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## The importance of financial resources for student loan repayment

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**The Importance of Financial Resources  
for Student Loan Repayment**

by

**Lance Lochner, Todd Stinebrickner and Utku Suleymanoglu**

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# The Importance of Financial Resources for Student Loan Repayment

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November 27, 2013

## **Abstract:**

Government student loan programs must balance the need to enforce repayment among borrowers who can afford to make their payments with some form of forgiveness or repayment assistance for those who cannot. Using unique survey and administrative data from the Canada Student Loan Program, we show that nearly all recent borrowers with annual incomes above \$40,000 make their standard loan payments while repayment problems are common among borrowers earning less than \$20,000. Still, over half of all low-income borrowers manage to make timely payments. We demonstrate that other financial resources in the form of savings and family support are key to understanding this – repayment problems are rare among low-earners with access to savings and family support. This has important policy implications, in part, because many recent proposals have advocated for a move to an income-based repayment system. Under such a system, many low-income borrowers in good-standing (due primarily to savings and family support) would pay less, while little new revenue would likely be generated from inducing payment among those that are currently delinquent or in default since their income levels are so low. Specifically, we show that expanding Canada's income-based Repayment Assistance Plan to automatically cover all borrowers could reduce revenue by nearly one-half over the first few years of repayment. Although a sizeable group of recent borrowers would benefit from improved repayment assistance, our results suggest caution before broadly expanding assistance to all low-income borrowers, many of whom already benefit from informal insurance provided by savings and their families.

# 1 Introduction

Rising costs of higher education, student debt levels and student loan default rates have heightened tensions inherent in post-secondary student loan programs (Avery and Turner 2012). The central objective of these programs is to ensure that students have access to the funds needed to benefit from higher education. However, with students borrowing more than ever and tight fiscal budgets, governments must ensure that loans are repaid whenever possible. With three-year student loan cohort default rates of nearly 15% (in both the U.S. and Canada), concerns naturally arise that some students may be choosing not to repay their loans even when they are in a position to do so. At the same time, there are growing concerns that some low-income borrowers in delinquency or default may be financially unable to meet their loan obligations, prompting calls for expanding repayment assistance and income-based repayment schemes.<sup>1</sup> A serious consideration of these issues requires a much better understanding of the relationship between student loan repayment and the financial resources of borrowers than is currently available. In this paper, we use unique data on recent students to provide an up-to-date examination, documenting and exploring a number of relationships that have not been studied previously.

By definition, a successful lending program should recover its outlays (with interest). While some losses are to be expected from borrowers with few resources, those with adequate resources should meet their obligations. Although labor market income is an important financial resource, access to other resources like personal savings, loans/gifts from families, or other in-kind assistance from families (e.g., the opportunity to live at home) may also enable repayment. In determining whether borrowers are making appropriate payments, it is important to account for the full set of resources available to borrowers.

Student loan repayment/non-payment rates by income, savings and family support are also of direct importance for thinking about the budgetary implications of potential changes in student loan programs like those currently being discussed. For example, a shift toward more universal

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<sup>1</sup> The U.S. introduced the “Pay as you Earn” Repayment Plan for recent borrowers in 2012, while Canada introduced the Repayment Assistance Plan (discussed further below) in 2009-10. More recently, a majority of the 15 proposals for the Bill and Melinda Gates Foundation’s effort to redesign the financial aid system in the U.S. (i.e., the Reimagining Aid Design and Delivery project) argue for a universal income-contingent repayment system. See Nelson (2013) for a short summary of the proposals.

income-based (rather than debt-based) repayments would reduce payment amounts expected from those with low income levels. This would have two important but opposing budgetary effects for student loan programs. First, borrowers currently making standard payments would pay less, reducing program revenues. Second, some borrowers that would otherwise stop making standard loan payments (i.e., those that are delinquent or in default under the current system) may be induced to make smaller income-based payments, thereby generating additional program revenue. If many people with low personal income are currently taking advantage of other financial resources in order to repay their loans (as we show), then the first effect may dominate and a shift to an income-based repayment system could have a sizeable adverse impact on government budgets. Surprisingly, this possibility has been neglected in recent policy discussions.

Despite the central importance of these relationships, little is known about the broad set of resources available to recent students and how those resources affect loan repayment. This is likely because previously used data sets do not contain information about student debt and repayment, post-school earnings, savings, and other (potential) family transfers. By combining administrative data on loan amounts and repayment with data from a survey we designed specifically to measure a broad array of available resources (i.e., income, savings, and family support), we provide new evidence on the link between these resources and student loan repayment. Because our data also contain innovative questions soliciting borrower's views on the importance of repaying student loans and the potential consequences of not doing so, we are able to account for heterogeneity in these factors when assessing the importance of income and other resources.

The key to our analysis is the availability of unique data from the Canada Student Loans Program (CSLP). The CSLP is natural for a study of this type, because the program is large in scope (servicing all provinces and territories in Canada except Quebec) and repayment problems are common. In 2010-11, the CSLP provided loans to approximately 425,000 full-time students (Human Resources and Skills Development Canada 2012). The official three-year cohort default rate of 14.3% for loans with repayment periods beginning in 2008-09 was very similar to the corresponding rate of 13.4% for the U.S.

We augment administrative data detailing debt amounts and repayment outcomes with data from a survey – the Client Satisfaction Survey (CSS) – that we helped design to elicit information about potential determinants of repayment problems that are typically unobserved. These data show that more than one-in-four CSLP borrowers in their first two years of repayment is experiencing some form of repayment problem at the time of the CSS.

In Section 3, we show that repayment problems are strongly related to labor income with very low non-payment rates among higher income borrowers. Borrowers with income less than \$20,000 are fourteen times more likely to experience some form of repayment problem than borrowers with income greater than \$40,000.<sup>2</sup> We estimate strong effects of income on repayment even after conditioning on debt levels, educational attainment, various demographic factors and beliefs about the importance of repaying student loans. Using complementary data from the CSLP’s Defaulter Survey, we further show that defaulter’s are significantly more likely to return to good standing if they experience increases in earnings relative to when they entered default.

Although nearly all repayment problems are concentrated in the low income group, many low income borrowers still manage to make timely CSLP payments. In Section 4, we show that other forms of financial resources (i.e., savings or family assistance) are crucial for these low income borrowers. Only 4% of low income borrowers with access to (at least) a modest amount of savings and family assistance experience repayment problems, while 60% of borrowers with negligible savings and little family support fail to make regular payments. Together, these findings demonstrate that borrowers with the resources to pay their loans almost always do and that resources other than labor market income play an important role for many borrowers.

The latter raises the possibility that policies based on the notion that labor income is a sufficient measure of the resources available for repayment may have unexpected budgetary consequences. In Section 5, we explore the implications of changing from the current CSLP environment, in which income-based payments are offered as one option to low income borrowers under the Repayment Assistance Program (RAP), to one in which all borrowers are automatically enrolled

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<sup>2</sup>This relationship is stronger than that found in studies using earlier cohorts in the U.S. and Canada (Dynarski 1994, Flint 1997, Lochner and Monge-Naranjo 2004, 2013, Schwartz and Finnie 2002). See Gross, et al. (2009) for a recent survey of this literature.

in RAP. In particular, we consider the effects of reducing payment levels to the income-based RAP amount for all low income borrowers whose standard (debt-based) payment would be higher. Our finding that many low-income borrowers have access to other resources and continue to make standard loan payments suggests that losses from lowering their payments are likely to be substantial. Our finding that most borrowers in delinquency or default have low earnings suggests that any potential increase in revenues from inducing them to make smaller RAP payments is likely to be quite small. Indeed, our calculations suggest that even if all borrowers in poor standing were induced to pay the RAP amount (an optimistic scenario), the policy of making RAP universal would lead to sizeable revenue losses for CSLP, at least in the short-run.<sup>3</sup>

Altogether, our findings have important implications for the general design of student loan programs. Measuring the availability of personal and family insurance for low-income borrowers is not only central to understanding the effects of income on repayment, but it also helps in assessing the need for additional insurance through explicit income-contingent repayment schemes. Our results suggest that a sizeable group of recent borrowers would benefit from improved repayment assistance; however, our results also suggest caution before broadly extending that assistance to all low-income borrowers, since many of them benefit from informal insurance provided by their families or own savings.

## **2 Data**

Our analysis involves merging CSLP administrative data with data from two CSLP surveys. Our primary investigation uses data from the Client Satisfaction Survey (CSS), which is traditionally used to gauge borrowers' general satisfaction with the CSLP program. For the years 2011 and 2012, new survey questions were included on the survey in an effort to understand why some people experience repayment problems for their student loan obligations while others do not.

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<sup>3</sup> A pure accounting approach of the nature we consider likely under-states the costs of an income-contingent lending program, because it abstracts from any behavioral responses by (potential) borrowers related to moral hazard and adverse selection. For example, additional repayment assistance (or lower payments) for low-income borrowers may encourage students with weaker labor market prospects to borrow, adversely affecting the pool of borrowers (i.e., adverse selection). It may also encourage borrowers to reduce study, job search, and work efforts or to choose less lucrative majors and careers (e.g., see the survey by Lochner and Monge-Naranjo 2011). There is virtually no evidence on the likely importance of these effects; although Rothstein and Rouse (2011) provide some estimates of the effects of student loans on early career choices.

We also exploit data from the Student Loan Defaulter Survey (DS) for some of our analysis. In early 2012, this survey was given to CSLP recipients who had entered default during the previous few years.

## **2.1 Primary Sample from the 2011-12 Client Satisfaction Surveys**

The CSS is an annual telephone survey of roughly 2,700 borrowers of all ages (in-study and in-repayment).<sup>4</sup> The 2011 and 2012 surveys used in this study elicit unique information about background characteristics (e.g., gender, province of residence, education level, and field of study), financial resources (e.g., income, savings, and family/parental support), and perceptions about the consequences of not repaying loans. We match respondents from the CSS with their administrative records from the CSLP, which provide information regarding their loan balances and repayment outcomes (i.e., loan status) throughout the entire time they were clients. Administrative records also contain information on any repayment assistance programs the respondents may have benefited from, as well as information about respondents' parental income levels (for dependent students).

