

Case for Support

1 Introduction

Higher education is a fundamental building block to ensure the maintenance and growth of skilled labour supplies, the essential input for productivity growth and economic prosperity. As well, education is the critical government instrument in the quest for equality of opportunity, with public sector approaches to financing being a key to unlocking inter-generational poverty traps. Whilst there is always a role for direct student aid via scholarships or grants, the indispensable vehicle for equitable higher-level skills delivery in a world with fiscal constraints inevitably lies in the design of student loans.

There are two distinct approaches to student loans, defined by the rules determining loan repayments. Still the most commonly used approach is known as “time-based repayment loans” (TBRL), in which, like a mortgage, a set stream of repayments is required over a given time period (such as 10 years for Stafford loans used widely in the US). The other is known as an “income-contingent loan” (ICL), in which repayments depend on a borrower’s future income.

The essential difference is that ICL provides insurance to borrowers from repayment hardship and default, but this is not the case with TBRL. Student loan defaults on a TBRL constitute a very significant problem because of damage to a former student’s credit reputation; this experience severely limits individuals’ access to normal commercial loans, for example for housing purchase. Default helps explain why in many countries TBRLs are in crisis, with very high non-repayment rates for borrowers and major expenditure wastage for governments. And these adverse outcomes help explain why the governments of many countries are currently seeking analysis and guidance from experts familiar with the implementation and design of ICL systems, such as have blossomed in several countries (including the UK, New Zealand and Australia) for more than two decades.

The international student loan debate has taken on new meaning with the COVID-19 crisis, because tens of millions of recent graduates will soon be, or are already, searching for very scarce employment opportunities in now-decimated skilled labour markets. Those former college students with TBRL (such as in the US, Colombia, Brazil and Malaysia) will be experiencing major anxiety associated with the looming high prospects of both loan repayment difficulties and default.

In contradistinction, and even though COVID-19 will likely have comparable recessionary impacts across countries, the graduates in countries with ICL will have no such concerns with student loan repayments. This is because with ICL-type borrowing there is insurance against unpredictable financial adversities; no-one will experience student loan repayment difficulties, and no-one will face default. The case for student loan reform towards ICL and away from TBRL has always been powerful, but when labour markets are as devastated as they are now the need for change is overwhelming; and thus too is the necessity for the most informed research into the economics and econometrics of student loans.

2 Methodological gaps in current research

Because of very engaged and prolific student loan research (both theoretical and empirical), and the clear practical success of ICLs in several countries, there has emerged a consensus in the academic community that ICL are preferred to TBRL (see Chapman and Doan (2019) edited special issue of the *Economics of Education Review*) which the CI and PI were heavily involved. The reasons for the loan preference include that, for countries which have introduced ICL:

- (i) Higher education enrolments expanded rapidly after the initiation of loan reform;
- (ii) The access of the disadvantaged to higher education has expanded in both absolute and in relative terms;
- (iii) There have been no issues with default and credit reputation loss, nor repayment hardships, because ICL rules these out; and
- (iv) Using employer with-holding for ICL collection has been extremely cost-effective.

In strong contrast, countries still struggling with TBRLs have experienced:

- (i) Very high levels of default (rarely below 20 per cent, and often in excess of 50/60 per cent) and thus major credit reputation loss for borrowers;
- (ii) Considerable wastage of government revenue due to the non-collection and expensive chasing of debt; and
- (iii) Low levels of higher education enrolment expansion due to the costs and non-repayment of loans.

So why aren't TBRL abandoned and ICL adopted throughout the world? One very clear possibility is that there is incomplete and likely inaccurate understanding of the implications of ICL, and this can be traced to a lack of use, or even knowledge of, the best emerging research methodologies. For public policy reform it is critical that governments can accurately assess the implications of change, particularly with respect to systems such as ICL that might seem foreign and/or irrelevant and hard to comprehend to governments only familiar with TBRL systems.

