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An analysis of Stafford loan repayment burdens

Bruce Chapman [a,*], Kiatanantha Lounkaew [a,b]

[a] Crawford School of Public Policy, Australian National University, Canberra 0200, Australia
[b] Faculty of Economics and Institute for Social and Economic Studies, Dhurakij Pundit University, Bangkok 10210, Thailand

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ABSTRACT

There is significant unease with the state of college loans in the US, of which Stafford loans are the most common. One of the most important issues relates to the "repayment burden" (RB), the proportion of a debtor's income per period required to repay loans. RBs are fundamental to assessments of student loan systems, and must impact on debtors' consumption experience and loan default probabilities. Surprisingly, there is little evidence of the size of RBs with respect to Stafford loans and our major goal is to rectify this deficiency through the presentation of a large range of plausible calculations, for average graduates and young lawyers working in either the private or public sectors. Importantly, we are able to compare estimates of RBs at the mean of incomes with a much more useful approach using unconditional quantile estimates of incomes. The disaggregation illustrates how critical it is to explore RBs across the income distribution by age and sex, and between employment sectors for lawyers. It is shown that RBs are a potentially important problem for a significant minority of debtors, and could assume major difficulties for some.

1. Introduction

The design of the Stafford student loan scheme is critical to its success, with one of the most important aspects being the extent of loan repayment burdens (RBs) faced by graduates. RBs are the proportion of a debtor's income per period required to repay loans and are fundamental to assessments of student loan systems, because they impact on debtors' consumption hardship and loan default probabilities. Surprisingly, there is little evidence of the potential size of RBs in the US and this is our subject.

Our empirical exercise focuses on Stafford loan arrangement since this is the system commonly used by college students taking out loans: about 88% of graduates with debts are on different types of Stafford loans (10 year loan, extended repayment, graduated repayment or extended graduated repayment plan (Chopra, 2013). In our analysis the incomes and thus the RBs of three groups of graduates (by sex) will be examined: a typical graduate, law graduates working in the private sector and law graduates working in the public sector.[1] The attention given to the latter two groups is motivated by two facts: young lawyers typically incur the highest student loan debts, and the differences in lawyer incomes between the private and public sectors are very large. Both realities will likely impact very significantly on RB calculations and we want to know the extent to which this might matter.

A critical contribution of our exercise involves the use of unconditional quantile estimates of graduate incomes to show how important it is to explore RBs across the income distribution (by both age and sex). A crucial reason that RBs

[1] The calculations present RBs only for single graduates and thus take no account of the possibility that debtors might be in households with shared incomes, such as would be the case with married couples. This is an acceptable simplification given that the RB issues are much more likely to matter when debtors first graduate and are young.

* Corresponding author. Tel.: +61 2 61254050; fax: +61 2 61256767.
E-mail address: Bruce.Chapman@anu.edu.au (B. Chapman).

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matter is the potential for student loan repayment obligations to impact on debtors with respect to consumption hardship and/or default probabilities. Baum and Schwartz (2006) consider this issue at length with a detailed analysis of the so-called "8 percent rule", the idea that at some ratio of income generally RBs become problematic to a significant proportion of debtors. The point has influenced our empirical method and is considered further below.

The approach provides new information on the potential incidence and extent of RBs for Stafford loans and is undertaken in different ways. To begin the process, a hypothetical, but fairly typical, loan repayment stream is constructed and this provides data reflecting potential annual repayment obligations. Given estimates of the structure of loan repayment requirements the illustration of Stafford RBs takes two different forms.

First, under a range of assumptions, we estimate the probability that young US graduates are likely to experience a repayment difficulty in at least one future year, something which has not been done before for any other country. This is achieved through an examination of the hypothetical loan payment obligation in combination with the presentation of distributions of graduate incomes which are calculated from a cross-section of a large number of individuals from a typical Current Population Survey.

