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DISCUSSION PAPER SERIES

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ABSTRACT

Reflections on the US College Loans System: Lessons from Australia and England*

There is wide agreement the US student loan system faces significant problems. Seven million borrowers are in default and many more experience non-repayment. The stress of repayments faced by many students results at least in part from the design of US student loans. Specifically, loans are organised like a mortgage, with fixed monthly repayments over a fixed period of time, creating a high repayment burden on borrowers with low income. This paper draws on the experience of the income-contingent loan (ICL) systems operating in England and Australia, in which monthly repayments are related to the borrower's monthly income. By design, those systems explicitly include insurance against problems of repayment during periods of low income. We discuss the design of this type of loan in detail since such an exercise seems to be largely absent in the US literature. Drawing on data from the US Current Population Survey (CPS) we provide two main empirical contributions. First a stylised illustration of the revenue and distributional implications of different hypothetical ICL arrangements for the USA; and second an illustration of repayment problems faced by low-earning borrowers in the US loan system, including a plausible example of adverse outcomes in the Stafford loan. Importantly, we compare repayment burdens under the existing and alternative systems. Our illustrations show how US mortgage-style loans can create financial difficulties for a significant minority of US borrowers, difficulties which a well-designed ICL has significant potential to address.

JEL Classification: H28, I22, I28, J24

Keywords: income contingent loans, mortgage-type loans, student loan design, loan defaults, repayment burdens

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1 Background

It is generally agreed that there is room for major improvements in the US student loan system. In 2016, the stock of debt was over $1.3 trillion with seven million borrowers in default (Dynarski, 2016), and with many more in extended periods of non-repayment. In addition, students face extraordinary complexity, with many choices of loan that have different and frequently opaque financial implications. That complexity appears strange to commentators with experience of the English or Australian student loan systems, which are based on a single, mostly transparent, income-contingent loans. Income-contingent (in US parlance, income-based) loans (ICLs), proposed in concept by US economists Milton Friedman and James Tobin, have been adopted successfully in Australia (since 1989), New Zealand (since 1992) and England (since 1998).

Drawing on English and Australian experience, this paper outlines an income-contingent approach that has the potential to resolve the important issues of the current US student loan system. We seek to address two goals: to add empirical evidence concerning comparisons of the effects of different types of loan schemes for the US; and to provide a template for use in the US student loans debate concerning the choices to be made if an alternative and broadly-based ICL was to be considered as part of a reform initiative. Because the practical purpose of the latter aspiration is unusual in the context of a research contribution, this highlights the occasional implicit ambiguities related to the sometimes inevitable cross-over between enquiry and policy development.

It is important to understand what we are intending and not intending. Drawing on the experience of ICL systems in other countries, the intention is to explain the core conceptual problems of the main student loan arrangements in the US. In addition, we set out an ICL strategy and in this sense go beyond the boundaries of a typical research paper. To that end, considerable effort is made to explore all the design parameters of an ICL in order to set the scene for the statistical illustrations that follow.

Our empirical exercises are original contributions with respect to the US debate about different student loan systems – the current mortgage-style Stafford loan and a hypothetical ICL. Both sets of analysis are based on data from the 2016 US Current Population Survey. The two sets of illustrations seek to address the following questions:

(i) What effects would a hypothetical ICL have on the distributional consequences for debtors and the cost of interest rate subsidies for government; and

(ii) What are the repayment burdens of Stafford loans for low-income borrowers, and how do these repayment burdens compare with a hypothetical ICL?

The exercises are highly stylised. They are not intended as simulations with respect to an economy-wide reform of US student loans policies, but as illustrations of the sorts of issues and potential effect of different ICL designs on both subsidies and distribution.

Our findings look at the overall picture, but make no attempt to address the wide variance in the loan experience of higher education debtors in the US. Some individuals have little debt. In addition, there may be a positive correlation between a person's total debt and their eventual lifetime incomes (Looney and Yanellis, 2017), which might mitigate concerns about debt levels *per se.* Unwrapping these myriad issues for US college loans is a substantial puzzle, our contribution being limited to shining a light on some fundamental design issues. The plan is as follows.

Section 2 explains the advantages of ICLs, which seem to receive little consideration in the US. Section 3 briefly describes the systems in Australia and England, and section 4 draws out the implications of those arrangements. That discussion sets the scene for section 5 which considers the key design elements in an ICL loan and the considerations that underpin the choice of parameters. Section 6 looks at the distributional implications of possible ICL systems, illustrates one of these systems for borrowers at different points of the income distribution, and compares the repayment profiles of these borrowers with what occurs under Stafford Loans. For the last of these, we take highly stylised examples of how difficult financial life can be for people in low-income circumstances.

2 WHY INCOME-CONTINGENT REPAYMENTS FOR STUDENT LOANS?[1]

INCOME-CONTINGENT REPAYMENTS ARE VERY DIFFERENT

Conventional mortgage style loans involve a nominal repayment of $X per month for *n* years. With a mortgage style loan:

- An increase in the interest rates raises monthly nominal repayments.
- What is fixed is the duration of the loan; the variable component is the fraction of a person's income absorbed by repayments (referred to as the *repayment burden*).
- Because repayments stay the same (in the absence of interest rates changes), the repayment burden increases if income falls.

In contrast, with an income-contingent system repayments are *x* per cent of the borrower's current income until he/she has repaid the loan. Further, in virtually all ICL systems payments are taken only after income reaches a threshold (to protect those facing financial stress. In a mortgage-type loan, repayments are for a fixed duration. In an ICL system the duration of

[1] For fuller discussion, see Barr, 2012*a* and 2012*b*.

repayments is variable, being longer for borrowers with lower incomes, and unique to each debtor because the path of lifetime income is similarly unique.

Income-contingent loans have many features not shared by mortgage-style loans. For example:

- An increase in the interest rate has no effect on monthly repayments; what changes is the duration of the loan.
- What is fixed is the fraction of a person's income absorbed by loan repayments.
- If a person's income rises, their repayments increase but their repayment burden cannot exceed the repayment rate defined in the policy.

For the reasons set out below, an income-contingent design to finance investment in human capital is more consistent with economic principles than a conventional loan.

WHY NOT CONVENTIONAL LOANS?

Friedman (1955) identified the fundamental reason why conventional mortgage-type loans work well for home loans but not for investment in skills. Friedman identifies two strategic problems in the market for student loans:

- There is a lack of collateral: in contrast with home loans, there is nothing for a bank to sell if a student defaults on his/her loan; and, again unlike home loans, students can emigrate, leaving no forwarding address. In addition,
- There is asymmetric information: students are better informed than lenders about whether they aspire to careers in say financial markets or the arts.

The first problem implies excessive risk for borrowers (who have no asset to sell to pay off the loan if their subsequent income is low); and both problems imply excessive risk for lenders. As a result, with conventional mortgage-type loans, investment in human capital is too low. The deterrent applies to all students, but particularly to those from poorer backgrounds who tend to be (*a*) less well informed and (*b*) less able to absorb financial risk.

These market failures imply that to achieve an efficient level of investment in human capital a loan system needs two elements:

- Consumption smoothing: the loan needs to be large enough to provide effective consumption smoothing over the course of the loan; *and*
- Insurance: if consumption smoothing is to be effective (that is, people borrow enough to finance the efficient amount of investment in human capital), the loan needs in addition to provide an element of insurance against low income.

LOANS WITH INCOME-CONTINGENT REPAYMENTS

Having identified the capital market imperfections outlined above, Friedman goes on to point out that:

> "The device adopted to meet the corresponding problem for other risky investments is equity investment plus limited liability on the part of shareholders. The counterpart for education would be to "buy" a share in an individual's earning prospects: to advance him

the funds needed to finance his training on condition that he agree to pay the lender a specified fraction of his future earnings" (page 138)

On that basis he advocates loans from government, in return for which:

> "The individual would agree in return to pay to the government in each future year x per cent of his earnings in excess of y dollars for each $1,000 that he gets in this way. This payment could easily be combined with payment of income tax and so involve a minimum of additional administrative expense" (page 140).

Based on similar thinking, Yale University introduced a system of ICLs in the 1970s. The main reason why that system failed, it can be argued, is that a university lacks a sufficiently robust capacity to collect repayments, particularly of an income-contingent form[2].

Thus the design addresses the lack of collateral (a) by using the tax system or equivalent to enforce repayment (reducing risk to the lender) and (b) through income-contingent repayments (reducing the risk to the lender). The design does not address adverse selection directly. However, to the extent that the loan is on better terms than a conventional private loan, the incentive to adverse selection is less powerful; and in addition, taxpayers can absorb an element of adverse selection better than a private lender.

The operation of student loans is analogous to social security and can be designed with a similar principles. For example, pensions redistribute from a person's younger to her older self; student loans can redistribute from middle years to earlier years.[3]

DIFFERENT INCOME-CONTINGENT DESIGNS

An income-contingent mechanism has two generic forms:

- With a graduate tax (as in Friedman), borrowers repay a fraction of their earnings for life or (say) till retirement. This is equity finance: repayments are contingent on lifetime income; thus people with higher lifetime earnings repay more in present-value terms.
- With loans, repayment continues until the borrower has repaid some specified amount, for example, 100 per cent of the amount borrowed in present value terms. In this design, income contingency affects the time path of repayments but, except for the lifetime poor, not the total repayment.

In what follows we concentrate on loan, not equity, finance and do not consider an alternative of a graduate tax.

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[2] As well, it was argued perceptively at the time (Nerlove, 1975) that unusual adverse selection and moral hazard features of the Yale plan would lead to its implosion.

[3] For an early UK proposal in which student loan repayments are linked to social security contributions, see Barr (1989).

DIFFERENT WAYS OF IMPLEMENTING INCOME-CONTINGENT REPAYMENTS

Repayments can be organised in different ways.

- Based on current income, as in Australia, New Zealand and England. Since repayments adjust automatically to current earnings, this is the best method so long as a country has the institutional capacity to implement it effectively;
- Based on past income, as in Hungary; and
- Through a hybrid arrangement, as in the Netherlands. The Netherlands has a traditional mortgage-like system, but if a person's earnings are low, he/she can contact the student loans administration and request a lower repayment rate, losing the benefits of automaticity.

KEY ELEMENTS IN DESIGN

The core elements of an ICL are:

- The repayment rate(s), that is, repayments as a percent of a person's current income;
- The repayment threshold, that is, the level of income at which repayments start;
- The interest rate and/or loan surcharge/administrative charge;
- A cap on total and/or annual borrowing from the student loan system or an ICL design that allows higher prices to involve higher contributions by graduates (see Palacios (2014));
- The maximum number of years of repayment, that is, forgiveness after *n* years;
- Conditions for early repayment;
- A robust collection mechanism.