CSLP borrowers are not required to begin making payments on their loans until six months after they are last enrolled in school. After this grace period, all CSLP loans are consolidated and repayment begins. We focus attention on the final loan repayment period, beginning six months after borrowers complete their most recent schooling spell. This avoids issues associated with school re-entry, since borrowers need not make payments on previous loans while enrolled.

We restrict our sample to borrowers who entered their final loan repayment period no more than two years prior to the CSS.<sup>5</sup> Borrowers in the early stages of repayment are of particular interest, because most repayment problems surface relatively quickly – roughly 80% of all CSLP

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<sup>4</sup> Survey response rates were 50% and 52%, respectively, in 2011 and 2012. The survey administrator conducted an analysis of non-response to see whether responders and non-responders differed in the following dimensions relevant to our analysis: loan amount, repayment status (current, in arrears, on IR), institution type (private vs. public), province, and age. Nearly all of these differences were statistically insignificant at the 5% level in both survey years; however, responders were 3-4 percentage points less likely to be in arrears in both surveys, suggesting that students having repayment problems are slightly under-represented.

<sup>5</sup> To determine the final repayment period, we examine their status as of two months after the CSS. Restricting the sample to those entering repayment within two years of the CSS also helps mitigate concerns about the sampling nature of the CSS, which did not survey borrowers who had fully repaid their loans nor those who were already in default (those in delinquency were surveyed). We study the implications of this sampling scheme in Appendix A, and obtain very similar results to those presented in the paper when we limit our sample to those who had consolidated their loans within one year (rather than two years) of the CSS.



defaults occur within the first three years after consolidation with the majority coming in year three (Office of the Chief Actuary 2011). We also restrict our sample to borrowers under age 30 to ensure a more homogeneous group of respondents. With these restrictions, our sample consists of 757 borrowers.

Descriptive statistics for the variables used in our analysis are reported in Table 1. Sample weights are used for all calculations (here and in following tables) to account for stratified sampling by province, loan type, and repayment status (within the CSS sampling frame).

### *Repayment Outcomes*

Our analysis focuses on two measures of repayment problems at the time of the CSS.<sup>6</sup> The first of our two dependent variables is a ‘serious repayment problem’ indicator which has a value of one if the CSLP administrative data indicates that the borrower is delinquent or has a loan status of bankruptcy, claim submitted, consumer proposal, return-to-government, aging default, or other defaults.<sup>7</sup> The second dependent variable is an indicator for ‘any repayment problem’, which is set to one whenever a serious repayment problem exists or if an individual is taking advantage of repayment assistance offered by the CSLP: Interest Relief (IR), Debt Reduction in Repayment (DRR), or the Repayment Assistance Program (RAP).<sup>8</sup> While borrowers on formal repayment assistance are generally considered to be in good standing, these outcomes are of interest because they are predictive of more serious longer term repayment problems like default (see Appendix B). These programs are also costly even when borrowers do not ultimately default, since interest payments are often covered by CSLP and loan amounts may be forgiven. In 2010-11, nearly 90% of RAP recipients made no monthly payments, so CSLP covered associated interest payments at an estimated cost of \$83 million (Human Resources and Skills

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<sup>6</sup> The 2011 and 2012 CSS surveys took place in January and February of both years. We examine repayment status as of February 2011 and 2012.

<sup>7</sup> We observe a very small number of defaults in our sample, since the sampling frame (which excluded borrowers in default) was determined a couple months before the CSS was administered.

<sup>8</sup> Introduced in 2009, RAP reduces CSLP loan payments for eligible borrowers to ‘affordable’ amounts no greater than 20% of gross family income. Eligibility is restricted to borrowers with low family income (adjusted by family size) relative to their standard loan repayment amount. We discuss RAP further in Section 5. Prior to RAP, the CSLP offered IR and DRR to eligible low-income borrowers. The government made all interest payments for borrowers on IR while it paid down the principal (in multiple stages up to a maximum of \$26,000) for borrowers on DRR who had exhausted their 54 months of eligibility on IR.

Development Canada 2011). Another \$36 million was budgeted to cover future unpaid principal amounts associated with the RAP program for CSLP loans disbursed in 2010-11.

Table 1 shows that 26% of borrowers had some form of repayment problem at the time of the CSS, while 11% were experiencing more serious repayment problems.

### *Determinants of Repayment Problems*

A range of factors may influence student loan repayment. Not surprisingly, previous studies have found student debt levels to be an important factor (e.g., see Gross, et al. 2009). We measure the total CSLP loan amount outstanding at the beginning of the repayment period (summing across all loans) based on administrative data. Table 1 shows that, on average, CSLP borrowers owed nearly \$14,000. For information about other factors that may influence repayment behavior, we turn to the CSS. In addition to basic demographic characteristics (age, gender, aboriginal status), we consider three broad categories of factors that may affect repayment: educational background, income and other financial resources, and beliefs about the importance of repaying student loans.

As reported in Table 1, our sample contains more women than men and has an average age of twenty-four. Aboriginals make up slightly less than 10% of our sample. Roughly 40% of borrowers were university graduates (from four-year institutions) or had a post-graduate degree, while 80% had a vocational/technical degree (from less than four-year institutions) or higher. Only 15% had attended a private institution, primarily at the vocational/technical level.

With respect to financial resources, 85% earn less than \$40,000 annually, while nearly half of all borrowers earn less than \$20,000. Given our sample restrictions (individuals under age 30 who recently left school), it is not surprising that respondents typically have few assets of their own – roughly half report less than \$1,000 in savings. Many respondents are also unable to count on their family for financial help. When asked how much their parents or other family would be willing to give them if they needed money over the next six months, 70% reported that they could obtain less than \$2,500. As emphasized by Kaplan (2012), many of our respondents may be able to move back home with their parents to help ends meet. In our sample, 47% currently live with their parents while another 36% report that they could move back home if they needed to.

Finally, the CSS contains a unique survey question eliciting beliefs about the importance of repaying student loans. Specifically, the survey asks borrowers which type of loan (e.g. CSLP, credit cards, home mortgage) they would repay first if financial difficulties prevented them from paying them all. Table 1 shows that roughly 40% of all respondents report that they would stop paying their CSLP loans first. This suggests that many individuals view that failure to make CSLP payments is less harmful than failing to repay other forms of debt.<sup>9</sup>

## 2.2 2012 Defaulter Survey

A total of 3,200 borrowers who had defaulted between Aug 1, 2009 and July 31, 2011 were interviewed in March 2012 for the Defaulter Survey. We analyze a subsample of 1,536 respondents who allowed their survey information to be linked to their administrative records, were under age 30 (at the time of loan consolidation), and were surveyed within five years of consolidation. To account for sample stratification by region and RAP experience, we use sampling weights provided by CSLP.

Although everyone had defaulted prior to the survey, many borrowers had returned to good standing by the time of the survey. The survey contains measures of income at the time of default and at the time of the survey – 84% had income of less than \$1,600/month (roughly \$20,000/year) at the time they entered default and 60% had income below this amount at the time of the survey. Not surprisingly, these figures are worse than in the CSS. Debt levels were also relatively high in the Defaulter Survey with 46% owing less than \$10,000, 30% owing \$10,000-20,000, and 24% owing more than \$20,000. The data contain the same measures of educational attainment as reported in the CSS: 48% had a vocational degree or more while 21% had a BA or higher. Gender, age, and province of residence are also available.

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<sup>9</sup> The CSS also asks respondents what they think would happen to their credit rating if they did not repay their CSLP loans. We have created an indicator equal to one if they report that not paying would make borrowing much more difficult or impossible. Using this indicator in place of the indicator variable based on which loan they would stop paying first yields very similar conclusions to those reported in the text.

### 3 Importance of Post-School Earnings for Loan Repayment

#### 3.1 Repayment Problems in the CSS

Previous studies have demonstrated that educational attainment, student debt, and post-school income are all important determinants of student loan default.<sup>10</sup> For comparison, we begin by examining the relationship between these factors and our measures of student loan repayment problems.

Consistent with prior research, Table 2 shows that repayment problems are less common among borrowers with a four-year university degree relative to those with a two-year vocational/technical degree or less. For example, serious repayment problems are 2.4 times as likely for borrowers with no post-secondary degree than for those with a university degree or higher (.16 vs. .07).<sup>11</sup> Table 2 further shows that our broad measure of repayment problems (that includes individuals on repayment assistance) is increasing in student debt levels, while there is little systematic relationship between student debt and more serious repayment problems.

The most striking finding in Table 2 and a primary focus of this paper is the strength of the relationship between repayment problems and post-school earnings. Repayment problems are extremely rare among individuals with high earnings levels, while they are quite common for those with earnings levels below \$20,000. The existence of any repayment problem is roughly 14 times as likely for borrowers earning less than \$20,000 annually than for those earning more than \$40,000 (.42 vs. .03). Serious repayment problems are nearly 8 times as likely for borrowers earning less than \$20,000 than those earning more than \$40,000 (.17 vs. .02). Both of these differences are statistically significant at all traditional levels. Table 2 also shows that differences in repayment problems by income are large between low- and middle-income borrowers (i.e., annual income less than \$20,000 vs. \$20-40,000).

The bivariate relationships reported in Table 2 are unlikely to entirely reflect causal effects for a number of reasons. Most obviously, an attempt to establish causality should take into account

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<sup>10</sup> See Gross, et al. (2009) for a recent review of this literature. Most of this literature examines loan repayment and default in the U.S.; however, Schwartz and Finnie (2002) and Kapsalis (2006) study repayment and default in Canada.

<sup>11</sup> This difference is statistically significant at the 0.05 level, but the difference between university degree and vocational/technical degree for the ‘serious repayment problem’ is not. For ‘any repayment problem’, the difference between university degree and vocational/technical degree is statistically significant at the 0.05 level, while the difference between university degree and no degree is not (p-value = .11).

that educational attainment, debt levels, and post-school earnings are all strongly correlated. For example, if higher earners tend to borrow more while in school, the effects of income on repayment problems may be overstated. Of perhaps greater concern is the possibility that traditionally unmeasured non-financial factors (correlated with observed factors like earnings) may also influence student loan repayment decisions. For example, students who have strong beliefs about the importance of honoring debts or have strong beliefs that non-payment will have substantial consequences may be more conscientious in other ways that may be rewarded in the labor market. Fortunately, the CSS includes unique questions designed to measure these beliefs.

