



WORKING PAPERS

RESEARCH DEPARTMENT

**WORKING PAPER NO. 17-38
STRATEGIC DEFAULT AMONG
PRIVATE STUDENT LOAN DEBTORS:
EVIDENCE FROM BANKRUPTCY REFORM**

Rajeev Darolia
University of Kentucky and Visiting Scholar
at Federal Reserve Bank of Philadelphia

Dubravka Ritter
Payment Cards Center
Federal Reserve Bank of Philadelphia

November 2017

RESEARCH DEPARTMENT, FEDERAL RESERVE BANK OF PHILADELPHIA

Ten Independence Mall, Philadelphia, PA 19106-1574 • www.philadelphiafed.org/research-and-data/

Strategic Default Among Private Student Loan Debtors: Evidence from Bankruptcy Reform

Rajeev Darolia*

Dubravka Ritter†

November 2017

Abstract

Bankruptcy reform in 2005 restricted debtors' ability to discharge private student loan debt. The reform was motivated by the perceived incentive of some borrowers to file bankruptcy under Chapter 7 even if they had, or expected to have, sufficient income to service their debt. Using a national sample of credit bureau files, we examine whether private student loan borrowers distinctly adjusted their Chapter 7 bankruptcy filing behavior in response to the reform. We do not find evidence to indicate that the moral hazard associated with dischargeability appreciably affected the behavior of private student loan debtors prior to the policy.

Keywords: student loans, bankruptcy, bankruptcy reform

JEL Codes: D14, G21, I22, K35

* University of Kentucky and visiting scholar of the Federal Reserve Bank of Philadelphia; 120 Patterson Drive, 417, Lexington, KY 40506; e-mail: rajeev.darolia@uky.edu.

† Federal Reserve Bank of Philadelphia, Ten Independence Mall, Philadelphia, PA 19106; e-mail: dubravka.ritter@phil.frb.org.

We thank Beth Akers, Satyajit Chatterjee, Julia Cheney, Robert M. Hunt, Wenli Li, Shuwei Ma, and numerous seminar and conference participants for their helpful comments. Nathan Blascak, Ryan Smith, Anna Tranfaglia, and Michael Vogan provided excellent research assistance. The views expressed here are those of the authors and do not necessarily reflect the views of the Federal Reserve Bank of Philadelphia or the Federal Reserve System. No statements here should be treated as legal advice. This paper is available free of charge at www.philadelphiafed.org/research-and-data/publications/working-papers/.

1. Introduction

Student loan delinquency rates in the United States have nearly doubled during the past decade nationally, and default rates on federal loan programs recently reached their highest level in more than 15 years (Federal Reserve Bank of New York, 2014; U.S. Department of Education, n.d.). Student loan debtors, however, cannot take full advantage of the benefits offered by declaring bankruptcy except in rare circumstances. Student loan debt is generally nondischargeable, which means that obligations to service educational debt survive after a bankruptcy filing.

Laws that inhibit debtors from discharging their student loan debt were passed because of the concern that student loan debtors have the incentive to strategically declare bankruptcy even if they have, or expect to have, sufficient income to service their debt. Nondischargeability policies generally affect debtors' benefits of declaring bankruptcy but not their ability to repay debt. Therefore, these laws were enacted to protect the bankruptcy system from abuse and to preserve credit availability. But according to critics, the inability to discharge student loan debt in bankruptcy unfairly damages debtors' economic health and is unnecessarily burdensome to struggling students (Dayen, 2013; Pardo and Lacey, 2005). These concerns have spurred legislative proposals to roll back student loan debt nondischargeability policies, but there is little research to inform the debate.¹

We use a unique, nationally representative sample of millions of anonymized credit records obtained from a major credit bureau to examine whether student loan nondischargeability policy changes affected debtors' bankruptcy filing behavior. The 2005 Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) specifically targeted private student loan (PSL) borrowers by making PSL nondischargeable in bankruptcy except under rare circumstances. We identify the effects of PSL nondischargeability by estimating the policy-induced change in PSL debtors' bankruptcy filing behavior while accounting for the filing trends of debtors who had similar prepolicy bankruptcy filing trends but whose incentives were not directly affected by the PSL nondischargeability policy change: student loan borrowers who borrowed government student loans (GSL).