We discuss these elements both individually and in terms of their interactions in section 5.

3. HOW THE ENGLISH AND AUSTRALIAN STUDENT LOAN SYSTEMS WORK: TUITION[4]

Universities in England[5] and Australia operate in the public sector with tuition charges set by government. Fee levels have changed considerably over the last 20 years and are currently:

(i) A maximum of GBP 9,250 (USD 12,000) per full-time student per year in England, irrespective of subject, with over 95 per cent of institutions charging this amount; and

(ii) Between about AUD 6,000 (USD 5,500) and AUD 9,000 (USD 7,000) per full-time student per year in Australia depending on the course studied, there being three tiers (for example, law and medicine are in the top and arts and humanities the bottom tiers).

Upon enrolment, domestic students choose between paying tuition up-front or deferring their obligation through an ICL system. The vast majority (85 per cent in Australia, 90 per cent in England) choose to defer, and a student's debt is recorded and linked to his/her unique social security/tax file number. When a borrower starts work, employers withhold loan repayments based on the borrower's current income in the same way that they withhold social security payments and income tax. Outstanding debt is recorded and reconciled within a government agency, which can be the tax authorities or a separate loans administration, such as the UK Student Loans Company.

In both Australia and England, borrowers have no repayment obligation unless their incomes exceed a certain amount, GBP 21,000 per year[6] (USD 26,000) in Britain and AUD about 57,000 (USD 42,000) per year in Australia. Above these thresholds loan repayments are an increasing proportion of income, but cannot exceed 9 and 8 per cent of incomes, respectively in Britain and Australia. When the loans has been fully repaid, employers are informed and repayment collections cease; the median duration is about 8 years in Australia and about 27 years in Britain (where average debts are much larger), although the variance is considerable; in Britain all outstanding loans are forgiven after 30 years, but there is no maximum repayment period in Australia. Both systems charge interest, and both include an element of interest subsidies, an issue considered in more depth below.

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[4] What follows considers the case for tuition debts only although the British arrangement also provides means-tested loans to cover living costs. The administrative arrangements are identical although policy concerns with respect to interest rate subsidies are more important in a system that covers living costs because the resulting debt is larger, hence the distortion caused by an interest subsidy greater.

[5] Across the UK there is an ICL for universities, but it is only in England that tuition is charged. We refer to England as shorthand for the combination of an ICL with tuition charges.

[6] The Prime Minister of the UK recently announced that this figure would increase to £25,000 but this is yet to be enacted.

4 KEY CONCEPTUAL FEATURES OF THE ENGLISH AND AUSTRALIAN ICL SYSTEMS

Several critical features of the British and Australian loan arrangements contrast with those in the US. The most important are:

REPAYMENT BURDENS

A critical concept is that of the "repayment burden" (RB), the proportion of a borrower's income required for loan payments. The most important benefit of the English and Australian ICL systems is that by design there is a maximum RB of 8 or 9 per cent. This feature contrasts sharply with the typical situation in the US, where RBs for an individual borrower can fluctuate widely and also differ considerably between student debtors, as noted in Dynarski (2016).

RBs are a crucial aspect of student loan design because they reflect the difficulty or ease of meeting repayment obligations. With non-ICL systems, for example standard Stafford loans, a borrower is required to repay a fixed amount each month for 10 years, irrespective of their financial capacity to do so. Thus borrowers experiencing unemployment or low earnings through non-graduation (a particularly likely outcome for borrowers who did not complete their degree from the for-profit sector), face high RBs, causing hardship and in many cases leading to default. This cannot happen with an ICL loan system and this is the main benefit of such arrangements.

Chapman and Dearden (2017) present calculations of RBs for BA graduates in the US at different percentiles in the US earnings distribution but only for those in the labour force.[7] Though most graduates do not experience difficulties, those in the 10th and 20th centile face serious problems, particularly early in their careers. With hypothetical illustrations, Chapman and Dearden report RBs of over 100 per cent for young men and women in the 10th centile of BA earnings at the age of 22; and even those in the 20th centile face high RBs of over 30 per cent for men and 40 per cent for women early in their career.

These can adversely affect both labour market decisions (whether to work in the public or private sector, take more time to find an appropriate job, do volunteering, look after family members) and decisions about family formation (partnership and when to have children) in ways that are neither efficient nor equitable. Chapman and Dearden (2017) illustrate this with the example of a young female teacher who has a child.

A central characteristic of ICL loans in England and Australia is that such difficulties are ruled out by design, since both systems provide automatic insurance against low earnings. As a result, there are no adverse consequences in terms of damaged credit reputation – a major cost for debtors in the US system. Furthermore, an ICL system minimises (and for some

[7] Chapman and Dearden (2017) reports examination of RBs only with respect to people in the labour force. The approach adopted in the exercise reported here takes into account the effect on income of both unemployment *and* not being in the labor force, which are of course related importantly to income and thus the RB.

designs eliminates) the perverse labour market and family formation incentives that face low earners in the US system.

ADMINISTRATIVE SIMPLICITY

As Dynarski (2016) stresses, while US borrowers can choose an income-based repayment stream from the plethora of loan options available, the system is complicated to navigate and administratively burdensome. For example, being part of the US income-based arrangement must be negotiated on an annual basis and requires a fairly sophisticated understanding of the present value of expected loan repayments of different repayment options. In the English and Australian systems, in contrast, repayments adjust automatically; borrowers are not required to navigate through the myriad rules, nor to make complex decisions about their loan strategies. For employers, it is a simple matter of an additional element of withholding on behalf of the government, alongside income tax and social security.

Stiglitz (2014) has labelled these ICL advantages "transactional efficiencies" and promotes this aspect of the English and Australian policies as one of the most important positive features of ICL. The resulting benefits take two forms:

- The marginal cost of collection is small because the system builds on an existing administrative income-contingent collection apparatus[8].
- As noted, the benefit for the borrower is that repayments automatically adjust to financial circumstances.

ACCURACY IN ADJUSTING REPAYMENTS TO CURRENT FINANCIAL CIRCUMSTANCES

ICL repayments in England or Australia accurately reflect a borrower's *current* capacity to repay, since repayments are collected on the basis of the borrower's current weekly, fortnightly or monthly income[9]. This aspect is important for the insurance element built into ICLs. This is not the case in the US variant of income-based repayment since repayments are based on the previous year's income rather than current income (Dynarski, 2016).

The distinction between past and current income would be immaterial with stable and predictable incomes, but that is not the way the world works for borrowers. The incomes of young people are least stable, and depend significantly on the state of the labour market when first seeking full-time employment. Thus the US income-based arrangements are not income contingent for the most important subset of borrowers – those with unstable employment and income and/or hours of work. Unemployment benefits and tax credits are

[8] Administrative costs in the Australian and UK systems are about 3 or 4 per cent of the annual revenue collected (Chapman, 2014).

[9] ICLs typically involve employer with-holding from wages/salaries, that is earnings, although there are later financial year adjustments to include non-earnings incomes as well. In the rest of the paper we use the terms "income" and "earnings" interchangably.

rightly based on current circumstance; for the same reasons, the insurance element in ICLs requires repayments based on current earnings not past earnings.

ICLs GUARANTEE THAT THE REPAYMENT PERIOD IS OPTIMUM FOR ALL GRADUATES

An implication of the English and Australian ICLs is that the repayment period for higher-earning income borrowers will generally be shorter and for low-earning graduates longer.

There is no obvious argument for having a fixed 10-year (or indeed 20- or 30-year) term for student loans. Indeed, the typical US term of 10 years is unusual compared with student loans in other countries; for example, in the Thai and Canadian mortgage-style student loan systems the repayment periods are 15 and 18 years respectively. It can be argued that it is efficient if the lifetime of a loan is related to the lifetime of the asset, hence 3-year car loans and 25-year home loans. Since human capital has value throughout a person's working life, the option of a long repayment duration is efficient, as well as reducing the risk of default. Note that, as discussed below, a well-designed ICL allows early repayment if that is what the borrower wishes.

MINIMISING TAXPAYER SUBSIDIES WITH ICL

The extent of taxpayer subsidy associated with an ICL depends on its design, discussed in section 5.

It is always possible to design an ICL system that is cost neutral. Key variables include a combination of smaller loans, real interest rates above the government cost of borrowing, loan surcharges, lower repayment thresholds, higher repayment rates, longer loan terms, and a healthy labour market with good earnings growth. Some of these variables can be controlled, others cannot. A good ICL system should be transparent, easy to understand, with high take up (essential for the insurance mechanism), easy to access, easy to administer, placing low burden on borrowers once they enter the labour market, and basing repayments on current earnings.

The English and Australian experience points to the following policy design conclusions.

- ICLs deliver major benefits in terms of consumption smoothing and insurance, because they eliminate concerns with high repayment burdens and hence largely eliminate defaults;
- Repayments through employer withholding based on current income is the simplest and cheapest approach for both lender and borrowers;
- A system without the complications of reapplication has significant administrative and conceptual benefits both for government and borrowers; and
- The parameters of an ICL are critical design issues, to which we now turn.

5 Designing an ICL system

This section discusses in turn the elements in an income-contingent system noted earlier: the repayment function (that is, the repayment rate(s) and repayment threshold); the interest rate on the loan and/or the loan surcharge charge; the cap on borrowing from the system; forgiveness after *n* years; conditions for early repayment; and a robust collection mechanism.

Student loans have multiple objectives, including consumption smoothing and social mobility (hence avoiding high repayment burdens), and fiscal parsimony (thus allowing loans to be large enough to provide good consumption smoothing, and sufficiently widely available to bring about the efficient level of investment in skills). The choice of parameter values will depend on:

- The relative weights given to these different objectives;
- The choice of the other parameters, i.e. the parameters interact with each other;
- The size of the loan;
- The level, distribution and projected rate of change of graduate earnings;
- The tax and benefit regime operating in a country and the tax base;
- Political sensitivity connected with real interest rates and surcharges.