An additional potential concern is that earnings levels only partially reflect an individual's financial situation; however, they are likely to be correlated with other resources or forms of family support or 'insurance' that may also influence repayment behavior. The role of non-income financial resources is a central focus of this paper. We return to this issue in Section 4, exploring it in detail.

In Table 3, we take advantage of the rich survey data from the CSS to incorporate a broader range of factors that may affect student loan repayment than has been considered in previous studies. This table reports ordinary least squares (OLS) estimates for a linear probability model using our two repayment problem measures as dependent variables.<sup>12</sup> In addition to educational attainment, student debt, and post-school earnings, we control for a number of demographic characteristics, a measure of beliefs about the importance of repaying student loans, an indicator for whether the borrower had attended a private post-secondary institution, and province indicators. Consistent with Table 2, the probability of any repayment problem is significantly increasing in student debt levels, while the likelihood of serious repayment problems is not. Based on the estimates in column 1, a borrower with \$10,000 in loans is twelve percentage points less likely to have some form of repayment problem than a person with only \$1,000 in loans. The effect of educational attainment is not statistically significant conditional on student debt and post-school income levels, but serious repayment problems are significantly more likely among borrowers who attended a private post-secondary institution.

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<sup>12</sup> Average marginal effects from an analogous Probit model are similar and available upon request.

There is some evidence that beliefs about the importance of repayment affect behavior. Our estimates suggest that a borrower who “would stop paying the CSLP loan first if he was unable to repay all loans” is 7.9 percentage points (statistically significant at 0.10 level) more likely to experience some form of repayment problem than someone who would not stop paying the CSLP loan first.

Our main focus is on the role of earnings. The specifications in Table 3 include indicator variables for available annual income categories from the CSS. Even after conditioning on student debt, educational attainment, and beliefs about repayment, we estimate strong effects of annual income on student loan repayment problems with a sizeable jump occurring around \$20,000. Borrowers earning less than \$20,000 per year are 37-57 percentage points more likely to have some form of repayment problem than borrowers earning more than \$40,000 (the omitted category). The difference in serious repayment problems for these income groups is roughly 14 percentage points.<sup>13</sup> These differentials are enormous given the rates of repayment problems (26% for any problem and 11% for serious problems) in our sample.

### **3.2 Income & Returning to Good Standing – Evidence from the Defaulter Survey**

Although our regression includes potentially important factors unmeasured in previous studies, one might still worry that we have neglected other important determinants of repayment that may vary systematically across borrowers with different income levels. If these unmeasured factors are largely time invariant, they could be differenced out using standard fixed effect approaches. Unfortunately, this type of within-person analysis is not possible using the CSS, because we only observe borrower income in a single period – at the time of the CSS. Instead, we turn to the Defaulter Survey, DS. While this survey also interviewed borrowers only once, it asked respondents about their earnings at two different points in time: (i) when they went into default (several months to a few years prior to the survey date) and (ii) at the time of the survey. Our strategy is simple: examine the relationship between current earnings and current repayment status conditional on previous earnings and other measured factors (recall that all borrowers were initially in default). If income truly impacts repayment status and is not simply correlated with other permanent unobserved factors that drive default, then borrowers with higher current

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<sup>13</sup> In Appendix Table B2, we estimate similar effects of income (at the time of CSS) on serious repayment problems up to 18 months after the CSS.

earnings should be more likely to have returned to good standing. In short, we examine how repayment reacts to a change in income after initially going into default.

To study changes in repayment status in the DS, we limit the sample to the 1,536 individuals under age 30 who had left school and entered repayment within the past 5 years. Panel A of Table 4 reports the fraction of respondents in the DS who are currently in good standing (at the survey date) conditional on their reported monthly income at the time they went into default and at the survey date. Two patterns are immediately evident. First, looking down either column, we observe that income at the time of default has little effect on current repayment status after taking current income into account. Second and more important, looking across either row we see that defaulters currently earning more than \$1,600/month (roughly \$20,000/year) are 20-30 percentage points more likely to have returned to good standing than defaulters earning less than \$1,600/month.

In Panel B of Table 4, we account for many of the same factors considered in Table 3 using multivariate regression. In particular, we regress current default status on current monthly income and monthly income at the time the borrower went into default (both indicators for less than \$1,600/month), as well as current CSLP loan amounts (indicators for zero, \$1-5,000, \$5,000-10,000, \$10,000-15,000, \$15,000-20,000, and \$20,000-30,000), educational attainment (indicators for vocational degree and for university degree or higher), age, gender, and province indicators. Using sample averages for all non-income characteristics, Panel B reports predicted default rates from these regressions for all four combinations of low/high current monthly income and monthly income at the time the borrower entered default.<sup>14</sup> Again, we see that current income has strong effects on current repayment status (those with income exceeding \$1,600/month are 20-30 percentage points more likely to be in good standing than their lower income counterparts), while income at the time of default has much more modest implications for repayment status at the time of the survey.

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<sup>14</sup> Specifically, we calculate  $\bar{X}\hat{\beta} + D_{0,CSS}\hat{\gamma}_{0,CSS}$  for each income combination, where  $\bar{X}$  reflects the sample average for all non-income variables,  $\hat{\beta}$  reflects corresponding coefficient estimates,  $D_{0,CSS}$  reflects indicator variables for low/high income at the time of default and at the time of the CSS, and  $\hat{\gamma}_{0,CSS}$  reflects coefficient estimates for the income indicators. The table reports estimates for these predicted values along with standard errors for each  $\hat{\gamma}_{0,CSS}$ .

## 4 Importance of Other Resources: Savings and Family Assistance

Our results, thus far, establish borrower income as a central factor driving recent repayment behavior, with borrowers earning less than \$20,000 annually experiencing significant repayment problems. Still, Table 2 suggests that nearly 60% of these low-income borrowers manage to make timely CSLP payments. Why do some low-income borrowers choose to make their loan payments (many who would qualify for RAP as we discuss in the next section), while others do not?

Table 3 suggests that debt levels and a few other factors help explain these repayment differences, but these factors still leave the large majority of variation unexplained. In this section, we explore the extent to which other forms of personal and family resources affect student loan repayment behavior, especially among low-income borrowers.

First, we try to capture family support using the traditional strategy of measuring parental income, which is only available for borrowers classified as dependent when they applied for financial aid—less than half our sample. The first two columns of Table 5 examine the extent to which parental income (for dependent students) can explain repayment behavior for borrowers with high and low income levels. Column 3 shows results for independent students. Consistent with our previous results, Table 5 indicates that the borrower's own income is quite important for repayment status regardless of dependency status and parental income. However, the table provides, at best, suggestive evidence that family support, as measured by parental income, might play an important role in mitigating the effects of low personal income. Among borrowers with low earnings, those with parental income of less than \$25,000 are 2.5 (1.3) times as likely as those with parental income greater than \$25,000 to have a serious (any) repayment problem, but these estimated differences in repayment problems by parental income are not statistically significant.

The lack of a firm finding in Table 5 may be partially due to the small sample sizes that remain after stratifying by both borrower and parental income. More importantly, however, parental income may be a poor proxy for post-school family support due to differences in actual willingness and/or ability to provide support to adult children. This concern motivates our use of a more direct measure of family support based on a unique question from the CSS, which asks: “If you needed money during the next six months, how much would parents or other family be



willing and able to give you?” We construct a “family assistance” indicator that equals one if the borrower reports that he/she could expect to receive \$2,500 or more from family/parents – a modest sum but enough to cover up to a year of typical monthly loan payments. Thirty percent of our sample expects this level of support, suggesting a potentially important role for parental transfers.<sup>15</sup>

Borrowers may also have their own savings that they can draw on in the case of unemployment or other adverse labor market outcomes. To explore the importance of this, we create an indicator variable that takes on a value of one for those who have at least \$1,000 in savings – roughly half our sample.

In Table 6, we examine the extent to which savings and family assistance help explain repayment behavior for borrowers with high and low income levels, analogous to that of Table 5. Focus on results for low-income borrowers first. Column 1 shows that low-income borrowers with access to both savings *and* family assistance are very unlikely to experience repayment problems. Rates of any (serious) repayment problems are only 4% (1%) for these borrowers. Column 2 shows that repayment problems become much more likely (rates of 26% for any problem and 8% for serious problems) for low-income borrowers with access to only one form of additional financial resources (i.e., some savings *or* family assistance but not both). Column 3 shows that nearly 60% (25%) of borrowers with negligible savings and little family support experience any (serious) repayment problems.

Results for borrowers with incomes of at least \$20,000 also suggest a role for savings and family assistance; however, the role is much more muted, especially for more serious repayment problems. For these borrowers, access to at least one form of additional resources (savings or family support) appears to reduce the likelihood of repayment problems, but there is little marginal benefit from having access to both forms since repayment problems are already quite unlikely.

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<sup>15</sup> In Appendix C, we consider an alternative measure of family assistance that includes the ability of students to move back in with their parents. Based on this broader measure of family assistance, approximately 86% of all borrowers can count on financial transfers of at least \$2,500, can move back in with their parents, or already live with them. Results using this alternative measure are qualitatively consistent with those discussed in the paper.

Table 6 suggests a very important role for additional financial resources. Direct measures of these resources in the form of savings and potential family transfers reveals a much stronger role in affecting student loan repayment behavior than is suggested by measures based on dependency status and parental income levels. We, therefore, use the more direct measures in the rest of our analysis.<sup>16</sup>

In Table 7, we estimate the importance of additional resources (i.e., savings and family assistance) for low-income borrowers (income less than \$20,000/year) accounting for other possible determinants of repayment problems as studied previously in Table 3. This helps address concerns that savings and family assistance may be correlated with the amount students borrow in the first place, the type of school they attend, their educational attainment, or their views about the importance of repayment. Consistent with the results in Table 6, we estimate a very strong role for additional financial resources. Relative to those with negligible savings and little parental help (the omitted category), low-income borrowers with either savings of at least \$1,000 *or* access to family support of at least \$2,500 (not both) are 36 percentage points less likely to experience any repayment problem and 14 percentage points less likely to experience a serious repayment problem. Those with both savings *and* family support are 49 percentage points (20 percentage points) less likely to experience any (serious) repayment problem(s).