One of the most important ICL reform questions for governments concerns the proportion of the loan not expected to be repaid, and several factors will contribute to apprehension and caution in this area, particularly with respect to developing countries. For example, there will be collection concerns due to large informal labour markets, and to this can be added doubts concerning the future incomes which will determine ICL revenue streams. It is this space that our proposed research agenda has such wide-reaching policy reform potential; it entails the elaboration and instigation of new empirical methodologies motivated precisely by the above documented measurement concerns, and in part will be using data that has never been available before which will help this endeavour tremendously.

Currently, in this area of public policy debate there is widespread use of unsatisfactory methods to evaluate the implications of different loan systems in a host of countries. Many of the shortcomings are outlined in Dearden *et al.* (2008), Chapman and Doan (2019), Barr *et al.* (2019) and Dearden (2019) and include: using data relating only to average graduate labour market experience; failing to consider the distribution and spread of graduate earnings; and graduate earnings mobility over the life cycle. As well, the data used to illustrate and estimate the impact of these methodological problems has been inadequate: importantly there has not been use of information on who had a student loan and how much they had borrowed.

In countries with ICL, such as Australia and the UK, over 90 per cent of students take out loans, so the above-noted issue this is not an important concern, but in most countries with TBRLs loan take-up is much less prevalent and more socially graded. A major research point is that to do this critical work properly the extension and refinements of existing methodologies needs to be undertaken with data on TBRL recipients identifying their earnings and repayment records. This will, for the first time, allow extremely accurate comparison of the effects of TBRL compared to the outcomes for borrowers with a well-designed ICL.

Upon implementation the new methods explained fully below will allow us for the first time to correctly value the cost of default with TBRL, not only to the government (who often sell defaulting loan books to private collection agencies at huge losses), but also to students in terms of the financial cost of lost credit reputations. As well, our research will involve econometric methodological advances facilitating the measurement of the direct costs and benefits associated with both ICL and TBRL. An important example in this context is that estimates will be undertaken which explicitly value the consumption smoothing benefits of ICL, in contradistinction to the default damages inherent in the application of TBRL. Importantly, the proposed development and extension of empirical methods estimating the value of the insurance aspects of ICL compared to TBRL will be highlighted in the context of the huge increases in graduate joblessness, now emerging as a consequence of the economic devastation caused by COVID-19.

3 Proposed exemplar study: Colombia

Colombia is of great interest in the history of student loans because it was the first country in the world to have a national student loan program, with the quasi-governmental student loan company (known as

ICETEX) being established in 1951. However, it is widely accepted that the current TBRL loan system is not working; there are very high default rates and accompanying major student unrest, long-term shortfalls in collection revenue collection, and very high administration costs traceable in part to the requirements to chase unpaid debts. These problems are now likely approaching calamitous levels of adversity because of the decimation of the skilled labour market due to the economic consequences of COVID-19.

We are proposing an exemplar study which, if successful for Colombia, could lead to a more ambitious and informed research program involving all other countries considering changes to their student loan systems. A critical reason for the Colombian focus is a result of the unique data set that has recently become available to us from the government, in part because of the long-term student loan reform involvement and trust between the PI and the CI, on the one hand, and the Colombian government and ICETEX, on the other.

The proposal involves developing these new methods and tools using these remarkable data for a country which is committed to introducing a pilot ICL in 2021 for 10,000 new students. We hope and expect that as a result of our work, ICETEX and the Colombian government will introduce wider loan reforms covering both current loan holders and *all* new loan holders, to ensure future sustainability, and improvements in both equity and efficiency. As is the case in many emerging countries such as Chile, Brazil and Malaysia (with which the PI and CI also have strong policy connections), policy makers and stakeholders are reluctant to make changes because of the understandable fears associated with poor data and methodologies highlighted above. We have an endorsement from the Director of ICETEX on just how important this work will be for the policy debate in Colombia and there is also interest from the Vice-minister of Higher Education who has been key in data sharing arrangements between ICETEX and government ministries.