THE CHOICE OF REPAYMENT RATE

- In England, the 9 percent repayment rate applies only to earnings above the threshold of GBP 21,000 per year; thus the repayment for someone earning GBP 22,000 per year is GBP 90, that is 9 per cent of GBP 1,000. In Australia, the first income threshold of repayment is AUD 57,000 per annum, and at that income debtors are required to repay 4 per cent of their *total* income, or about AUD 2,200. This suggests a "cliff-edge" as income crosses the threshold, and it is likely that this has behavioural effects, such as tax bunching[10].
- A higher repayment rate brings in more repayments faster, but creates a larger potential distortion to labour supply, as labour supply is affected by the marginal tax rate. In England, the repayment rate of 9 per cent means that the increase in the marginal tax rate above the threshold is 9 per cent for all graduates (until the loan is repaid). In the Australian system the high short-term costs incurred at the first threshold can be reduced by having a lower initial repayment rate; the issue is currently under consideration by the Australian Parliament.

[10] An advantage of using a total instead of a marginal income basis of collection is the revenue receipts will be quicker. Chapman and Leigh (2009) find evidence of bunching in the Australian system, but it seems to be empirically very small (although that was when the first repayment rate was only 2 per cent of income and it has since increased to 4 per cent).

THE CHOICE OF REPAYMENT THRESHOLD.

- Other things equal, a lower repayment threshold increases repayments, making it possible, for example, to have a lower repayment rate at any given level of income.
- The case for a higher threshold is to avoid the high effective marginal tax rates faced by many low earning recipients of income-tested benefits, and to reduce financial stress on low earners. A higher threshold disentangles student loan repayments from the welfare system, with both efficiency and equity gains, but reduces revenue.
- The choice of threshold depends on the balance between repayment flows and social concerns, and will depend crucially on the median level of income in a country, the extent of income inequality, its tax and benefit systems and the efficiency of the tax collection/employer withholding system.

THE CHOICE OF INTEREST RATE

- If a policy aim is to keep taxpayer subsidies small, one approach is an interest rate on the loan which is not below the government's cost of borrowing. An interest rate below the cost of finance means that *no* borrower repays in full in present value terms, an outcome which can be expensive in fiscal terms (especially if the government cost of borrowing is high). However, a lower interest rate may be politically more palatable,[11] and may reduce adverse selection, and is also more progressive in terms of the proportion of the loan paid by the cohort of borrowers in present value terms across the earnings distribution. We return to the issue in section 5.2.
- If the interest rate is set above the government's cost of borrowing, borrowers who repay their loan in full repay more than the cost of their loan in present value terms. However this is no longer necessarily progressive within the cohort of borrowers (since the richest graduates repay their loan faster and hence contribute less proportionately in present value terms from the interest surcharge).

THE CHOICE OF SURCHARGE

- A loan surcharge is an alternative to a positive real interest rate, or an option alongside it.[12] A surcharge works by adding *x* per cent to the amount borrowed; for example a 10 percent surcharge on a loan of $10,000 requires the borrower to repay $11,000. Unlike compounding real interest rates, a surcharge is transparent and can help to maintain progressivity within the cohort of borrowers. This is because a surcharge with no real interest rate on the debt afterwards means that the highest income

[12] The US Stafford Loan system currently has a loan surcharge of 1.67 per cent.

earners pay the quickest and thus have lower interest rate subsidies from CPI indexation only of the debt.

- A possible disadvantage is that a surcharge, particularly if large, may affect the decision to take out a loan, that is, create adverse selection. There is no evidence for this response with the surcharge in the Australian ICL, in part because the sysem is mandatory[13]..

MAXIMUM NUMBER OF YEARS OF REPAYMENT

- In a system with a positive real interest rate, a lower maximum repayment duration is more progressive (since lower earners are increasingly protected), but at the expense of less revenue.
- England has a maximum repayment duration of 30 years, that is, any outstanding loan balance after 30 years is forgiven. In Australia, by contrast, there is no maximum period of repayment but implicitly it is set to be the death of a debtor.

CONDITIONS FOR EARLY REPAYMENT

In a well-designed system borrowers should be able to repay early, in part or fully, with no penalty, so that nobody is forced to take longer than they wish to repay. A well designed system should have no incentives to repay early and/or ensure that there is no loss of revenue if there is early repayment.

A ROBUST COLLECTION MECHANISM

As discussed earlier, employer with-holding on the basis of current earnings is (a) cheap, (b) robust in a country like the US, and (c) essential if the insurance element in the loan is to be effective. Retrospective collection of ICL repayments, albeit necessary for self-employed workers, is not transactionally efficient for employees and defeats the essence of the insurance element of an ICL loan system. A system as suggested by Dynarski (2016) in which employer-withholding is done in the same way as is done with respect to social security contributions, would be ideal.

FUTURE PROOF

A well designed ICL should be transparent, future proof and not easily subjected to political manipulation.

In sum, an efficient loan scheme has the characteristics summarised in Box 1.

[13] In a sense the Australian loan system can be avoided by students paying tuition charges up-front, but being involved in the arrangement is compulsory. Around 85 per cent of students in a given year choose the loan option.

Box 1 Characteristics of a good loan design

INCOME-CONTINGENT REPAYMENTS based on current earnings.

A WRITE-OFF after *n* years, or at retirement or death.

REPAYMENT THRESHOLD AND REPAYMENT RATE chosen so that:

- A graduate with 'good' earnings repays (in PV terms) 100 per cent, or for high earners perhaps more than 100 per cent, in the latter case with a cap on maximum overpayment (in present value terms) by any individual.
- As far as possible seeks to avoid distortions, e.g. large cliff edges or wedges.

Such a loan is designed to make a loss on people with low lifetime earnings but should seek to keep the loss on other borrowers low.

Fiscal parsimony of loan design matters, not out of a sense of the purity of the loan, but because loans that make avoidable losses reduce their capacity to fulfil their core purpose of facilitating investment in human capital. Expensive loans restrict one or more of:

- The number of loans that are made available;
- The size of loans;
- Student numbers;
- The breadth of the loan system, e.g. not covering living costs, or excluding part-time students, postgraduate students and students in sub-degree tertiary education.
- Spending on more powerful pro-access policies, for example improving nursery and primary education.

FINANCING NON-REPAYMENT. The design question is where the loss on low-earning borrowers should fall: (a) on the taxpayer, or on the cohort of borrowers through (b) a cohort risk premium or (c) a surcharge.

- With a small loan any of these methods is likely to be effective.
- The larger the loan the greater the marginal loss (the marginal loss on a $1 loan is close to zero (since almost everyone has sufficient income to repay a $1 loan), on a $1m loan it is close to 100 per cent). If loans are large, excessive reliance on any one method is generally suboptimal.
    - Taxpayer subsidy: a large fiscal cost (as in the English loan until 2012), as just discussed, creates downward pressure on the number and/or size of loans, and crowds out other beneficial activities;
    - Risk premium: a large loss requires a substantial risk premium, that is, an interest rate significantly above the government's cost of borrowing, risking adverse selection and creating potential political problems;
    - Surcharge: a large loss requires a substantial surcharge, again raising the prospect of adverse selection.

This line of argument suggests that the loss should be covered by a mix of the three mechanisms, the mix depending on the size of the loan and country specifics.

6 Empirical illustrations OF AN ICL for the USA

How might such a system work in the US? In order to assess this, we require good earning simulations of future graduates throughout their (simulated) lifetimes. This is the only way to work out the full cost implications of different ICL designs and the full distributional implications for borrowers. In England, the Department for Education provides simulated earnings profiles for male and female graduates, which allow anyone to calculate the implications of different ICL systems for different types of graduates and on government finances[14] under different assumptions. It is very similar to models developed at the Institute for Fiscal Studies since 2002.[15] In the US, it would be easy for the government to replicate these simulated earnings since they have the best sources of longitudinal data (for example, see Looney and Yanellis, 2014).

Instead, for this paper we take the latest data from the 2016 Current Population Survey. We focus on Bachelor of Arts (BA) graduates and assume real earnings growth of 1 per cent real per year for all these graduates. We include all graduates including those not in the labour force (as noted, in contradistinction to the approach undertaken in Chapman and Dearden, 2017).

We assume all BA graduates stay in the same earnings percentile throughout their life. This is simply for illustrative purposes and in no way reflects a typical earnings path for BA graduates and will exaggerate differences in earnings across the BA graduate distribution and will be an upper bound on taxpayer subsidies involved in different types of ICL systems.[16] Dearden (2017) reports use of the same CPS data and allowed for income dynamics and shows that taxpayer subsidies are likely to be significantly lower. In this paper we are more concerned with showing the implications of different types of ICL designs which is illustrated more clearly assuming no dynamics. We begin by looking at the implications of an example ICL scheme across the distribution of all BA graduates.

We start with (a) a system with a zero real interest rate, and consider its distributional impact within the cohort of borrowers and the overall taxpayer subsidy. We then show the

[14] See https://www.gov.uk/government/publications/simplified-student-loan-repayment-model.

[15] See Haroon Chowdry *et al.* (2012a).

[16] Note that using example individuals and or assuming that somebody stays in the same percentile of the earnings distribution is not realistic and will over-estimate taxpayer subsidies. We do use dynamic simulations from Dearden (2017) to show the likely magnitude of these over-estimates. Studies that have analysed the PSID and/or SIPP data in the US show that individuals experience transitory and permanent employment and earnings shocks throughout their lives, for example, see Low *et al.* (2010). Moreover, the big differences between the two systems is for people with even poorer labour market outcomes. The aim of the example graduates we use in this section is to show that that a well designed ICL can make a significant difference in important ways even for a moderately successful graduate. We also show, that for a successful graduate, revenue streams can accrue faster than with a mortgage-type loan.

distributional implications of reducing taxpayer subsidies via (b) a real interest rate only or (c) a surcharge only and (d) a real interest rate in combination with a loan surcharge.

We then illustrate the essential differences of our ICL system with a Stafford style mortgage loan using two examples of graduates: a female BA graduate who is assumed to earn around the 35th centile of the earnings distribution throughout her life, and a male graduate who is assumed to earn around the 90th centile of the male earnings distribution throughout his life. These very different experiences have been chosen to illustrate the range of likely earnings and ICL experiences.

CASE 1: AN EXAMPLE ICL WITH ZERO REAL INTEREST RATE

How might an ICL system work in the US, and what would be the distributional and taxpayer subsidies involved? As an illustration only, we start with the following possible ICL parameters for a US system:

(i) A first income repayment threshold of $25,000 per year, and a second threshold of $40,000 (in a policy reality these would both uprated annually with inflation);
(ii) A flat 3 percent repayment rate on total income above the first threshold and 6 percent for earnings above the second threshold;
(iii) A zero real interest rate (that is, debt increases with inflation only);
(iv) A loan write-off after 25 years compared to no write-off.[17]

Our example is for a debt of $35,000. In reality there would be a range of loans and hence debts that would be subject to an ICL. This may involved altering the parameters of the ICL according to debt level as suggested by Palacios (2014) but this is beyond the scope of this paper.