To better understand the extent to which savings and family assistance serve as insurance mechanisms against adverse income shocks, Table 8 estimates specifications similar to Table 3 after stratifying the sample based on access to these additional resources. Differences in the effects of income across our three additional resource groups are striking. Income has small and statistically insignificant effects on repayment problems for borrowers with access to both savings and family assistance. By contrast, borrowers with neither savings nor family support are 61 percentage points (17 percentage points) more likely to experience any (serious) repayment problem(s) if their income is less than \$20,000 relative to those with incomes above \$40,000.

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<sup>16</sup> One might be concerned that our measures of savings and family assistance reflect differences in willingness to repay; however, we obtain similar effects of family resources and savings when controlling for self-reported views on the importance of CSLP repayment in Table 7. We also obtain similar results for our low-income group when we restrict the sample to those with income of less than \$10,000/year. These borrowers are very unlikely to be able to afford timely payments without some form of savings or outside assistance even if they have a strong desire to do so. In this case, access to savings or parental support appears to make repayment feasible for many borrowers.

Altogether, these results suggest that savings and family assistance serve as very important sources of ‘insurance’ for borrowers in the event that they experience periods of low income or unemployment. Borrowers with low income and no access to additional resources (from savings or family) are more likely than not to experience some form of repayment problem. At the opposite extreme, high income borrowers with access to modest savings *or* family support are very unlikely to experience repayment problems, as are low-income borrowers with modest savings *and* family support. Access to some form of financial resources – from work, savings, or family – is critical in determining which borrowers experience repayment difficulties. Attempts to measure these additional resources using parental income as a proxy provide only a hint of the full extent of insurance provided by family transfers and savings.

## **5 Implications for Repayment Assistance Programs**

Our results about the importance of savings and family support have direct implications for thinking about the design of government student loan programs. An important feature of income contingent repayment schemes is to provide explicit insurance for borrowers when they experience adverse income shocks or unemployment. This contrasts with the implicit insurance associated with delinquency and default, which typically trigger penalties like reporting to credit bureaus, legal proceedings, and sometimes wage garnishments.

In both the U.S. and Canada, student loan borrowers can choose to enroll in income-contingent repayment programs if they are currently in good standing on their loan and can demonstrate financial hardship. Under Canada’s RAP, eligible borrowers are expected to pay a fraction of their current income above a threshold – from zero to 20% based on their income – towards their CSLP loan.<sup>17</sup> If this amount exceeds the standard debt-based payment amount, RAP recipients only need to pay the lesser amount. Expected RAP payments are currently zero for single (childless) borrowers with monthly income below \$1,685 (annual income of roughly \$20,000). In 2010-11, nearly 90% of the 165,000 RAP recipients were not required to make a monthly payment (Office of the Chief Actuary 2011).

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<sup>17</sup> If the calculated payment is less than the interest accumulating on their debt that period, the federal government pays the remaining interest amount, so the principal does not grow. Any loan balance remaining fifteen years after consolidation is effectively forgiven. In the U.S., borrowers may choose Income-Based Repayment (IBR), Income-Contingent Repayment (ICR), or the new “Pay as You Earn” Repayment plans, all linking payments to earnings for 20-25 years.

One potential policy of interest would automatically enroll everyone in RAP, which would reduce enrolment costs associated with applying for and participating in RAP. It would also alleviate concerns that some eligible borrowers are unaware of the option. In principle, this policy would share key features of universal income contingent loan schemes that currently exist in countries like Australia or New Zealand (Chapman 2006). This policy is also broadly consistent with a variety of current proposals. For example, the state of Oregon is currently considering a universal income-contingent student loan program, while the majority of proposals for the Bill and Melinda Gates Foundations Reimagining Aid Design and Delivery project argue for a federal student loan system with income-based payments for all borrowers.

In this section, we consider the potential short-run implications of such a policy for CSLP revenues (or payments by borrowers). In particular, we examine how payments (based on income and debt levels as of the CSS) would change if all borrowers were automatically enrolled in RAP and made the expected payments under RAP (i.e., the lesser of the amount based on their income and the standard payment).

Two groups of borrowers would be directly affected most by such a move. First, many low-income borrowers may see their payments lowered. Under the current system, many of these borrowers make their standard payments even though they are eligible for much lower (or zero) payments under RAP. This may reflect high costs associated with RAP enrollment, a lack of information about the program, or access to other resources like savings and family support that make lower payments unnecessary. Second, many low-income borrowers that are currently delinquent or in default may choose to make a lower income-based payment. The revenue implications of moving to a ‘Universal RAP’ program, therefore, depend on the balance of reduced payments from low-income borrowers currently making standard payments against the potential increased revenue from encouraging current delinquents/defaulters to make some (potentially small) payments.

We use the administrative records combined with the CSS to measure these two revenue effects under a best case scenario for a ‘Universal RAP’. In particular, we assume that no borrowers would fail to make their payments under the ‘Universal RAP’. Thus, we assume that payments under ‘Universal RAP’ equal the lesser of the income-based RAP amount and the standard

payment, regardless of the borrower's current repayment status.<sup>18</sup> In calculating payments under the 'Current RAP' regime, we use their standard payment as given by administrative records if they are currently in good standing, the RAP amount if they are currently on RAP, and zero if they are currently delinquent or in default.

Figure 1 reports the distribution of payments under these two RAP regimes. Interestingly, the fraction paying zero would nearly double under a 'Universal RAP' regime, since many low-income borrowers currently in good standing would not be expected to make any payments under RAP. This highlights the role of additional resources (i.e., savings and family support) in enabling repayment for many low-income borrowers. Placing all of these borrowers on RAP automatically would significantly reduce their repayment obligations. Our calculations further suggest that average monthly payments (including payments of zero) would decline by nearly half from \$130 to \$68 for recent school-leavers if RAP were made universal. A decline in revenue of this magnitude is likely to threaten the sustainability of CSLP.

It is important to note that these calculations are rough and only meant to illustrate the potential implications of broadening the RAP base and to highlight the importance of borrower income and other resources for student loan repayment. It is possible that some borrowers would continue to make higher payments than expected by RAP if automatically enrolled. At the same time, many currently delinquent borrowers may continue to remain delinquent; although, the implications of this are likely to be modest given that expected RAP payments for many of these borrowers are very low or zero given their incomes. Most importantly, these calculations do not factor in any dynamic effects a move to 'Universal RAP' might entail. If the program keeps borrowers better connected with CSLP, it may ultimately result in higher total lifetime payments among borrowers who temporarily experience poor labor market outcomes. Even in this case, however, government interest payments for many RAP recipients are likely to be substantial. A detailed accounting of these effects is beyond the scope of this paper and would require better

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<sup>18</sup> To simplify the calculation of expected payments under RAP, we focus on single borrowers with no children (the majority our sample), since the threshold income level above which RAP payments begin depends on household size. This analysis excludes 3% of our sample that is from Manitoba, PEI or Yukon, since income-contingent RAP payments in these provinces also depended on loan amounts. RAP income-based payments were calculated based on the mid-points of reported monthly income categories in the CSS (0, 1-\$799, \$800-1599, \$1600-2499, \$2500-3299, \$3300-4999, \$5000-6699, and \$6700+). The standard monthly payment amount is reported in administrative records.

longitudinal data.<sup>19</sup> Nonetheless, our findings provide strong evidence that caution is warranted when considering these types of changes to repayment programs.

## 6 Conclusions

For recent Canadian students, post-school income has strong effects on student loan repayment. Borrowers earning more than \$40,000 per year have non-payment rates of 2-3 percent, while borrowers with annual income of less than \$20,000 are more than ten times as likely to experience some form of repayment problem. On the one hand, the very low non-payment rates among borrowers with high earnings suggest that student loan repayment is well-enforced in Canada. On the other hand, high delinquency and default rates among low-income borrowers signal important gaps in more formal insurance mechanisms like RAP. These gaps have motivated growing interest in the expansion of income-contingent repayment schemes for student loans in both Canada and the U.S.

Despite relatively high non-payment rates for low-income borrowers, the simple fact is that more than half of them continue to make their standard student loan payments. We show that other financial resources in the form of personal savings and family support are crucial to understanding why/how so many borrowers with very low income still manage to pay off their loans. Low-income borrowers with negligible savings and little or no family support are more likely than not (59%) to experience some form of repayment problem, while fewer than 5% of low-income borrowers with both savings and family support do. Consistent with larger literatures in economics emphasizing the roles of savings and family transfers as important insurance mechanisms (e.g., Carroll 1997, Becker 1991), we estimate that borrower income has small and statistically insignificant effects on the likelihood of repayment problems for those with modest savings and access to family assistance. By contrast, among borrowers with negligible savings and little or no family assistance, the effects of income on repayment are extremely strong. We also show that measures of parental income when students first borrow (available in some administrative loan datasets) are a relatively poor proxy for these other forms

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<sup>19</sup> We also abstract from potential behavioral changes that might affect borrower income levels due to moral hazard or adverse selection (e.g. reduced effort during or after school). These effects would likely increase the costs of moving to a ‘Universal RAP’ system.

of self- and family-insurance, which suggests that efforts to accurately measure savings and potential family transfers offer real benefits.

These findings have important implications for efforts to expand income-contingent repayment schemes that are under current discussion. We show that expanding the income-based repayment RAP to automatically cover all borrowers would reduce revenues by roughly half for borrowers early in their repayment period. This is because a more universal income-based repayment scheme would significantly reduce repayment levels for many low-income borrowers who currently make their standard payments. At the same time, little revenue would be raised from inducing borrowers currently in delinquency/default to make income-based payments, since the vast majority of these borrowers have very low income levels.