¹ See, for example, Senate Bill S. 114 Fairness for Struggling Students Act of 2013 and House Bill H.R. 3892 Student Borrower Bill of Rights Act.

Our research contributes to the literature on default, for which the causes are less established in the student loan context than with other types of credit, such as mortgages (e.g., Li, White, and Zhu, 2011). Researchers have found associative relationships between student loan default and demographic characteristics, such as race and ethnicity, age, and gender and socioeconomic characteristics, as well as low-income families, having dependents, and being unemployed (Dynarski, 1994; Greene, 1989; and Knapp and Seaks, 1992). Prior studies have also examined the effect of college characteristics on default behavior and have reported generally mixed findings (Belfield, 2013; Darolia, 2015). The most closely related study to ours is Yannelis (2017), who finds that adding hurdles to the process of discharging student loan debt in bankruptcy and increasing the severity of wage garnishment rules reduced default rates for borrowers with federal student loans. In contrast to that paper, our study focuses on private student loans, which has been the primary focus of policy debates related to nondischargeability, and policy variation from BAPCPA, which introduced a more drastic change in bankruptcy rules.

We also provide descriptive evidence that the 2005 policy change induced an expansion of PSL credit supply and looser origination credit standards. We observe that riskier borrowers (as measured by credit score) appear to have gained access to the PSL market postpolicy, and these relatively risky borrowers tended to borrow larger loan amounts. For example, postpolicy loan amounts among the least creditworthy PSL borrowers were more than 30% higher than prepolicy loan amounts.

As documented in prior research, the BAPCPA induced a large spike in Chapter 7 bankruptcy filings after the bill was signed but before the law was enacted (e.g., see Li, White, and Zhu, 2011). After the policy went into effect, the rate of these filings declined substantially among all borrowers. If PSL debtors were strategically filing for bankruptcy, we would expect to see divergent behavior among the different groups of student loan borrowers after the policy. However, after accounting for potential policy-induced changes in credit supply, we find similar postpolicy filing trends for PSL borrowers and GSL borrowers. In other words, the 2005 nondischargeability provision does not appear to have differentially affected the likelihood of PSL borrowers filing for bankruptcy when compared with other debtors whose incentives were not directly affected by the policy. Therefore, our findings do not provide empirical support to

the theoretical concerns about strategic default that inspired lawmakers to make private student loan debt largely nondischargeable in the 2005 bankruptcy reform.

Our results are robust to the exclusion of student loans that are cosigned, the consideration of borrowers with different levels of creditworthiness, and analyses considering different time periods. Overall, we find little evidence that would support concerns about widespread opportunistic filing behavior among student loan debtors prior to the policy. Consequently, policymakers are faced with the challenge of weighing the burden placed by restrictions to bankruptcy protection on struggling nonopportunistic debtors against the benefits of expanded credit availability.

2. Student Loans and Bankruptcy

During the past decade, annual educational loan disbursements have grown from about \$40 billion to nearly \$107 billion (in inflation-adjusted dollars; College Board, 2016; Baum and Payea, 2012). Students and their families generally have access to two broad categories of student loan programs: federal programs and private lenders.² Federal loan programs typically have relatively favorable terms and are subsidized: Loan approval and interest rates in federal programs do not vary with expected default risk as long as borrowers attend eligible institutions. In addition to federal student loans generally being offered at lower rates than from private lenders, most federal loan programs offer additional benefits, such as the ability to postpone or reduce payments and/or interest accrual during times of college enrollment or hardship. Nevertheless, a significant number of students borrow from private sources. Private creditors lent nearly one-quarter of the total educational debt annually in the mid-2000s, although federal loans comprise more than 90% of the total annual disbursements in recent years (College Board, 2016). PSL debt is estimated to account for about 15% of the total outstanding educational debt today, with current estimates indicating that about 15% of undergraduates and 11% of graduate students borrow private loan money each year (Consumer Financial Protection Bureau [CFPB] and U.S. Department of Education, 2012).

² States and postsecondary institutions can also lend money to students, but these programs account for less than 1% of the total loan disbursements over the past 10 years (College Board, 2016).