In order to compare the full distributional implications of this ICL as well as the size of the taxpayer subsidy, we calculate the unconditional quantiles of earnings by age and gender using CPS income data for BA graduates.[18] We then smooth these quantile estimates using polynomials in age (see Dearden, 2017)). We use these smoothed unconditional quantile earnings profiles by age and gender to estimate the impact across the entire income distribution of BA graduates. For calculating the taxpayer subsidy we pool the male and female results using current BA conferment proportions taken from the Digest of Education

[17] With the no write-off scenario we assume all individuals retire at 65 which means that we will over-estimate the costs of such a scheme as a significant proportion of graduates will earn beyond 65.

[18] In all our analysis we use the CPS the variable 'ptotval' which is total income including unearnerd income. All data was obtained from Center for Economic and Policy Research (2016).

Statistics for 2015.[19] We assume real earnings growth of 1 per cent per annum; and that the government cost of borrowing is the 10-year bond rate plus ¼ of a point.[20]

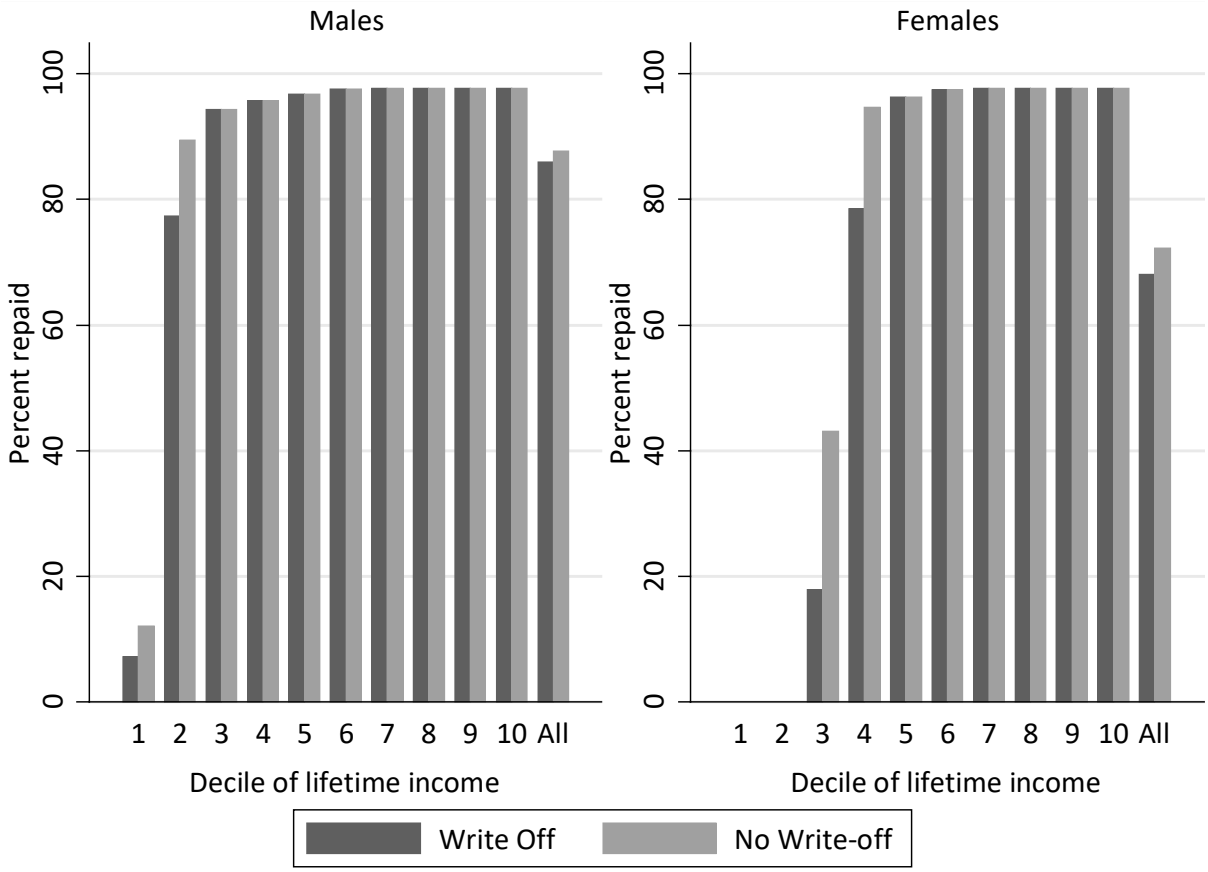
A zero real interest rate in an ICL system is always *progressive* within the cohort of debtors for all borrowers but it helps the lowest graduate earners the most. This is because those with lower incomes repay their loans for longer (and are more likely to not repay in full), and the longer a loan with a subsidized interest rate is not fully repaid, the bigger is the subsidy.

Figure 1 shows the distributional impact (by deciles of the male and female college earning distribution) of a zero interest rate for our baseline scenario for men and women. We show the differences when there is debt write-off (after 25 years) and no debt write-off.

[19] BA degrees conferred in 2015 were 812,669 men and 1,082,253 women (see https://nces.ed.gov/programs/digest/d16/tables/dt16_301.10.asp). This is slightly different to the methodology used in Dearden (2017) who bases all here analysis using a simulated sample of 20000 graduates assuming no mobility and then earning dynamics. Here we just take percentile estimates of income to undertake the analysis.

[20] The Stafford interest rate of 3.78 per cent per annum nominal is the government cost of borrowing plus 2.05 per cent points and hence 1.78 per cent points higher than a real interest rate of one percent (assumed in our ICL example) with one percent inflation.

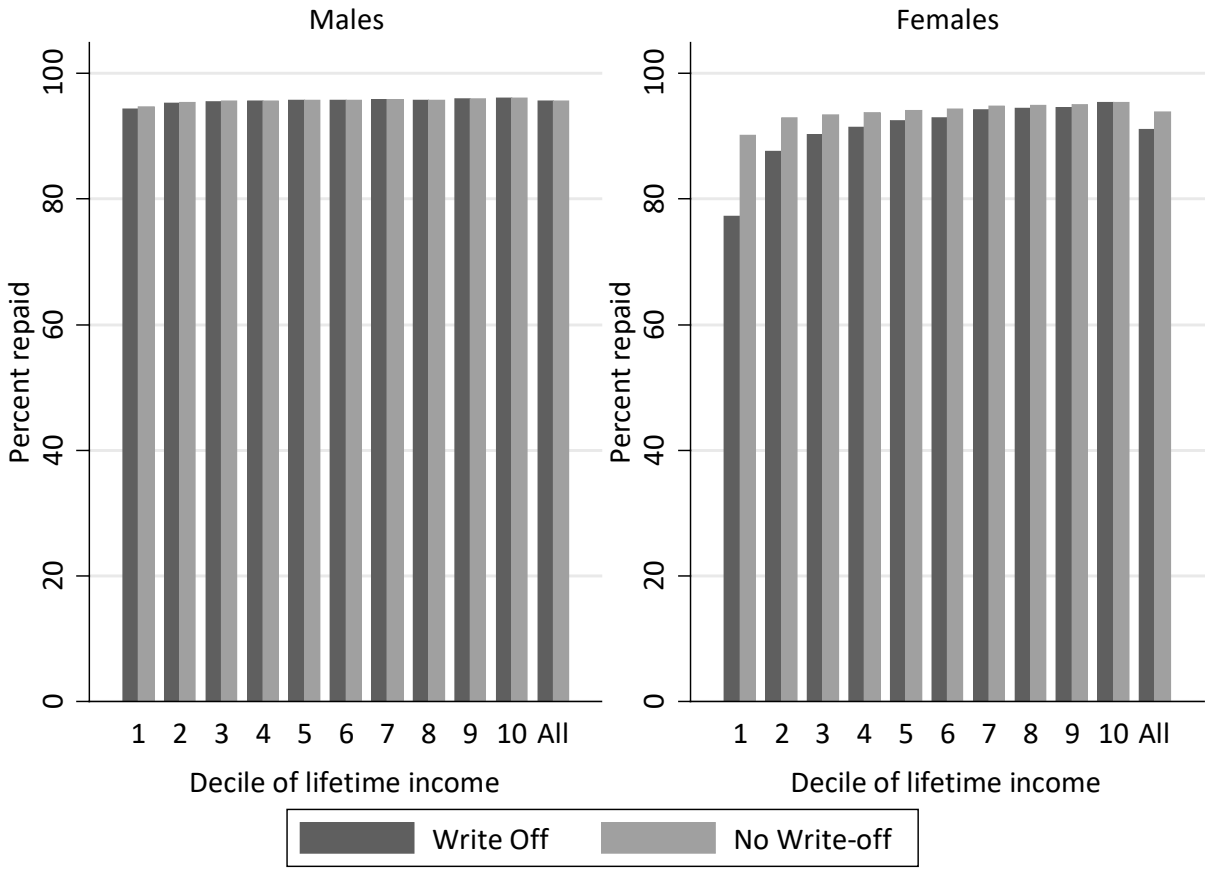
Figure 1
Proportion of ICL Loan Repaid by Decile of Lifetime Earnings:
zero real interest rate and no income dynamics



Overall, this baseline scheme involves a 29 per cent taxpayer subsidy with a write-off, and a 26 per cent subsidy with no write-off. All graduates receive a taxpayer subsidy because there is a zero (subsidised) real interest rate while at college and below the first threshold from which every graduate benefits. On average women repay between 68 per cent and 72 per cent in present value terms, and men between 86 per cent and 88 per cent. Having a write-off makes the scheme more progressive for the cohort of borrowers but only impacts on the bottom four deciles for women and bottom two deciles for men.

The analysis above has assumed that all graduates stay in the same part of the earnings distribution from the age of 23. If we instead use the preferred dynamic simulations of Dearden (2017) where we allow for realistic earning dynamics using CPS data we get a very different picture as shown in Figure 2:

Figure 2
Proportion of ICL Loan Repaid by Decile of Lifetime Earnings:
zero real interest rate and income dynamics



In this case the baseline scheme involves a significantly smaller taxpayer subsidy of between 6 and 9 percent for women and 4 per cent for men. The loan write-off has virtually no impact on men but impacts on women up until the 6th decile. Again some caution is needed here as these dynamic simulations are only based on the short panel available in a subset of the CPS data (see Dearden , 2017).