Altogether, we find that slightly more than half of all low-income borrowers have little self- or family-insurance. These borrowers currently have high delinquency/default rates and would surely benefit from greater government insurance (i.e., some form of repayment assistance). Yet, our results also suggest considerable caution is warranted before broadly expanding income-contingent repayment schemes. Many low-income borrowers have access to savings and family support that enables them to make standard payments. Lowering payments for these borrowers based on their incomes alone would significantly reduce student loan program revenues to the point of threatening their viability.

Our results suggest that the optimal design of student loan repayment schemes is more complicated than recent proposals and studies would suggest. Contrary to current thinking, the family plays an integral role in student loan repayment. This neglect is, perhaps, surprising given the established literature on family transfers and the central role parental resources play in determining financial aid at the college-going stage.<sup>20</sup> Our results raise important questions about the extent to which government repayment assistance should depend on broader family resources and transfers (to the extent possible), since these clearly influence repayment behavior. They may also help in understanding puzzling differences in default rates by race in the U.S. –

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<sup>20</sup> Becker and Tomes (1976) and Behrman, Pollak and Taubman (1982) provide early treatments of intra-family transfers. Brown, et al. (2006) provide an interesting recent analysis that explicitly links transfers to educational choices. Evidence on the nature and extent of parental transfers to adult children is provided in Cox (1987), Rosenzweig and Wolpin (1993), Gale and Scholz (1994), McGarry and Schoeni (1995), Altonji, et al. (1997), and Haider and McGarry (2012).

blacks have much higher default rates than whites even when debt levels and post-school income are held constant (e.g. see Lochner and Monge-Naranjo 2013).



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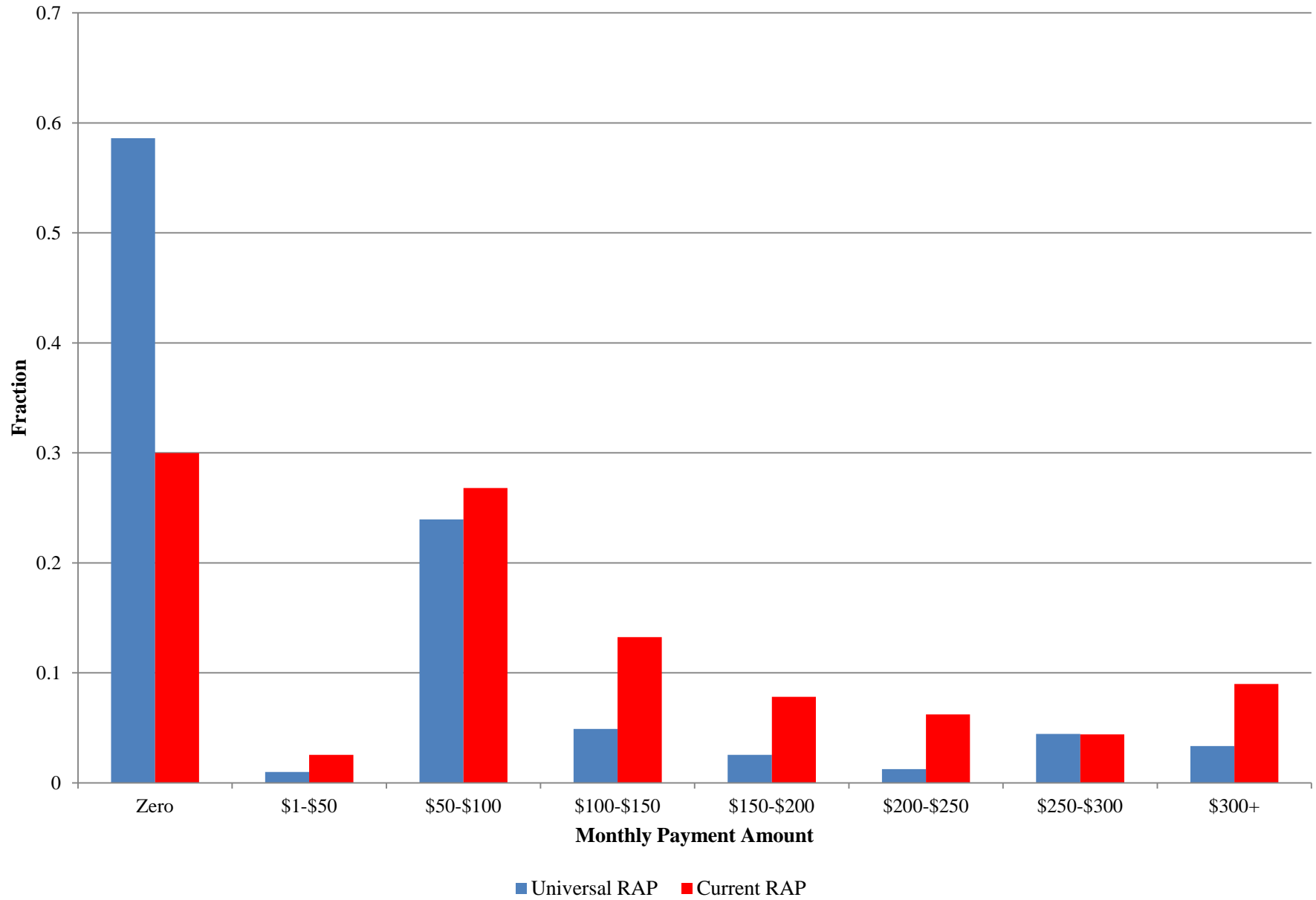
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**Figure 1: Distribution of Payments under Current RAP and 'Universal RAP'**



**Table 1: Sample Descriptive Statistics**

<b>Variables</b>	<b>Mean</b>	<b>Std. Error</b>
<u>A. Repayment Outcomes as of CSS (N=757)</u>		
any repayment problem (default+bankruptcy+delinquency+IR+DRR+RAP)	0.262	0.024
serious repayment problem or delinquent (default+bankruptcy+delinquency)	0.107	0.015
<u>B. Potential Repayment Determinants (N=757)</u>		
CSLP loan amount outstanding at consolidation (in \$10,000)	1.367	0.065
current month's income less than \$20,000/yr	0.489	0.032
current month's income \$20,000/yr to less than \$40,000/yr	0.358	0.030
vocational/technical school graduate or more	0.795	0.027
4-year university graduate or post-graduate degree	0.408	0.031
would stop paying CSLP loan first if unable to repay all loans	0.409	0.031
male	0.425	0.031
age	23.710	0.183
aboriginal	0.094	0.019
private for-profit post-secondary institution (CSS loan type)	0.150	0.014
<u>C. Parental Help and Savings Variables (N=689)</u>		
expected parental transfer less than \$2500	0.701	0.031
savings less than \$1,000	0.486	0.033
<u>D. Dependency Status (N=757) and Observed Family Income (N=259)</u>		
dependent student	0.388	0.031
parental income in \$1,000 (dependents only)	46.087	3.110
parental income less than \$25,000 (dependents only)	0.301	0.046

Notes: Sample weights used in calculating all statistics.

**Table 2: Repayment Problems at CSS by Income, CSLP Debt, and Education**

	<b>Any Repayment Problem</b>		<b>Serious Repayment Problem</b>	
	<b>Mean</b>	<b>Std. Error</b>	<b>Mean</b>	<b>Std. Error</b>
<u>A. by current monthly income</u>				
less than \$20,000	0.423	0.040	0.174	0.026
\$20,000 to less than \$40,000	0.148	0.030	0.045	0.012
at least \$40,000	0.030	0.016	0.022	0.015
<u>B. by CSLP loan amount at consolidation</u>				
less than \$10,000	0.202	0.028	0.117	0.021
\$10,000 to less than \$20,000	0.294	0.047	0.084	0.021
\$20,000 to less than \$30,000	0.365	0.068	0.094	0.032
at least \$30,000	0.377	0.073	0.115	0.046
<u>C. by highest educational attainment</u>				
no post-secondary degree	0.309	0.054	0.157	0.034
vocational/technical degree or higher	0.312	0.038	0.118	0.024
4-year university graduate or higher	0.209	0.031	0.066	0.016

Notes: Sample weights used in calculating all statistics.

**Table 3: OLS Estimates for Probability of Repayment Problems**

<b>Variables</b>	<b>Any Repayment Problem</b>	<b>Serious Repayment Problem</b>
current income: none	0.574 (0.088)	0.145 (0.053)
current income: \$1 to less than \$10,000/year	0.447 (0.082)	0.142 (0.061)
current income: \$10,000/year to less than \$20,000/year	0.373 (0.064)	0.140 (0.043)
current income: \$20,000/year to less than \$30,000/year	0.146 (0.050)	-0.005 (0.024)
current income: \$30,000/year to less than \$40,000/year	0.100 (0.055)	0.005 (0.033)
CSLP loan amount outstanding at consolidation (in \$10,000)	0.131 (0.044)	0.045 (0.030)
CSLP loan amount (in \$10,000) squared	-0.010 (0.008)	-0.007 (0.005)
vocational/technical school graduate or more	-0.010 (0.068)	-0.065 (0.050)
4-year university graduate or post-graduate degree	-0.075 (0.060)	-0.008 (0.032)
would stop paying CSLP loan first if unable to repay all loans	0.079 (0.047)	0.002 (0.027)
male	0.013 (0.047)	-0.025 (0.028)
age	0.015 (0.010)	0.003 (0.007)
aboriginal	0.040 (0.090)	0.038 (0.048)
private for profit post-secondary institution (CSS loan type)	0.080 (0.050)	0.089 (0.039)
Observations	757	757
R-squared	0.239	0.088

Notes: Linear probability model estimated using OLS. Specifications also include indicators for CSS cohort and province. Sampling weights are used. Robust standard errors in parentheses.

