs. As well, we have examined recent innovations in empirical methodologies which facilitate an understanding of the consequences of different approaches to higher education financing.

If designed and collected properly, ICLs have major advantages over TBRLs because the former provide insurance for borrowers against repayment hardship and default. A clear benefit to governments interested in introducing ICLs is that they can be designed to suit the country's idiosyncratic characteristics; this then

facilitates the opportunity for governments to find the right design mix with respect to the trade-off between equity and taxpayer subsidies. The international higher education financing reforms towards ICLs over the last thirty years should be considered to be unsurprising.

Notes

1 To some extent this chapter draws on previous work by the authors, including Barr, Chapman, Dearden and Dynarski (2019), Chapman (2014), Chapman and Doan (2019), Chapman and Dearden (2018), Dearden (2019), Doan (2017) and Doan (in preparation, 2019). The authors wish to thank the Centre for Global Higher Education, University College London and the College of Business and Economics (Australian National University) for financial support. All opinions are those of the authors.
2 Marx (1875) wrote: 'If in some states … higher education institutions are also "free", that only means in fact defraying the cost of education of the upper classes from the general tax receipts' (Ch. (iv)).
3 In Australia, for example, around 20–25 per cent of students end up without a qualification.
4 The importance of the point is given theoretical substance in Stiglitz (2014).
5 Doan (in preparation, 2019) proposes new measures of RBs to address these limitations.
6 These studies all report the estimations of RBs for existing TBRLs in the countries, except for the cases of Ireland, Indonesia and Vietnam, in which a hypothetical TBRL system was designed on the basis of typical features of such arrangements.
7 Malaysian government loan (PTPTN) documents, 2019.
8 See Chapman and Doan (2019) for the formula for the present value of repayments of an ICL.

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