The important motivations for the Colombian case study are twofold: (i) to illustrate the value of our innovative research methodologies for an accurate understanding of the true consequences of student loans; and (ii) to highlight the key role of the use of administrative data has in the provision of information vital to propitious and equitable reform of student loans in all countries. These lessons will be drawn out in what follows.

The PI, CI, and the two ICETEX researchers involved in this research Germán Efraín Pulido Parra and Juliana Aragon Acevedo, already have assembled data on ICETEX loan-holders who first took out a loan from 2003 onwards, a census consisting of just over 580,000 borrowers. Access to this data directly followed a visit by the PI and CI to Colombia in November 2019 where they helped convince the government to share their data with ICETEX. The information has been linked to monthly earnings for those who make social security contributions and, splendidly for research, these data will shortly be linked to loan repayment information as well as individual scores in the university entrance exam.

The data includes measures of individuals' socioeconomic status, the loan/scholarship amount that the student received in every semester of their course, and the terms of the ICETEX loan (which vary by status, ability and student choice). The data set includes other essential information, such as date of birth, sex, birthplace, university attended, private or public institutions of study, course subject, and whether students graduated or not, the last of which is very important in Colombia higher education because of the very high dropout rates (which are close to 50 per cent, and will be an important part of our analysis).

Initial descriptive analysis of the data already informs us importantly with respect to labour market outcomes for ICETEX loan holders, which are taken out by around 20 per cent of higher education students. In a comparison of the earnings of loan holders with data from the key national representative cross-sectional survey, the *Gran Encuesta Integrada de Hogares* (GEIH) for 2018, we see that ICETEX male and female university graduates earn slightly less than that observed for *all* male and female university graduates, with the difference being largest at the top of the earnings distribution. This has provided us with both confidence in the administration information and our ability to rely on survey data for simulating earnings for older graduates (for whom we currently have no administrative data).

Secondly, taking female university graduates as an example, employment rates in both the GEIH and social security data are very similar with around 30 per cent not being in the formal labour market at any one time (defined as contributing to health social security and earning at least 1mmw in that month). Cumulatively, however, just over 90 per cent of loan holders who first took out loans in 2003 have been in the formal labour market between 2009 and 2020. The contemporaneous employment rates (measured as those in the formal labour market earning at any point in time), are very similar but it is the cumulative employment rate that is important for ICLs and this illustrates the importance for all countries' student loan research of accounting for labour market mobility (both movements in and out of the formal labour market, and up and down the earnings distribution) over time for every individual.

4 Methodological innovations in student loan design

Our 4 methodological advances in this project relate directly to the research questions highlighted above.

4 (i) Extending and developing new simulation methods for lifetime monthly earnings and developing models for student loan evaluation using monthly data

The first significant methodological component to our research involves simulating formal labour market earnings for periods that are not observed with the available Colombian administrative data. While we have 12 years of monthly earnings data for all our Colombian student loan holders what is not available is information on earnings prior to 2009, nor of course do we not know what graduates will earn beyond 2020. This means that we need to address the critical and difficult issue of the simulation of earnings and participation in the formal labour market because this data is missing. This is particularly important for looking at the repayment and revenue implications of different ICLs which, for less well-off graduates, necessarily have longer terms than TBRLs.

The PI and CI have been using sophisticated methods for achieving this (see Dearden, 2008), Barr *et al.*, (2019), Dearden, 2019 and Britton *et al.*, 2020). However, all these methods have involved forward and not backward simulation. In Colombia, there is a lot more volatility in earnings and non-employment in the formal labour market that needs to be accurately captured monthly. Our work will extend and develop these methods to simulate *monthly* earnings from graduation/dropout to retirement using older and younger cohorts in the administrative data combined with the GEIH survey data mentioned above.

This approach is similar to, but extends, the approach of Britton *et al.* (2020) (in which the PI was involved) using so-called vine copula methods which allow complex dependencies at very disaggregated levels. There is a host of important decisions to be made with respect to the time periods of labour market data to be used in combination with the administrative data, with the project exploring different approaches to determine the robustness of results to a variety of assumptions and model structures. These methodological ventures will have key implications for the sorts of empirical procedures, and the nature of the data, required for accurate understanding of the true situation of the effects of TBRL in all individual countries.