Predicting future earning dynamics is a difficult task and with both the static and dynamic simulations we have assumed 1 per cent real income growth across all deciles of the income distribution. We assume that the unemployment rate and variance in earnings at every age is the same as it was in 2016 in the CPS data. Clearly our estimates of likely taxpayer subsidies are very sensitive to these assumptions.

In what follows we take the conservative approach and assume no mobility. It is important to emphasise that these simulations will be an upper estimate of the likely cost of an ICL and the actual cost is likely to be lower under reasonable assumptions. These estimates of taxpayer subsidies are sensitive to loan size and with large student loans (such as those in the UK) the taxpayer subsidies involved in an ICL can be relatively large regardless of assumptions about

income dynamics. Finally we are estimating the costs of the ICL based on individual gross income, including non-labour income. The actual income base used for an ICL clearly impacts on estimated taxpayer costs.

We now consider two ways of reducing taxpayer subsidies and highlight the associated distributional consequences with respect to all taxpayers: increasing the real interest rate above the government cost of borrowing and applying it for the duration of the loan (including while at college and when earning below the first threshold); and introducing a loan surcharge.

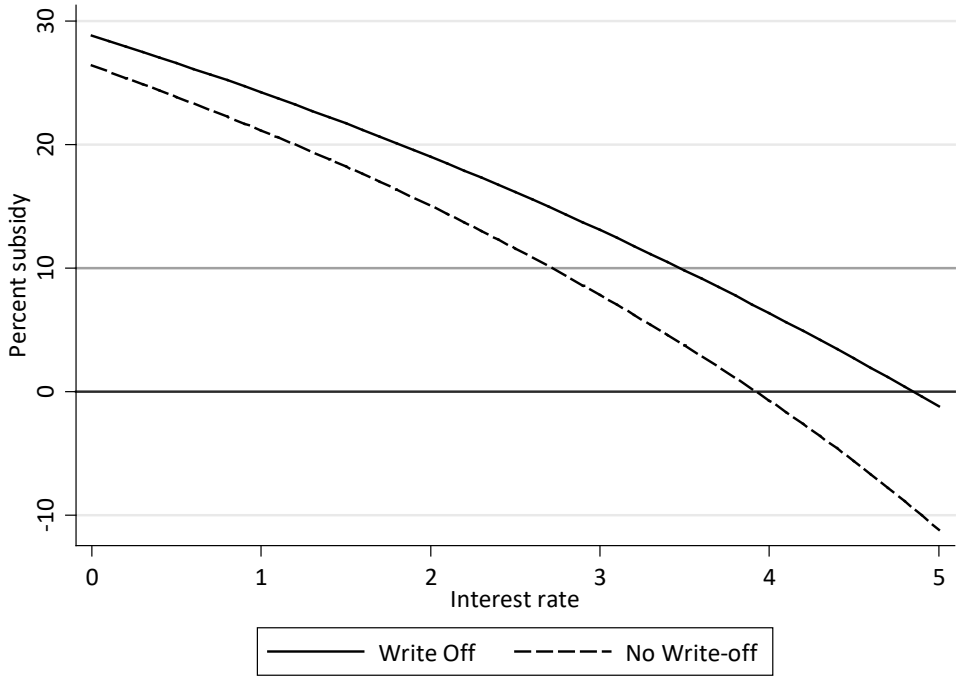
CASE 2: RAISING THE REAL INTEREST RATE

Figure 3 shows the relationship between the real interest rate and the extent of taxpayer subsidies for the ICL described above for the case where we assume no mobility. In contrast with Case 1, the real interest rate applies from the moment the student takes out the loan, with no subsidy during college or below the first threshold. The figure shows that the taxpayer subsidy falls as the real interest rate increases. From the graph we can see the level of real interest necessary to make this baseline ICL system cost neutral. For the loan with no write-off it would be 3.9 per cent real or 4.9 per cent nominal, and with a 25 year write-off 4.9 per cent real or 5.9 per cent nominal.[21] In what follows this is what we define as involving no overall taxpayer subsidy.[22] This is identified where the lines cross the *x* axis. It is also easy to see what interest rate would require an average taxpayer subsidy of 10 per cent (or indeed any other taxpayer subsidy): for this example the real interest rate could be 2.7 per cent if there is no write-off, or 3.5 per cent real or 4.5 per cent nominal with write-off after 25 years.

[21] This is almost identical to the current Stafford Loan rate of 3.78 per cent nominal.

[22] Of course, this ignores administrative and other costs of implementing an ICL system and ignores non-completers and two year college students. Hence no taxpayer subsidy for the BA group will necessarily involve a taxpayer subsidy for the student loan system as a whole. It also ignores direct government funding for teaching and grants.

Figure 3
Real Interest Rates and Taxpayer Subsidies



Note: The real interest rate is assumed to apply as soon as the loan is taken out.

What are the distributional implications of increasing the real interest rate compared to those shown in Figure 1? To illustrate this we look at the distributional implications of a 10 per cent taxpayer subsidy and 0 per cent taxpayer subsidy by increasing the interest rate under both write-off scenarios. This is shown in Figure 4.

Figure 4
Distributional Consequences of Imposing a Real Interest Rate

We see that for the 0 per cent taxpayer subsidy case, the biggest proportionate burden tends to be centred around the 3rd, 4th, 5th and 6th deciles for males (and 2nd decile with no write-off). Those in the top decile do well in proportionate terms and only males in the bottom decile (with no write-off) and bottom two deciles (with write-off) pay a lower proportion of their loan in net present value terms. For females the biggest proportionate burden is in the 5th and 6th deciles (and 4th decile with no write-off). In the 10 per cent taxpayer subsidy case, those in the 4th, 5th and 6th decile for women, and 3rd, 4th and 5th decile pay proportionately more than other deciles so once again this is not progressive within the cohort of borrowers.

In order to reduce the taxpayer burden, certain groups of graduates are paying more than 100% of their loan value in net present value terms to offset students who do not pay off their loan in full. This illustrates the insurance nature of ICLs. Using a real interest rate to reduce taxpayer costs means that this disproportionately falls on middle earning graduates.

CASE 3: IMPOSING A LOAN SURCHARGE

We now look at the implications of imposing a loan surcharge. A loan surcharge simply increases the debt outstanding by a constant amount. If a student borrows $5,000, their outstanding debt would be $5,500 if a 10% loan surcharge was in operation. All other parameters of the ICL scheme remain the same, just the debt is increased.

In what follows we again pool the male and female BA graduates using latest enrolment figures and use our earnings data to see what surcharge would be necessary to reduce taxpayer subsidies for the baseline scenario with a zero real interest rate. This is shown in Figure 5, which illustrates how the taxpayer subsidy falls as the surcharge increases. The figure also shows the surcharge necessary to make the baseline ICL loan cost neutral, or indeed any other taxpayer subsidy.

Figure 5
Loan Surcharge and Taxpayer Subsidies: zero real interest rate

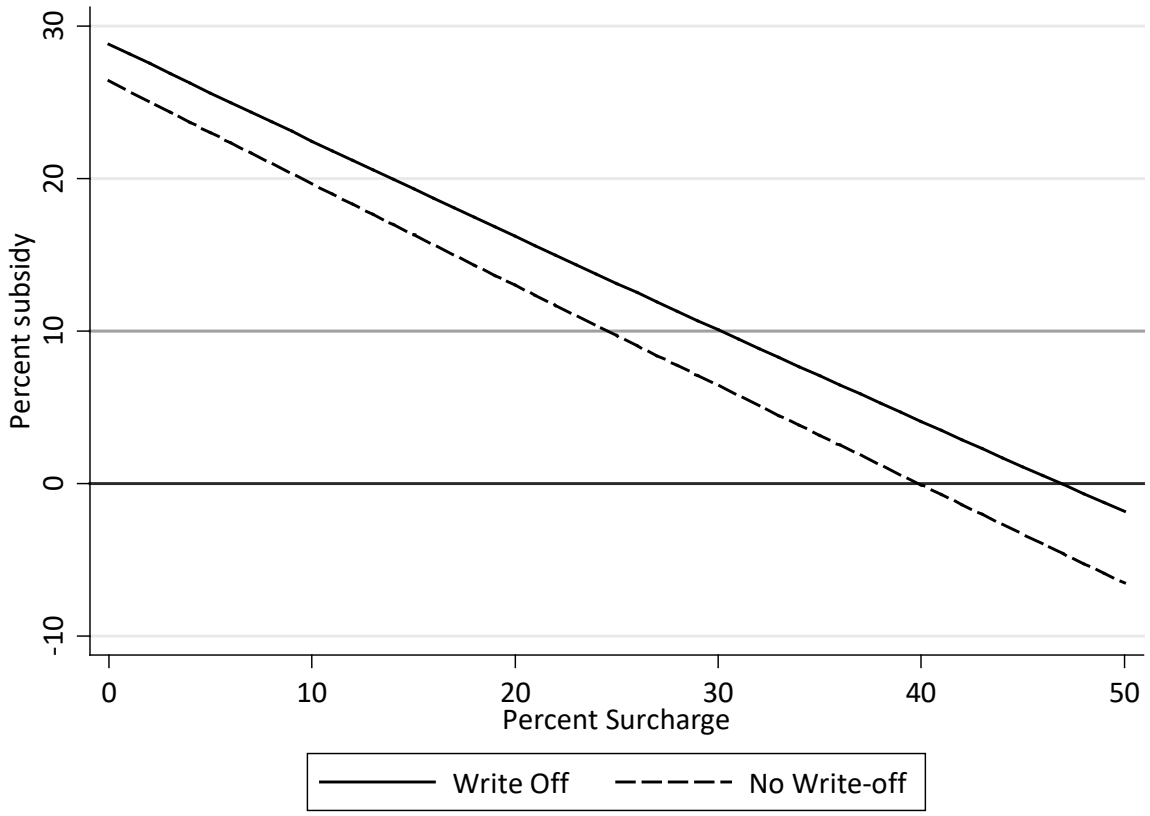


Figure 5 shows that a surcharge of around 40 per cent is necessary to avoid any taxpayer subsidy with no write-off, and 47 per cent with a write-off. Alternatively, a surcharge of

around 25 per cent with no write-off and 30 per cent with a write-off would require a 10 per cent taxpayer subsidy.