**Table 4: Fraction of Defaulters Returning to Good Standing by Income at Default and Survey Dates**

	<b>Monthly Income at Survey Date:</b>	
	<b>Less than \$1,600</b>	<b>At Least \$1,600</b>
<hr/>		
<b>A. Raw means</b>		
Monthly Income at Default Date less than \$1,600	0.161 (0.019)	0.369 (0.034)
Monthly Income at Default Date at Least \$1,600	0.150 (0.068)	0.452 (0.052)
<b>B. Regression adjusted</b>		
Monthly Income at Default Date less than \$1,600	0.160 (0.084)	0.365 (0.088)
Monthly Income at Default Date at Least \$1,600	0.184 (0.113)	0.458 (0.094)

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Note: Panel A reports percentage of defaulters that paid off their loans entirely or are currently in good standing at the time of the Defaulter Survey by monthly income at the time of default and at the time of the survey. Panel B reports the predicted fraction in good standing at the time of the Defaulter Survey by income at the time of default and at the time of the survey holding other characteristics fixed at their sample averages. Predictions are based on an OLS regression controlling for current CSLP debt amount (indicators for zero, \$1-5,000, \$5,000-10,000, \$10,000-15,000, \$15,000-20,000, and \$20,000-30,000), educational attainment (indicators for vocational/technical degree and for BA or higher), age, province of residence, and gender. Standard errors are in parentheses. Sampling weights are used. Sample size is 1,536.



**Table 5: Repayment Problems at CSS by Borrower and Parental Income**

	<b>Parental Income ≥ \$25,000</b>	<b>Parental Income &lt; \$25,000</b>	<b>Independent Students</b>
<u>A: Any Repayment Problem</u>			
Borrower Income < \$20,000	0.413 (0.092) <i>10.98%</i>	0.547 (0.137) <i>5.38%</i>	0.378 (0.051) <i>32.13%</i>
Borrower Income ≥ \$20,000	0.095 (0.035) <i>17.31%</i>	0.066 (0.028) <i>6.38%</i>	0.139 (0.036) <i>27.51%</i>
<u>B: Serious Repayment Problem</u>			
Borrower Income < \$20,000	0.099 (0.038) <i>10.98%</i>	0.247 (0.101) <i>5.38%</i>	0.166 (0.034) <i>32.13%</i>
Borrower Income ≥ \$20,000	0.023 (0.019) <i>17.31%</i>	0.046 (0.023) <i>6.38%</i>	0.050 (0.014) <i>27.51%</i>

Note: Parental income (columns 1 and 2) is only observed for dependent students. Independent status is based on first year in CSLP records. Standard errors are in parentheses. (Weighted) percent of population in each cell is in italics. Sampling weights are used.

**Table 6: Repayment Problems at CSS by Income and Additional Financial Resources**

	<b>Has Both Savings and Family Assistance</b>	<b>Has Either Savings or Family Assistance (Not Both)</b>	<b>Has Neither Savings nor Family Assistance</b>
<u>A: Any Repayment Problem</u>			
Income < \$20,000	0.037 (0.020) <i>6.64%</i>	0.263 (0.067) <i>15.08%</i>	0.585 (0.060) <i>26.70%</i>
Income ≥ \$20,000	0.045 (0.024) <i>11.94%</i>	0.072 (0.023) <i>29.01%</i>	0.307 (0.079) <i>10.60%</i>
<u>B: Serious Repayment Problem</u>			
Income < \$20,000	0.011 (0.009) <i>6.64%</i>	0.075 (0.030) <i>15.08%</i>	0.250 (0.044) <i>26.70%</i>
Income ≥ \$20,000	0.024 (0.020) <i>11.94%</i>	0.026 (0.013) <i>29.01%</i>	0.100 (0.029) <i>10.60%</i>

Note: 'Savings' implies savings of at least \$1,000. 'Family Assistance' implies expected family transfers of at least \$2,500. Standard errors are in parentheses. (Weighted) percent of population in each cell is in italics. Sampling weights are used.

**Table 7: The Effect of Savings and Parental Transfers on Repayment Problems for Low-Income Borrowers**

Variables	Any Repayment Problem	Serious Repayment Problem
has either savings or parental help (not both)	-0.358 (0.077)	-0.138 (0.056)
has both savings and parental help	-0.491 (0.087)	-0.201 (0.060)
current annual income < \$10,000	0.150 (0.073)	0.000 (0.056)
CSLP loan amount outstanding at consolidation (in \$10,000)	0.239 (0.078)	0.102 (0.062)
CSLP loan amount (in \$10,000) squared	-0.023 (0.012)	-0.014 (0.012)
vocational/technical school graduate or more	-0.019 (0.091)	-0.075 (0.078)
4-year university graduate or post-graduate degree	0.164 (0.096)	0.000 (0.057)
would stop paying CSLP loan first if unable to repay all loans	0.079 (0.072)	-0.064 (0.047)
male	-0.003 (0.077)	-0.079 (0.051)
age	0.003 (0.019)	0.002 (0.016)
aboriginal	0.006 (0.144)	0.134 (0.116)
private for profit post-secondary institution (CSS loan type)	0.082 (0.078)	0.039 (0.074)
constant	0.328 (0.422)	0.195 (0.374)
Observations	356	356
R-squared	0.368	0.149

Note: Sample includes respondents with income less than \$20,000 per year. 'Savings' implies savings of at least \$1,000. 'Family Assistance' implies expected family transfers of at least \$2,500. Standard errors are in parentheses. Sampling weights are used.

**Table 8: Effects of Income and Other Characteristics on Repayment Problems for Different Levels of Additional Resources**

Variables	Any Repayment Problem			Serious Repayment Problem		
	Has Both Savings and Family Assistance	Has Either Savings or Family Assistance (Not Both)	Has Neither Savings nor Family Assistance	Has Both Savings and Family Assistance	Has Either Savings or Family Assistance (Not Both)	Has Neither Savings nor Family Assistance
current monthly income < \$20,000/yr	-0.032 (0.122)	0.376 (0.090)	0.615 (0.111)	-0.101 (0.103)	0.121 (0.049)	0.166 (0.091)
current monthly income \$20,000 to at least 40,000/yr	-0.095 (0.118)	0.187 (0.061)	0.262 (0.119)	-0.119 (0.105)	0.068 (0.033)	0.013 (0.082)
CSLP loan amount outstanding at consolidation (in \$10,000)	-0.035 (0.048)	0.076 (0.049)	0.232 (0.102)	-0.057 (0.036)	0.032 (0.023)	0.115 (0.080)
CSLP loan amount (in \$10,000) squared	0.015 (0.010)	-0.004 (0.009)	-0.029 (0.018)	0.013 (0.009)	-0.005 (0.005)	-0.018 (0.013)
vocational/technical school graduate or more	-0.015 (0.038)	-0.029 (0.099)	-0.009 (0.120)	-0.025 (0.026)	-0.087 (0.048)	-0.025 (0.103)
4-year university graduate or post-graduate degree	0.052 (0.064)	0.020 (0.076)	-0.072 (0.116)	-0.015 (0.036)	0.043 (0.027)	-0.053 (0.075)
would stop paying CSLP loan first if unable to repay all loans	0.039 (0.043)	0.108 (0.064)	0.059 (0.094)	0.030 (0.030)	0.053 (0.037)	-0.078 (0.064)
male	-0.001 (0.061)	0.092 (0.064)	0.036 (0.102)	-0.058 (0.041)	0.013 (0.028)	-0.053 (0.068)
age	0.007 (0.012)	0.018 (0.015)	0.013 (0.022)	0.014 (0.010)	0.011 (0.009)	-0.010 (0.015)
aboriginal	-0.017 (0.087)	-0.145 (0.068)	0.083 (0.141)	0.026 (0.080)	-0.072 (0.045)	0.020 (0.086)
private for profit post-secondary institution (CSS loan type)	0.149 (0.102)	0.112 (0.064)	0.010 (0.093)	0.125 (0.077)	0.133 (0.060)	0.063 (0.069)
Constant	-0.199 (0.211)	-0.651 (0.284)	-0.557 (0.530)	-0.246 (0.184)	-0.313 (0.175)	0.255 (0.385)
Observations	101	240	348	101	240	348
R-squared	0.165	0.227	0.169	0.171	0.123	0.096

Notes: 'Savings' implies savings  $\geq$  \$1,000. 'Family Assistance' implies expected family transfers  $\geq$  \$2,500. Standard errors are in parantheses. Sampling weights are used.

## **Appendix A    Default and Full Repayment Following Consolidation**

In this appendix, we consider the implications of the CSS sampling scheme, which did not include borrowers who had fully repaid their loans or had defaulted as of the date the samples were drawn (a few months before each CSS). This may raise some concerns if a sizeable fraction of the sample is systematically excluded.

We first examine when borrowers first enter default or repay their loans in full relative to the date of consolidation. To do this, we use the 2010 and 2011 CSS, since we have follow-up administrative loan records for these individuals that continue for a few years. To ensure that we do not lose any borrowers due to full repayment or default, we consider a sample consisting only of borrowers who had not yet consolidated their loans at the time of the CSS. Specifically, we limit our sample to those who consolidated their loans from the month of the CSS up to nine months after the CSS. In Figure A1, we include those borrowers who we observe for at least 12 months after consolidation, while Figure A2 includes a more limited sample of borrowers who we observe for at least 24 months after consolidation. Both figures report the fraction of borrowers that had entered default or fully repaid their loans by months since consolidation. Figure A1 includes 248 borrowers, while Figure A2 includes 115 borrowers.

Not surprisingly, we observe no defaults until month 11. Borrowers are not considered in default until they have missed nine consecutive payments, and the timing is such that this does not get recorded as a default until month 11 in our data. Figures A1 and A2 suggest that about 5% of borrowers never make any initial payments and enter default as early as possible. Over the next few years, another 3-4% enter default. In the paper, we include individuals who were administered the CSS within the first 24 months after consolidation. Averaging across all potential months, our sample excludes less than 5% of the population who would have been in default at the time the sample was drawn. Limiting the sample to those administered the CSS within the first twelve months after consolidation would exclude a negligible population in default. (Indeed, since the samples were drawn 2-3 months prior to the CSS, we are unlikely to be missing anyone due to default when limiting our sample to those taking the CSS within 12 months of consolidation.)