Second, and perhaps our major empirical innovation, is the computation and presentation of RB calculations in a far more sophisticated way with respect to the distribution of income than what is typically undertaken. We begin by showing average and median RBs by sex and age for the three groups for a typical loan, which allows a comparison with what is revealed with a much more disaggregated method exploring the distributions of graduate incomes a long way from the mean. To achieve the latter entails the use of unconditional quantile regression techniques.

2. Motivating analysis of disaggregated repayment burdens

Education economists and others have examined the concept and implications of student loan RBs for more than a quarter of a century.[2] Defined simply in a comparative static context, a loan repayment burden is the proportion of a person's income that needs to be allocated to service a debt per period, or, formally:

$$\text{repayment burden in period } t = \frac{\text{loan repayment in period } t}{\text{income in period } t}. \quad (1)$$

There are several policy design issues usually raised with respect to RBs. The first is motivated by the importance of difficulties faced by debtors in meeting their obligations. The main issue is that it is obviously the case that in a world in which borrowing against expected future earnings is difficult,[3] the higher is a debtor's RB the less consumption and/or savings are possible at any given income. This is of importance in comparisons of different student loan policies; specifically, for example, Stafford student loans are quite different to income contingent loans in this respect, although we do not explore directly alternative policy approaches.

A second loans design issue is that greater RBs are associated with higher prospects that debtors will default on loan repayments because of low incomes; this is substantiated by the findings for the US of Dynarski (1994) and Gross, Cekic, Hossler, and Hillman (2009). An associated policy mechanism relates to the provision of interest rate subsidies on student loans,[4] argued by Woodhall (1987) to influence governments' approach to interest rate subsidies. Shen and Ziderman (2009) explore these links, while Chapman, Lounkaew, Polsiri, Sarachitti, and Sitthipongpanich (2010) and Ziderman and Albrecht (1995) illustrate taxpayer subsidies associated with the Thai Student Loan Fund and many other Asian countries.

Given that RBs are of critical loan design importance, an important critical issue concerns the manner and methods used in their calculation. Until recently the vast majority of empirical research into RBs took two forms:

(i) calculations performed at the mean of the data (such as by using projected incomes smoothed by OLS age–earnings profiles); or
(ii) hypothetically constructed illustrations of ratios for some low income debtors.

In the first category Ziderman (2003) calculates average RBs for the Thai Student Loans Fund and finds them to be around 2.3–3.5%. Ping (2003) reports a similar exercise for Hong Kong and finds that repayment burdens are around 5–11%. For South Korea Kim and Lee (2003) reports RBs of 10–14%. What is critical to note from these exercises is that they arrived at the similar conclusion that RBs do not pose serious problems for graduates in these countries.

The other approach often taken with respect to the illustration of RBs are analyses of hypothetical incomes lower than the means or the OLS projections from age–earnings profiles (which are essentially the means as well) and some examples are as follows. Shireman et al. (2006) examines US loans calculating RBs for a range of 2006 US incomes, including as low as $10,000 per annum. This research shows that RBs for low income graduates can be as high as 22–37% for the lowest income debtors with debt sizes of $15,000–25,000.

A similar method is used by Schwartz and Finnie (2002) in calculations of the impact of earnings differential on Canadian RBs. They found that for graduates earning median income, RBs are around 6%, but for those in the 25th percentile however, RBs can be as high as 13%. Later work by Chapman et al. (2010) on the Thai Student Loans Fund (SLF), using a form of truncated OLS, reports that while RBs of typical graduates are around 3–5% in the earliest years after graduation, RBs of graduates in the bottom income decile are around 9–14%; they also report that the elimination of the considerable interest rate subsidies associated with the SLF will increase RBs to around 25–30% for this group of borrowers.

Our disaggregated approach using unconditional quantile regression methods with respect to the role of US graduate

[2] See Woodhall (1987), Ziderman (1999), Schwartz and Finnie (2002), Salmi (2003) and Baum and Schwartz (2006).

[3] The issue of credit constraints is critical in understanding repayment burdens and is addressed in Rothstein and Rouse (2011) and Chapman (2006).

[4] For recent analyses see Ziderman (2003) and Chapman and Lounkaew (2010).