Figure 6

Distributional Consequences of Imposing a Surcharge

Figure 6 shows the distributional implications of these two surcharges and shows that they are both progressive within the cohort of borrowers i.e. as we move up the deciles of the income distribution, graduates pay proportionately more. For each taxpayer subsidy they are more progressive than the fiscally equivalent interest rate scenario illustrated above. With a surcharge, the richest graduates pay around 140 per cent of their loan in NPV terms in the case with no taxpayer subsidy and 120 per cent with a 10 per cent taxpayer subsidy. For a Stafford Loan for the same amount, the equivalent figure is 114 per cent but this applies to *all* graduates regardless of earnings and ignoring default.

Finally, in Figure 8, we show the implications of a hybrid scheme which charges a real interest rate of 1 per cent real above the first threshold combined with a surcharge to make up the shortfall. For a 0 per cent taxpayer subsidy, the surcharge needs to be 28 per cent with no

write-off and 35 per cent with a write-off. Alternatively, a surcharge of 15 per cent with no write-off and 20 per cent with a write-off requires a taxpayer subsidy of 10 per cent.

In these examples we have shown the implications only of changing real interest rates and surcharges. However, as highlighted earlier, these are not the only parameters that can be changed.[23] Importantly, the economic and political implications of charging a surcharge vs higher real interest rates are different and may impact differently on student's borrowing and decisions about university. It also depends on how they interact with other components of the ICL design, the tax and benefit system, the private loan market, and the moral hazard and adverse selection issues associated with the ICL design.

Figure 7
Distributional Consequences of Imposing a Surcharge: 1 per cent interest rate above threshold

Figure 7 shows the distributional implications of these two surcharges and shows that they are both progressive within the cohort of borrowers, that is, as we move up the deciles of the income distribution, graduates pay proportionately more. With a surcharge, the richest

[23] Other parameters that can be changed are: the number and level of thresholds; repayment rates; write-off period; the maximum loan level and whether a marginal or average repayment rate is applied. Also, the estimates are sensitives to economy wide variables such as earnings growth across the earnings distribution, the government cost of borrowing and inflation.

graduates pay around 130 per cent of their loan in present value terms in the case with no taxpayer subsidy and 115 per cent with a 10 per cent taxpayer subsidy.

COMPARING ICL AND STAFFORD STUDENT LOANS REPAYMENT SCHEDULES AND BURDENS FOR EXAMPLE GRADUATES

In this section we examine repayment burdens for different types of borrowers under the various ICL schemes discussed in the previous section and Stafford mortgage style loans (Stafford ML). Ideally when conducting this exercise, we would use net income but this is not available in our data. For the vast majority of people we will be underestimating RBs using gross income. RBs will also be affected by other factors such as partner's income which again is not considered in our analysis.

We compare the situation of a female BA graduate who remains in the 35th centile of female BA earnings all her working life with that of a 90th centile male BA graduate. As with our earlier examples, we assume a debt of $35,000 in 2016 prices and a 10 year Stafford ML with a nominal interest rate of 3.78 per cent, the rate applying for those taking out loans in 2016. We compare the yearly repayments and repayment burdens for a Stafford Loan with the ICLs delivering a 10 per cent taxpayer subsidy that we discussed in our distributional analysis above. [24]

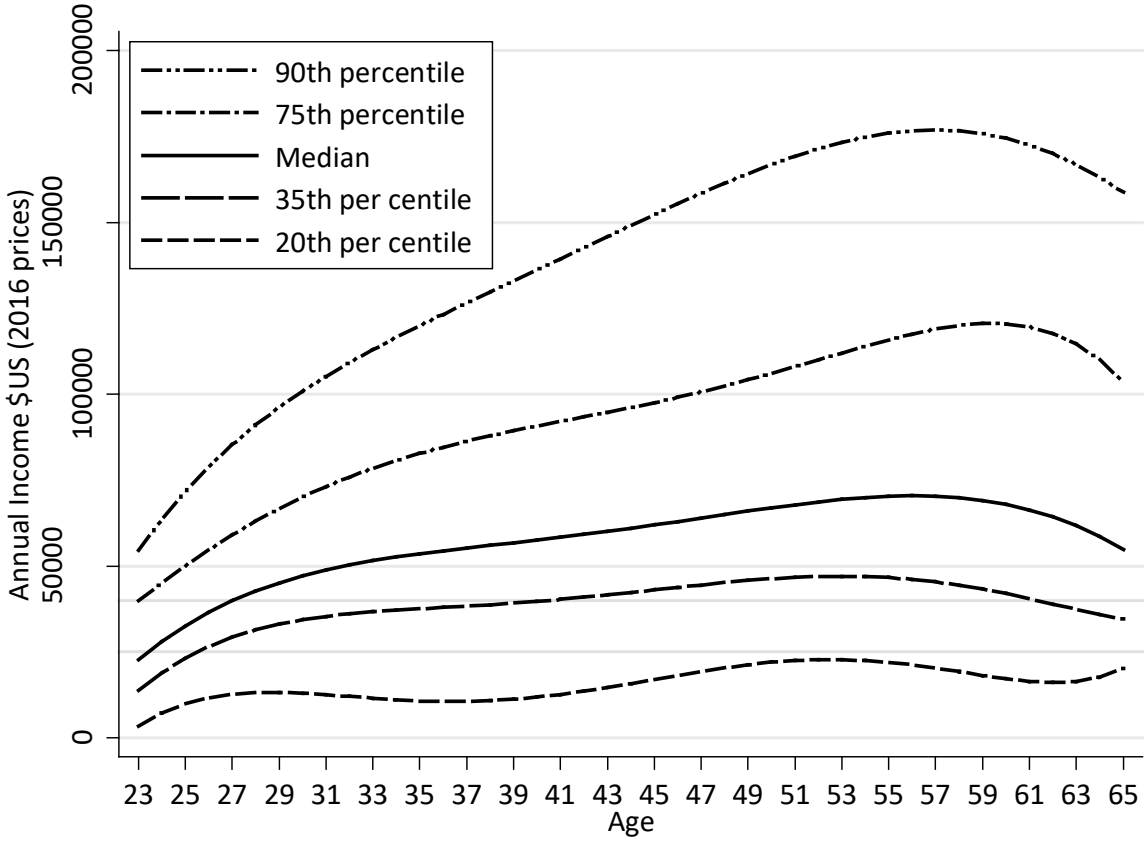
In Figure 8 we show our estimate of the earnings of this female BA graduate in 2016 $US and compare this to a similar females in the 20th percentile and 50th percentile (median), 75th and 90th percentile of the income distribution throughout her life. We have assumed 1 per cent annual real earnings growth.

[24] With the current Stafford MLs the government underwrites defaults on these loans and current estimates suggest that this subsidy is well in excess of 10 per cent of the total value of Stafford MLs (see Looney and Yannelis, 2015)).

Figure 8

Female BA Graduate Income throughout Lifetime at different percentiles

(Annual Income in 2016 $US)



For our example we will assume that graduates borrow $35,000 over 4 years, the same as was assumed in the previous section. We consider the following types of loans:

1. Stafford ML with a repayment term of 10 years and a nominal interest rate of 3.78 per cent[25]
2. An ICL with 2.7 per cent real interest rate and no write-off
3. An ICL with a 3.5 per cent real interest rate and a write-off after 25 years
4. An ICL with a loan surcharge of 15 per cent, 1 per cent interest rate above the threshold and no write-off
5. An ICL with a loan surcharge of 20 per cent, 1 per cent interest rate above the threshold and a write-off after 25 years

[25] The average student debt in 2015 was $30,100 but this included all debt including private debt. See http://ticas.org/sites/default/files/pub_files/classof2015.pdf.

6. An ICL with a loan surcharge of 25 per cent, 0 per cent real interest rate and no write-off
7. An ICL with a loan surcharge of 30 per cent, 0 per cent real interest rate and write-off after 25 years

From the previous section, we saw that all of these ICL schemes involve a taxpayer subsidy or around 10 per cent ignoring income dynamics and so represent an upper estimate of likely costs. Moreover Stafford MLs are currently costing the government a much higher proportion of subsidy due to high default rates so this seems fair. For all scenarios we assume a 1 per cent rate of inflation and a government cost of borrowing of 1 per cent (as we did in the previous section).

Figure 9 shows us the annual repayment schedule in $2016 for these schemes for a women in the 35th centile of the earnings distribution throughout her life. From Figure 8 we see that a women in the 20th centile of the earnings distribution throughout her life would pay nothing under this proposed ICL as her lifetime annual earnings remain under $25,000. For women in the 35th percentile the repayment schedule is identical for all schemes involving write-off as they do not repay their loan within 25 years.

Figure 9
Female BA Graduate 35th Percentile of Earnings: Repayment Schedule ($ per year in 2016 prices) for $35,000 loan