Figures A1 and A2 suggest that our samples are more likely to exclude borrowers who fully repaid their loans, since 3-4% repay their loans prior to or at the time of consolidation, while another 10% repays their loans over the course of the first year after consolidation. Averaging across all potential months within the first 24 months after consolidation suggests that our main sample is missing slightly more than 10% of the population who had fully repaid their loans. Limiting our sample to those taking the CSS within the first year after consolidation would reduce this exclusion to a little under 10%.

Altogether, our main sample is missing roughly 5% of the population who defaulted fairly quickly and another 10-15% who paid off their loans quickly. By limiting the sample to those administered the CSS within one year of consolidation, we would no longer miss anyone who defaulted and would miss around 7-8% of those who fully repaid their loans shortly after leaving school. Most of the full repayment exclusions would be due to borrowers who fully repaid their loans before any payments were actually due. In this case, we could simply re-interpret our results to apply to borrowers who do not fully repay their loans immediately after leaving school.

To see whether these omissions affect our results, Table A1 reports results analogous to those of Table 3 in the paper using the more restricted set of borrowers who consolidated their loans no more than one year (rather than two years as in the paper) prior to the CSS. While the results are less precise due to the smaller sample, the estimated coefficients are quite similar to those reported in Table 3. These results suggest that the (odd) sampling scheme of the CSS does not have important implications for our main results.

## **Appendix B    Repayment Problems 12 and 18 Months after CSS**

Updated designation files for the 2010 and 2011 CSS respondents allow us to observe outcomes twelve and eighteen months after the survey dates. Examining how the status of respondents changes during this period provides information about whether particular repayment problems tend to be especially persistent or tend to be good predictors of other (more serious) repayment problems in the future.

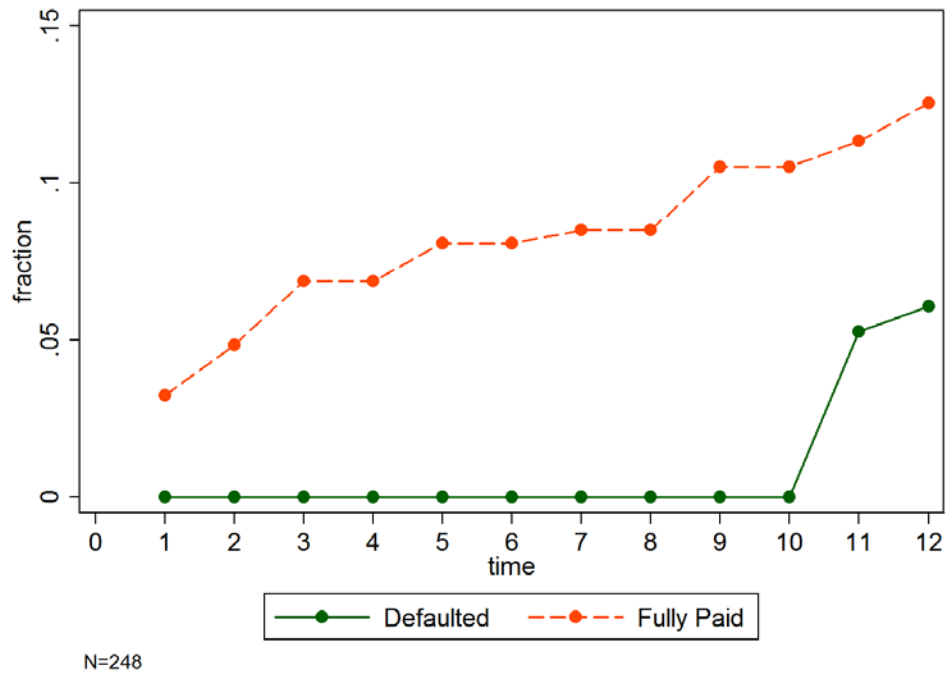
Appendix Table B1 reports the probabilities of different types of repayment problems 12 and 18 months after the 2010 and 2011 CSS. Among those who had any form of repayment problem at the CSS, one-in-three had a serious repayment problem (delinquency or default/bankruptcy) 12 and 18 months later, compared to about 5% of those with no problems as of the CSS. Thus, repayment problems were evident early and were quite persistent. Breaking the sample up by different types of repayment problems at CSS, 13% of those who were on IR/DRR or RAP at the CSS had a serious repayment problem 12 and 18 months later, while over half of those already in delinquency at CSS had a serious repayment problem a year or more later. IR/DRR/RAP recipients as of the CSS were also much less likely to be in default or have declared bankruptcy 12 and 18 months later when compared with those in delinquency at CSS (less than 2% vs. 27-35%). While IR/DRR and RAP may help borrowers continue on a path to eventual payment, these differences need to be interpreted with caution. First, individuals must go through a lengthy period of delinquency before they are considered in default, so many respondents on IR/RAP at the CSS date may not have had time to go through delinquency long enough to get to default 12-18 months after the CSS. Second, those on IR/DRR/RAP may be in a better position (i.e., lower debt, higher income) to repay their loans, on average. Related, those choosing to sign up for IR/RAP may have a strong desire to repay their loans relative to those who go straight to delinquency.

In Appendix Table B2, we show that income (at CSS), debt, and educational attainment are still important determinants of repayment problems 12 and 18 months after CSS. The effects of these variables are quite similar to their counterparts reported in column 2 of Table 3, which considers the determinants of serious repayment problems at the time of the CSS. Interestingly, enrolment in private institutions has a much stronger effect on serious repayment problems 12 and 18 months after CSS than it does at CSS. It is likely that enrolment in these institutions is associated with lower long-term income levels. At CSS, this is accounted for by including a measure of current income; however, we do not have an income measure 12-18 months after CSS. More importantly, however, these results highlight the importance of many of the same factors that impacted repayment at CSS.

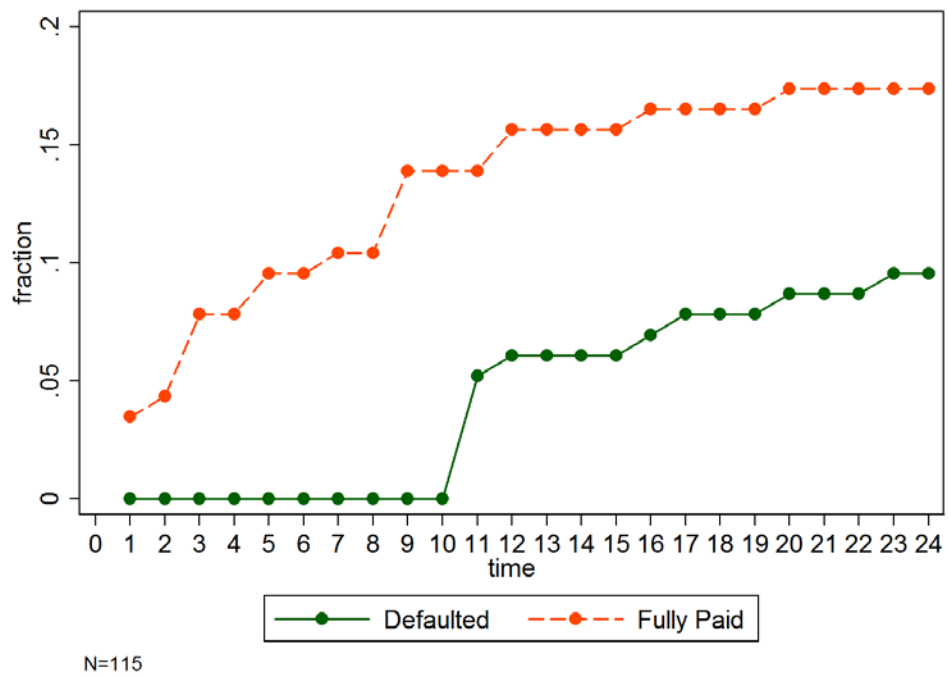
### **Appendix C Living with Family as a Form of Family Assistance**

Recent research in other contexts (e.g. Kaplan 2012) has recognized that financial assistance from families often comes in the form of housing. To account for this, we modify our measure of family assistance to incorporate this possibility. For Appendix Tables C1-C3 (analogous to Tables 6-8 in the paper), we set the family assistance indicator to one if any of the following are true: (1) the respondent could expect to receive \$2,500 or more from family/parents in the next six months if needed, (2) the respondent could move in with family if necessary, or (3) the respondent already lives with their parents. The results in Tables C1-C3 strongly support the conclusion that savings and family assistance are critical forms of insurance for low-income borrowers, significantly reducing the likelihood of repayment problems.

**Figure A1: Default and Full Repayment by Months Since Consolidation**



**Figure A2: Default and Full Repayment by Months Since Consolidation**





**Table A1: OLS Estimates for Probability of Repayment Problems (CSS within 1 Year of Consolidation)**

Variables	Any Repayment Problem	Serious Repayment Problem
current income: none	0.547 (0.109)	0.098 (0.061)
current income: \$1 to less than \$10,000/year	0.424 (0.105)	0.135 (0.078)
current income: \$10,000/year to less than \$20,000/year	0.477 (0.098)	0.215 (0.066)
current income: \$20,000/year to less than \$30,000/year	0.230 (0.085)	0.002 (0.046)
current income: \$30,000/year to less than \$40,000/year	0.143 (0.087)	0.017 (0.063)
CSLP loan amount outstanding at consolidation (in \$10,000)	0.161 (0.052)	0.048 (0.036)
CSLP loan amount (in \$10,000) squared	-0.012 (0.009)	-0.007 (0.007)
vocational/technical school graduate or more	0.043 (0.085)	-0.070 (0.066)
4-year university graduate or post-graduate degree	-0.129 (0.082)	0.007 (0.046)
would stop paying CSLP loan first if unable to repay all loans	0.104 (0.062)	0.007 (0.038)
male	0.000 (0.065)	-0.014 (0.041)
age	0.017 (0.012)	0.004 (0.009)
aboriginal	0.113 (0.124)	0.105 (0.075)
private for profit post-secondary institution (CSS loan type)	0.077 (0.064)	0.096 (0.059)
Observations	465	465
R-squared	0.269	0.109

Notes: Linear probability model estimated using OLS. Specifications also include indicators for CSS cohort and province. Sample only includes respondents taking the CSS within one year of CSLP consolidation. Sampling weights are used. Robust standard errors in parentheses.