A second important set of policy-relevant insights will be forthcoming from these unique approaches to much more accurate estimation of the distributions and levels of graduate incomes, and these relate to the design of ICLs. To institute a properly functioning ICL to suit the idiosyncrasies of each country's graduate labour market requires decisions to be made with respect to, *inter alia*, a first threshold of repayment, and interest and repayment rates. It is only possible to do this well with accurate information on expected graduate lifetime income streams; how to go about this, and what data to use, will be significantly clarified through these Colombian project applications. Both the PI and the CI have recently been consulted by the governments of Brazil, Japan, Malaysia and Ireland, and their counsel will be invited again soon in several of these countries; when this eventuates the results of the current approach will facilitate a much more informed ICL reform debate well beyond Colombia (see testimonial from Dr Nascimento from Brazil).

4 (ii) Developing a model that compares TBRL and ICLs in Colombia for lenders and students

As noted, the data from ICETEX includes the records of all loan repayments made between 2003 and 2019. This means for older cohorts we will be able to assess accurately the net present value of the loan,

comparing the amount loaned, and repayments made, by each borrower and allowing the true cost of the current TBRL loan system to be estimated for early cohorts. These results can then be compared to the estimated effects of different hypothetical ICLs.

Both the PI and CI have extensive experience modelling the implications of different ICLs for students and the government and have investigated the distributional implications of alternative rules and parameters. This exploits the earnings simulations described in 4 (i). This is a significantly more demanding exercise than would be the case for TBRL because, for some very low-income debtors ICLs can take much longer to repay than a typical TBRL, meaning that the time periods under consideration for the analyses need to be sufficiently long. We will also be able to compare the repayment burdens of TBRL with these new and improved approaches, to ascertain the extent to which more innocent modelling has been getting different countries' stories right or wrong.

The PI and CI have considerable experience in building student loan models to carry out this exercise (indeed, the CI was responsible for designing the first ICL in Australia, in 1988). This will draw on work they have recently carried out in Japan, Ireland, Brazil, China and Malaysia as part of the ESRC/OFSRE funded Centre for Global Higher Education (CGHE). All this work involved using survey data with no direct information on student loans amounts and repayments. The data available for the use in this proposal will be able to identify the shortcomings of this earlier research and, for the first time, will enable consideration of the short- and long-term implications of a TBRL compared to a well-designed ICL in Colombia, for different types of students with a significant range of debts and required repayment terms. There will certainly be lessons from this for student loan reform in all countries including potentially the UK.

4 (iii) Developing methods that correctly value the cost of default and the cost of loan collection and administration

From 4 (ii) it will be possible to ascertain the proportion of the present value of the loan that ICETEX recovers directly from former students. As well, ICETEX sells its bad loans to private debt collectors and receives revenue for this sale, albeit for much less than the apparent book value of the unpaid debt. With an ICL the process of loan repayments is completely different since there is no default and a very small proportion of borrowers would stay on ICETEX books for the rest of their working life, likely making small contributions when in work and earning above the minimum ICL repayment income threshold.

A very important issue for government is the consequences for the budget of the stream and repayment of loan of TBRL compared to ICL at the aggregate level; and this includes the cost of loan collection and administration which is also important to attempt to value. Further, with our data we can ascertain for the first time, the relationship between TBRL default probabilities and loan repayment burdens and how closely the two are related for different types of students. Is it only low earning graduates who default or do some high earning graduates also default because income verification is difficult with TBRLS? Analysis of these relationships using this highly valuable data will have critical lessons for all student loan research and policy debate.

4 (iv) Measuring the welfare implications of switching from a TBRL to an ICL in Colombia

From the work planned and explained in 4 (i), 4 (ii) and 4 (iii) we will be in a position to examine much more accurately than previously differences in the overall welfare for students of an ICL compared to a TBRL and this can be done in the context of each peso spent on student loans by ICETEX. A different research innovation will take into account the direct and indirect costs and benefits of each system including the insurance value of ICLs (which covers both university dropout/failure as well as bad luck in the labour market), the cost of default, and the cost of income verification/collection in the two systems, several of these having never been done before.