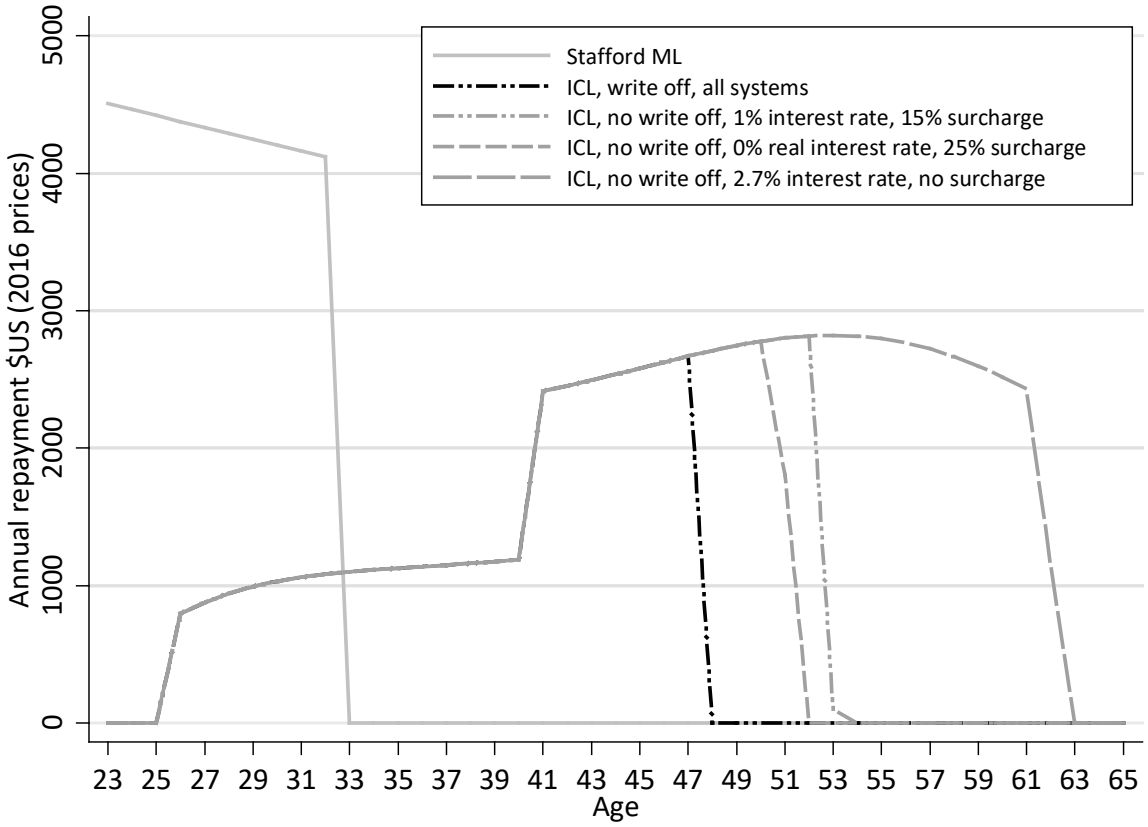


Figure 9 shows that, with the Stafford loan, around $4,100 to $4,500 per year (in 2016 $US) must be repaid for the 10-year period from when the graduate is age 22 to 31, after which there are no further repayments. With the ICL, the repayment streams and levels are quite different. Up until the age of 25, no repayments are made at all as income is below $25,000. Repayments then slowly rise as income rises and in a scheme with a write-off repayments stop after 25 years with the loan not fully repaid. In the schemes with no write-off, there is a jump in repayments at the age of 41 when her income goes above the second threshold of $40,000. But the different schemes have very different implications for how long she pays: until the age of 52 with a zero interest rate and 25 per cent surcharge, 53 with a 1% interest rate and 15% surcharge and 63 with no surcharge and a 2.7 per cent interest rate.

Annual repayment amounts never exceed $3,000 per year and never come close to approaching Stafford levels, even when this graduate's earnings are relatively healthy. Combining the data from Figures 8 and Figure 9 allows the calculation of the RBs for each of the loan systems. The results are shown in Figure 10.

Figure 10
Female BA Graduate 35th Percentile of Earnings: Average Burden (Repayment/Income) for $35,000 loan

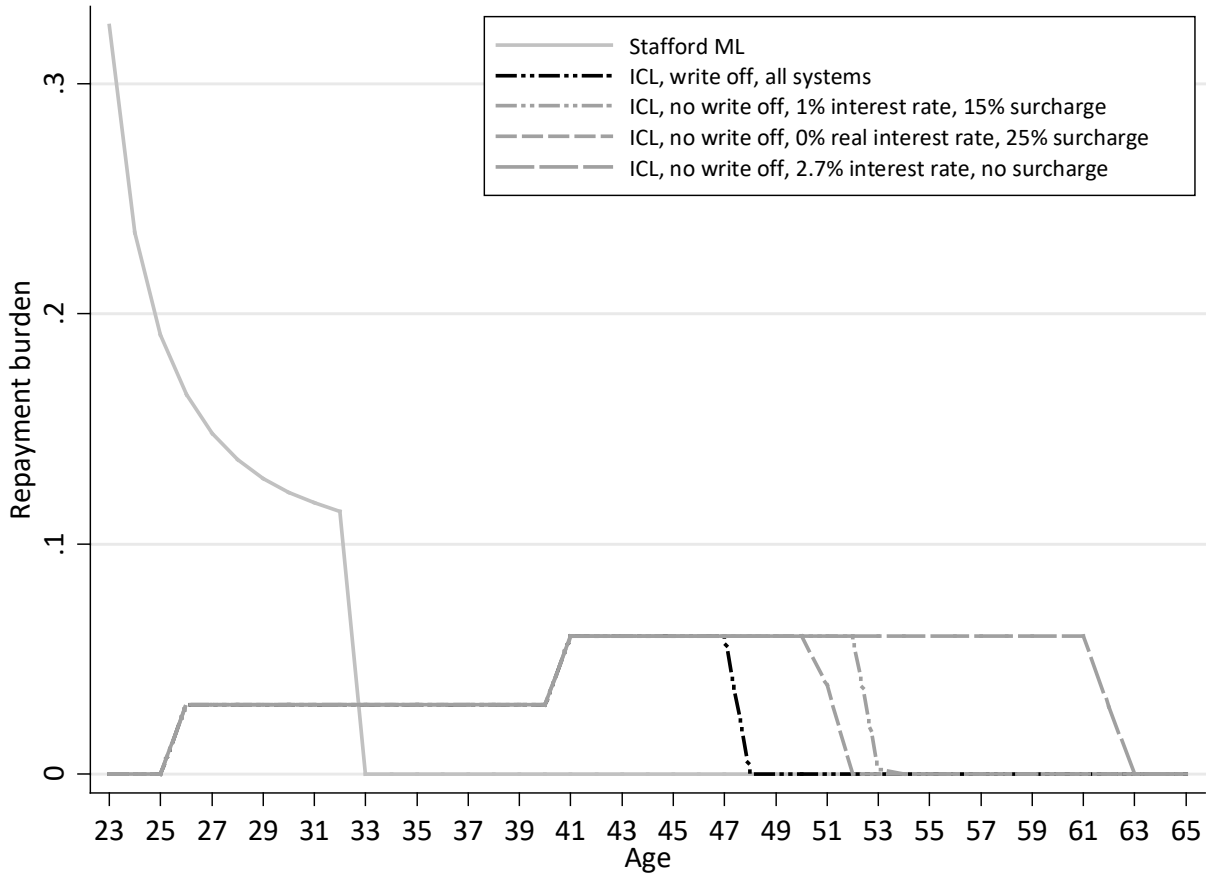


Figure 10 reveals very different repayment experiences under the Stafford ML and the ICLs for our relatively low-income female graduate. Because the Stafford loan system constrains repayment to be concluded within 10 years, the RBs begin at well over 30 per cent of income, fall then to around 12 per cent by the end of the 10-year period (still a relatively high proportion of income). The RB averages around 17 per cent of income for the 10 years. In contrast, with the ICL, RBs do not exceed 6 per cent per annum, and up until the age of 25 are zero and up until the age of 40 only 3 per cent.

From the figure, the graduate pays around 80 per cent of her loan with the write-off and 100 per cent of the loan with the 25 per cent surcharge and 0 per cent interest rate and no write-off, 109 per cent of the loan with a 1 per cent interest rate and 15 per cent surcharge maximum without the write-off (in net present value terms) which is less than the 114 per cent she would pay with the Stafford loan (presuming she doesn't default). Only the ICL with 2.7 per cent real interest rate involves her paying more than with the Stafford loan in NPV terms (158 per cent of loan) which arises because of the regressivity of an interest rate above the government cost of borrowing.

However, with women in the bottom third of the income distribution, RBs are extremely high with a Stafford ML and with such high RBs these graduates are very likely to default or experience financial distress. This has implications for calculating taxpayer subsidies as the ICL schemes offer insurance to taxpayers, since debtors are more likely to remain solvent and able to repay some of their debt over their lifetime.

In our final example we consider the implications of the different schemes for a high earning male graduate in the 90th centile of the earnings distribution. Figure 10 shows how this graduate compares to male graduates in the 20th percentile, 35th percentile, 50th percentile (median) and 75th percentile of the earnings distribution. A male graduate in the 90th centile is earning around 50 per cent more than median earnings by the age of 40.

Figure 11
Male BA Graduate Earnings throughout Lifetime at different percentiles
(Annual Income in 2016 $US)