**Table B1: Probability of Repayment Problems 12 and 18 Months after CSS by Repayment Status at CSS (2010 and 2011 CSS)**

Status at CSS	Status 12 Months after CSS		Status 18 Months after CSS	
	Delinquency	Default or Bankruptcy	Delinquency	Default or Bankruptcy
<b>No Problem (N=464)</b>	0.035 (0.009)	0.005 (0.003)	0.035 (0.009)	0.019 (0.008)
<b>IR/DRR/RAP (N=212)</b>	0.129 (0.033)	0.004 (0.002)	0.114 (0.031)	0.019 (0.010)
<b>Delinquency (N=165)</b>	0.262 (0.071)	0.274 (0.055)	0.213 (0.066)	0.345 (0.064)
<b>Any Problem (N=377)</b>	0.183 (0.036)	0.148 (0.026)	0.155 (0.033)	0.185 (0.031)
<b>All (N=863)</b>	0.076 (0.013)	0.045 (0.008)	0.068 (0.012)	0.065 (0.011)

Notes: Analysis uses extended designation files for 2010 and 2011 CSS samples. 'Any problem' indicates being either in IR, DRR, RAP, delinquency or default/bankruptcy. Sampling weights are used.

**Table B2: OLS Estimates for Probability of Repayment Problems 12 and 18 months after CSS (2010 and 2011 CSS)**

Variables	Status 12 Months after CSS		Status 18 Months after CSS	
	Serious Repayment Problem	Default or Bankruptcy	Serious Repayment Problem	Default or Bankruptcy
current income: none	0.192 (0.065)	0.165 (0.070)	0.102 (0.040)	0.065 (0.055)
current income: \$1 to less than \$10,000/year	0.089 (0.054)	0.098 (0.069)	0.076 (0.043)	0.076 (0.065)
current income: \$10,000/year to less than \$20,000/year	0.105 (0.044)	0.075 (0.059)	0.046 (0.025)	0.037 (0.051)
current income: \$20,000/year to less than \$30,000/year	0.019 (0.038)	0.013 (0.050)	-0.015 (0.019)	-0.029 (0.042)
current income: \$30,000/year to less than \$40,000/year	-0.040 (0.034)	-0.066 (0.045)	-0.024 (0.017)	-0.059 (0.038)
CSLP loan amount outstanding at consolidation (in \$10,000)	0.061 (0.032)	0.061 (0.032)	0.027 (0.020)	0.015 (0.025)
CSLP loan amount (in \$10,000) squared	-0.011 (0.005)	-0.011 (0.006)	-0.004 (0.003)	-0.003 (0.004)
vocational/technical school graduate or more	-0.055 (0.053)	-0.040 (0.057)	-0.026 (0.036)	-0.051 (0.047)
4-year university graduate or post-graduate degree	-0.083 (0.033)	-0.074 (0.032)	-0.050 (0.020)	-0.068 (0.024)
would stop paying CSLP loan first if unable to repay all loans	0.076 (0.030)	0.015 (0.031)	0.027 (0.020)	0.008 (0.025)
male	-0.022 (0.026)	-0.025 (0.030)	-0.013 (0.018)	-0.013 (0.024)
age	-0.001 (0.006)	-0.002 (0.008)	-0.001 (0.004)	0.000 (0.006)
aboriginal	0.076 (0.059)	0.162 (0.070)	0.092 (0.049)	0.069 (0.053)
private for profit post-secondary institution (CSS loan type)	0.171 (0.049)	0.167 (0.053)	0.082 (0.032)	0.102 (0.046)
Observations	731	731	731	731
R-squared	0.150	0.143	0.102	0.112

Notes: Analysis extended designation files for 2010 and 2011 CSS samples. Linear probability model estimated using OLS. Specifications also include indicators for CSS cohort and province. Sampling weights are used. Robust standard errors in parentheses.

**Table C1: Repayment Problems at CSS by Income and Additional Financial Resources (Includes Living with Parents)**

	<b>Has Both Savings and Family Assistance</b>	<b>Has Either Savings or Family Assistance (Not Both)</b>	<b>Has Neither Savings nor Family Assistance</b>
<u>A: Any repayment Problem</u>			
Income < \$20,000	0.130 (0.040) <i>16.93%</i>	0.497 (0.064) <i>28.65%</i>	0.785 (0.072) <i>5.12%</i>
Income ≥ \$20,000	0.055 (0.021) <i>28.99%</i>	0.108 (0.032) <i>16.01%</i>	0.571 (0.130) <i>4.29%</i>
<u>B: Serious Repayment Problem</u>			
Income < \$20,000	0.048 (0.023) <i>16.93%</i>	0.181 (0.042) <i>28.65%</i>	0.367 (0.083) <i>5.12%</i>
Income ≥ \$20,000	0.016 (0.010) <i>28.99%</i>	0.060 (0.026) <i>16.01%</i>	0.141 (0.060) <i>4.29%</i>

Note: Repayment problem indicator means by income and additional resource measures. 'Savings' implies savings ≥ \$1,000. 'Family Assistance' implies at least one of the following: (i) expected family transfers of at least \$2,500, (ii) can move in with parents, or (iii) already living with parents. Standard errors are in parentheses. (Weighted) percent of population in each cell is in italics. Sampling weights are used.

**Table C2: The Effect of Savings and Parental Assistance (Includes Living with Parents) on Repayment Problems for Low-Income Borrowers**

Variables	Any Repayment Problem	Serious Repayment Problem
has either savings or parental help (not both)	-0.201 (0.076)	-0.131 (0.092)
has both savings and parental help	-0.590 (0.077)	-0.269 (0.093)
current annual income < \$10,000	0.149 (0.072)	0.0012 (0.058)
CSLP loan amount outstanding at consolidation (in \$10,000)	0.251 (0.077)	0.103 (0.059)
CSLP loan amount (in \$10,000) squared	-0.020 (0.013)	-0.014 (0.011)
vocational/technical school graduate or more	-0.047 (0.095)	-0.087 (0.079)
4-year university graduate or post-graduate degree	0.165 (0.091)	0.008 (0.058)
would stop paying CSLP loan first if unable to repay all loans	0.052 (0.076)	-0.082 (0.047)
male	-0.031 (0.075)	-0.078 (0.052)
age	-0.009 (0.019)	-0.003 (0.017)
aboriginal	0.044 (0.141)	0.105 (0.108)
private for profit post-secondary institution (CSS loan type)	0.109 (0.074)	0.063 (0.072)
constant	0.738 (0.438)	0.391 (0.437)
Observations	338	338
R-squared	0.374	0.147

Note: Sample includes respondents with income less than \$20,000 per year 'Savings' implies savings  $\geq$  \$1,000. 'Family Assistance' implies at least one of the following: (i) expected family transfers of at least \$2,500, (ii) can move in with parents, or (iii) already living with parents. Standard errors are in parentheses. Sampling weights are used.

**Table C3: Effects of Income and Other Characteristics on Repayment Problems for Different Levels of Additional Resources (Includes Living with Parents)**

Variables	Any Repayment Problem			Serious Repayment Problem		
	Has Both Savings and Family Assistance	Has Either Savings or Family Assistance (Not Both)	Has Neither Savings nor Family Assistance	Has Both Savings and Family Assistance	Has Either Savings or Family Assistance (Not Both)	Has Neither Savings nor Family Assistance
current monthly income < \$20,000/yr	0.149 (0.068)	0.522 (0.105)	0.757 (0.201)	0.048 (0.048)	0.114 (0.062)	0.217 (0.222)
current monthly income \$20,000 to at least 40,000/yr	0.069 (0.053)	0.052 (0.094)	0.462 (0.216)	-0.005 (0.033)	0.042 (0.061)	0.084 (0.207)
CSLP loan amount outstanding at consolidation (in \$10,000)	0.013 (0.045)	0.183 (0.092)	0.218 (0.146)	-0.031 (0.023)	0.079 (0.070)	0.202 (0.150)
CSLP loan amount (in \$10,000) squared	0.009 (0.011)	-0.017 (0.015)	-0.047 (0.032)	0.010 (0.008)	-0.015 (0.011)	-0.029 (0.024)
vocational/technical school graduate or more	-0.034 (0.086)	-0.062 (0.126)	0.053 (0.142)	-0.054 (0.038)	-0.016 (0.100)	-0.180 (0.175)
4-year university graduate or post-graduate degree	-0.013 (0.068)	0.101 (0.096)	0.164 (0.176)	0.005 (0.024)	0.009 (0.065)	0.110 (0.164)
would stop paying CSLP loan first if unable to repay all loans	0.022 (0.042)	0.108 (0.088)	-0.155 (0.113)	0.031 (0.027)	-0.077 (0.051)	-0.114 (0.136)
male	0.016 (0.054)	0.075 (0.082)	0.238 (0.170)	-0.012 (0.025)	-0.011 (0.055)	0.035 (0.154)
age	0.012 (0.012)	-0.010 (0.017)	0.006 (0.021)	0.011 (0.006)	-0.008 (0.016)	-0.024 (0.027)
aboriginal	-0.085 (0.049)	0.041 (0.184)	0.144 (0.090)	-0.032 (0.035)	0.109 (0.106)	-0.042 (0.144)
private for profit post-secondary institution (CSS loan type)	0.014 (0.057)	0.122 (0.081)	-0.007 (0.143)	0.040 (0.039)	0.066 (0.072)	0.293 (0.133)
Constant	-0.335 (0.239)	0.061 (0.427)	-0.305 (0.572)	-0.233 (0.123)	0.109 (0.362)	0.651 (0.678)
Observations	221	305	110	221	305	110
R-squared	0.109	0.271	0.445	0.078	0.095	0.262

Note: 'Savings' implies savings  $\geq$  \$1,000. 'Family Assistance' implies at least one of the following: (i) expected family transfers of at least \$2,500, (ii) can move in with parents, or (iii) already living with parents. Standard errors are in parentheses. Sampling weights are used.