Our methodological approach in the project's final part will extend the literature in this area by drawing student loan design papers, from Long (2019), Lochner and Monge-Naranjo (2016), Abbott *et al.* (2019) and Stantcheva (2017); comparison of the welfare implications and costs of the current TBRL in Colombia

with a properly designed ICL, which will be calibrated using our earlier results; we aim for an ICL design which will improve the welfare of students but cost no more - and potentially much less - than the current TBRL.

This is an ambitious and difficult exercise, but recent theoretical and empirical papers promote methods to estimate the value of the unique insurance component of ICLs, which is unavailable with TBRLs. These involve analysis of the behaviour of current TBRL loan holders with respect to identified characteristics, such as university entrance scores, social status and sex. Assumptions are required concerning borrower utility and risk aversion.

This type of approach is in Chatterjee and Ionescu (2012), Chetty (2006,2009), Finkelstein and Chetty (2013) and Finkelstein, Hendren and Luttmer (2019). For example, Chatterjee and Ionescu (2012) develop a model examining the welfare implications of providing complete student loan forgiveness for college dropouts, taking into account the associated moral hazard and adverse selection. They use observed dropout behaviour in their data to estimate dropout risk in their model for different types of students by ability. They find that complete loan forgiveness improves college investment decisions because the insurance increases the option value of college and encourages more students to enrol and graduate. ICLs also offer partial insurance to dropouts and it is highly likely that, if similar behaviour is predicted for Colombian borrowers, ICLs could reduce dropout rates and increase enrolments for able students from poor backgrounds. Dropout is a huge problem in Colombia. A similar approach could be used to value the welfare benefits of reduced earnings risk from ICLs compared to TBRLs.

5 Dissemination and Impact

A crucial and innovative aim of this project concerns collaborative work with ICETEX that will build capacity to take this work forward both in Colombia and potentially other countries with TBRLs. We envisage this work, including a 2 week visit by the ICETEX analysts to London to work with the CI, will ensure ICETEX has highly skilled analysts who will be able to work with other Pan American countries considering student loan reform. This dissemination and impact component of the bid will be co-ordinated by both ICETEX and APICE, the Pan American Association of Student Loan Institutions. We have an endorsement from the Executive Director of APICE, Jorge Tellez Fuentes on the importance of this work and how his organisation can help with dissemination and impact. We have also costed the services of Tatiana Dias, who is the Research Impact Manager at UCL IOE, to provide administrative support to the PI and to co-ordinate the dissemination and impact activities with partners. She worked as a journalist in major Latin American newspapers such as O Globo prior to moving to Britain and has excellent contacts in the region.

We plan on holding an event at the APICE conference in August 2021 in Costa Rica, and a series of dissemination events in Colombia in November 2021, organised by ICETEX and APICE which the PI, CI and ICETEX researchers will attend as well student loan experts from both Chile and Brazil (Dr Paulo Nascimento who we have previously worked with). The World Bank also has considerable interest in this issue for other emerging and developing countries facing similar problems and Dr Harry Patrinos, Practice Manager of Education at the World Bank has agreed to hold a webinar for interested countries in November 2021 to discuss our findings from this research. We anticipate the findings from this project, could lead to future collaborations with other emerging and developing countries both inside and outside of the Pan American region as well as countries in Europe and Asia.

Professor Simon Marginson, Director of the CGHE, has also written an endorsement of the importance of this research and has agreed to help with impact and dissemination activities during the project. He has also offered us a platform at a major international conference in London after the project has ended. He has agreed to fund the CIs participation at this event.

It should be emphasised that student loan design has never been a more important issue than it is now due to the decimation of labour markets from the effects of COVID-19. This methodological collaborative research project, if funded and successful, could not only transform the live of Colombian Higher Education students, but provide a footprint for improving the lives of higher education students around the world.