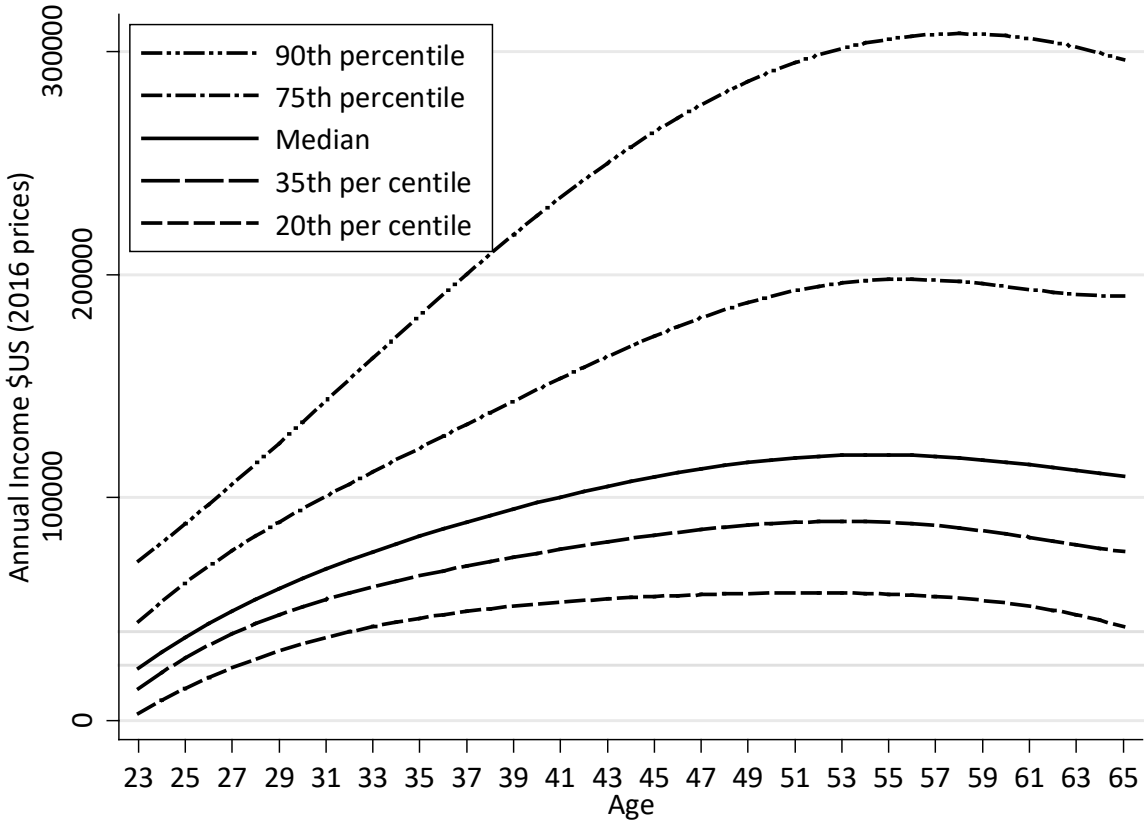
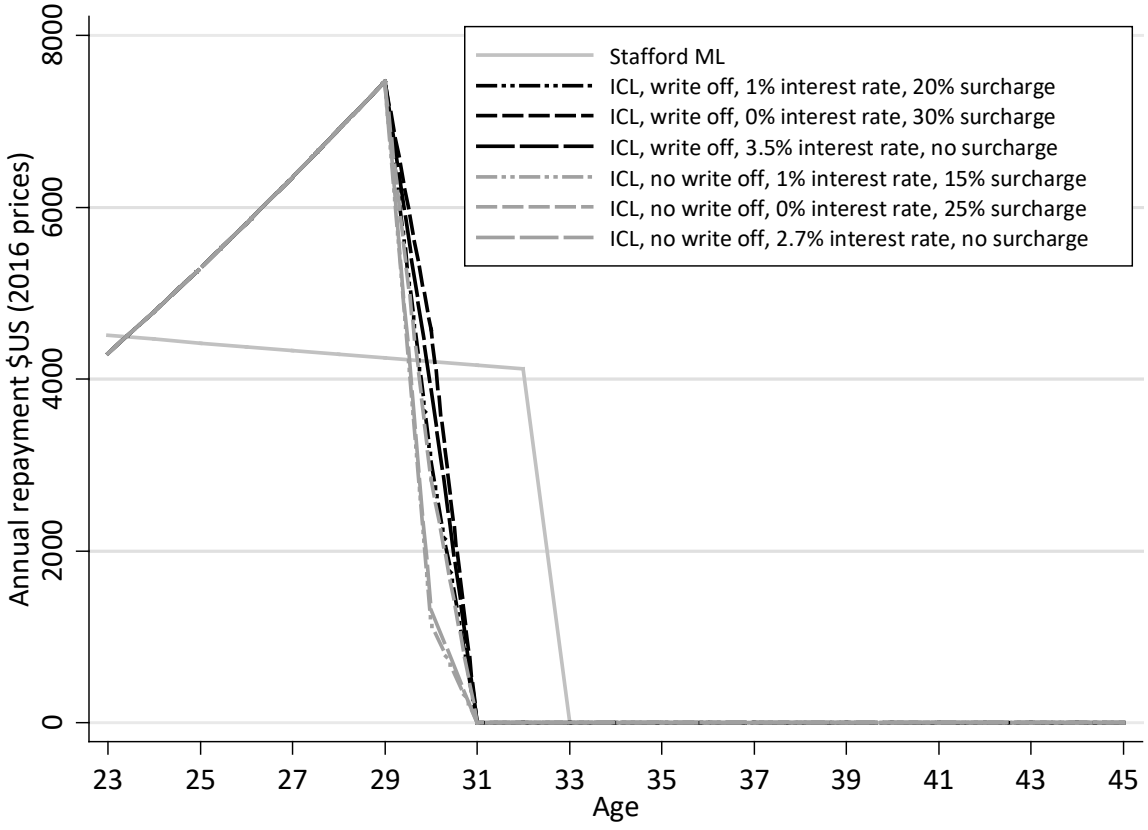


Figure 12 shows annual repayments under the various loan schemes. As was the case for our female BA graduate (and indeed all graduates), under the Stafford loan, our male graduate must pay around $4,100 to $4,500 per year (in 2016 $US) over the 10-year period after which there are no further repayments. With the ICL schemes, the repayment streams and levels are quite different and from two years after graduation are larger than the Stafford repayments which means the loan gets paid between two to three years faster.

From the figure, the high earning graduate pays most with the 25 per cent surcharge scheme and zero real interest rate and write off (around 121 per cent of the loan value which is larger than the 114 per cent under the Stafford ML). Only with the 2.7 per cent real interest rate option and the 1 per cent interest rate with 15 per cent surcharge and no write off does he pay less than with the Stafford ML (around 112 per cent of the loan in NPV terms).

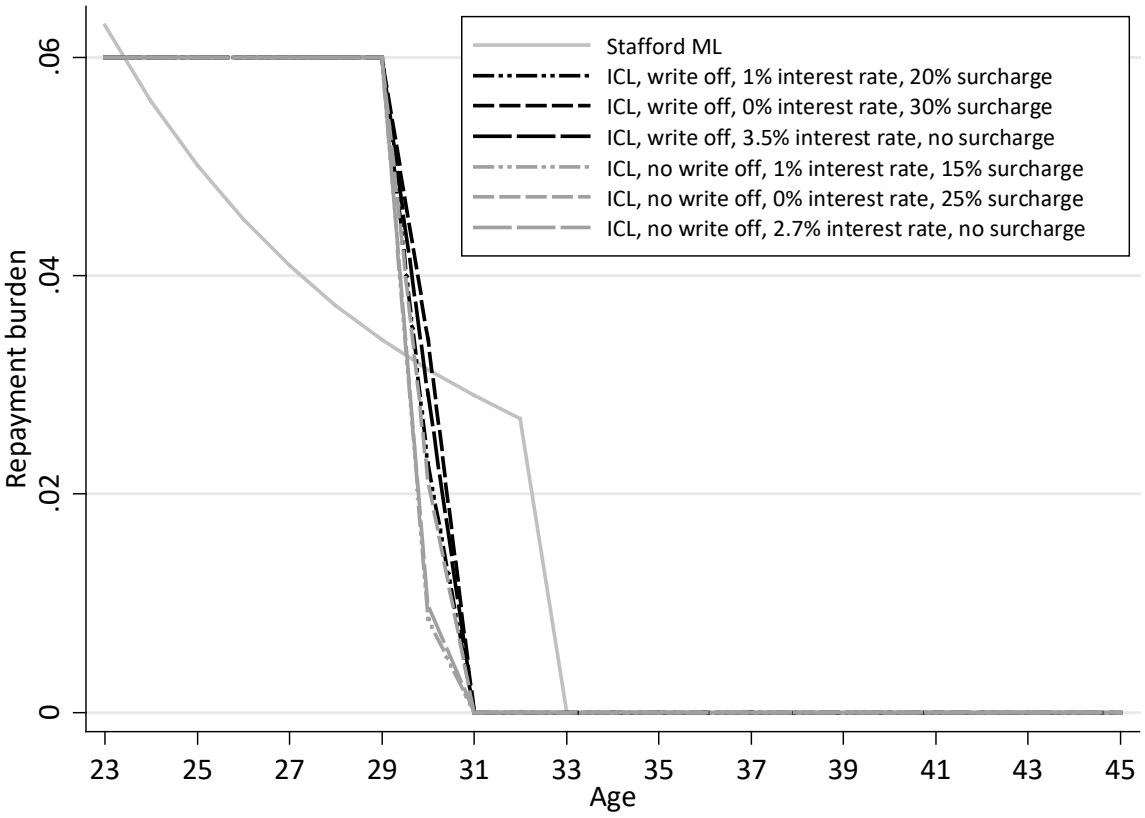
Figure 12
Male BA Graduate 90th Percentile of Earnings: Repayment Schedule ($ per year in 2016 prices) for $35,000 loan



Once again, combining the data from Figures 11 and Figure 12 allows the calculation of the RBs for each of the loan systems. The results are shown in Figure 13. From Figure 13, we see that even this high earning male graduate is protected from having a RB above 6 % under an ICL compared to a Stafford ML (where the RB is just over 6 per cent in the first year after

graduation). This high earning graduate pays 6 per cent of earnings every year until the loan is paid back. He pays back two to almost three years faster than under a Stafford ML depending on which ICL loan scheme is adopted.

Figure 13
Male BA Graduate 90th Percentile of Earnings: Average Burden (Repayment/Income)



7 Conclusions and Issues for Further Analysis

The current design of US student loans creates significant problems, notably the difficulties many students face in repaying. There are considerable risks associated with acquiring a college degree, and substantial uncertainty about individual financial returns to higher education. Loan arrangements such as those in the USA, which ignore these uncertainties, have considerable potential for adversely affecting borrowers: they create inequity and, if they lead to too little investment in human capital, also inefficiency.

This paper draws experience in Australia and England to suggest a constructive way to frame the issues. The root problem is that a in a convential loan with fixed monthly repayments, the duration of the loan and monthly repayments are not related to changes in income; a borrower's ability to pay depends crucially on having sufficient income to make these loans affordable.

We have explained the concepts underlying an ICL and illustrated empirically how a well-designed loan can protect low-earning graduates from default or financial distress, while simultaneously keeping taxpayer subsidies low. This contrasts with the current situation in the USA where the default rates on government-backed student loans are significant and rising, in large measure as a result of the high repayment burdens of Stafford type loans for low income and even moderately low-earning BA graduates (particularly early in their careers). These problems do not arise in countries with ICLs because the design of the system imposes an upper bound on repayment burdens. ICLs provide consumption smoothing combined with insurance against low earnings that can lead to default; that insurance increases the efficiency of consumption smoothing.

Using current data we show that a well-designed ICL system with the characteristics in Box 1 has the potential to address these issues in ways that can be considered to be simple, efficient, equitable and cost effective. We do not claim to have a complete answer, and much more detailed work and thinking are required before a comprehensive ICL system can be implemented, including with respect to the following issues.

First, a universal ICL in the USA raises important questions about price setting. Should the government, as ultimate risk taker for unpaid debts, allow private-sector and State-based institutions access to the loan without reference to the level of tuition fees? Or should the government set maximum levels of either prices or loan amounts so as to mitigate against high levels of unpaid debt? Palacios (2004) helps inform this discussion with respect to ICL design, it being the case that there are several possible ways to think about this, with an obvious candidate being the maintenance of loan caps such as with the existing system.

Second, what, if anything, is implied for regulation to ensure that private-sector institutions with access to the considerable benefits of ICL are required to ensure sufficient education quality? Current concerns related to the burgeoning and arguably adverse behaviours of for-profit institutions documented in Dynarski (2016) seem likely to be exacerbated by the general availability of an ICL. This suggests that ICL reform involving the private sector in the US needs to consider the issue of institutional risk sharing. Possible solutions are offered in Britton *et al.* (2017) and Palacios (2014).

Third, since there will be important issues of adverse selection if students are provided with choices between existing loan options and a broadly-based ICL. This raises the critical matter of universality so that there are no options for students to minimise payments, with mandatory ICL being the case in Australia and England.

Though work is needed on the details of design, ICL approaches in place of a mortgage-style design, have considerable potential to address major concerns about higher education finance in the US. Understanding the propitious experiences of ICLs in Australia and England is an important step in this journey.

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