There are several reasons for the substantial use of the PSL market. Lochner and Monge-Naranjo (2011) demonstrated how the private lending market expands or contracts in response to changes in federal student loan programs. Because the amount of credit available through federal loan programs is statutorily limited annually and in aggregate, many students and their families turn to the private loan market to cover unmet financial needs when costs at some postsecondary institutions exceed available aid offered by public programs.³ Borrowers do not exclusively obtain PSLs to accompany government loans, however. More than 20% of undergraduate PSL borrowers do not have a federal student loan (CFPB, 2012). This may reveal borrower preferences and the lack of access to federal lending programs available at some schools (Cellini and Goldin, 2014).

Student loan repayment, in particular, has become a prominent policy issue in large part because of rising student loan debt delinquency rates (Federal Reserve Bank of New York, 2014; U.S. Department of Education, n.d.).⁴ The considerable challenge for debtors to service their debt obligations highlights the importance of the treatment of student loan debt in bankruptcy. The U.S. bankruptcy system provides distressed borrowers with an opportunity to eliminate debt and to make an economic “fresh start” free of past repayment burdens. Consumer bankruptcy protection has been shown to have a variety of beneficial effects, including on earnings, mortality rates, and mortgage foreclosure rates (Dobbie and Song, 2015). Under the most common type of bankruptcy filing, Chapter 7 (commonly referred to as *liquidation*), debtors surrender unencumbered assets to service secured debt.⁵ Unsecured debts, in which borrowers do

³ Statutory annual limits for Stafford loans are as follows: \$3,500–\$5,500 per academic year in subsidized loans plus an additional \$2,000 per academic year in unsubsidized loans for dependent students or \$6,000–\$7,000 per year in unsubsidized loans for independent students. Lifetime limits for Stafford loans are as follows: \$23,000 in subsidized, \$8,000 in unsubsidized for dependent students, and \$34,500 in unsubsidized for independent students.

⁴ Legislators have introduced bills aimed at lowering student loan interest rates, enabling refinancing, reducing debt burdens, and forgiving portions of outstanding debt. See Senate Bill S.897 Bank on Students Loan Fairness Act, Senate Bill S.1066 Federal Student Loan Refinancing Act, and House Bill H.R. 4170 Student Loan Forgiveness Act of 2012. A prominent example of regulatory rulemaking is the U.S. Department of Education’s proposed Gainful Employment rules introduced in 2010. These rules hold colleges accountable for the repayment behavior of their students. See Darolia (2015) for a discussion of the policy implications of such accountability measures.

⁵ From 2005 to 2010, about 70% of nonbusiness bankruptcy filings occurred under Chapter 7. See U.S. Census Bureau, *2012 Statistical Abstract of the United States*, Table 776. Some assets are exempt from the bankruptcy estate. Debtors can keep property from different categories of assets, such as primary residence, automobile, or retirement accounts, with exemption maximums varying by state (some states allow debtors to choose between federal and state exemptions).

not place collateral against the loan, (e.g., credit card debt) are often discharged. Student loans are considered unsecured debt and would have been discharged in this category before changes to the treatment of these loans as part of the 2005 bankruptcy reform (this is discussed in more detail later in this section).

Generally following Li, White, and Zhu (2011), the following expression depicts a borrower's expected gains from filing Chapter 7 bankruptcy prior to the BAPCPA, conditional on eligibility to file:

$$Gain = (U_S + U_O) - \max[A, 0] - C . \quad (1)$$

Here, U_S is the value of PSL debt, and U_O is the value of other unsecured debt, such as credit card debt. A is the value of nonexempt assets surrendered. C includes all filing costs, possible increases in future prices of borrowing, and all nonpecuniary costs, such as the stigma associated with declaring bankruptcy.⁶ Therefore, the benefit from filing Chapter 7 for debtors is the difference between the value of unsecured debt discharged and nonexempt assets surrendered, net the costs associated with filing.

Strategic default has commonly been defined in the mortgage literature to describe decisions that debtors take when they derive financial benefit from defaulting, even if they otherwise have sufficient liquidity to service their debts (e.g., Fay, Hurst, and White, 2002). When filing under Chapter 7, some individuals with few nonexempt assets and high expected incomes can remove obligations to pay debts without forgoing future earnings. Therefore, even if eligible student borrowers have high expected incomes, some can achieve a positive financial benefit from filing Chapter 7 bankruptcy when $U_S + U_O > A + C$ (i.e., if they have high student loan debt and few assets, which would be expected of many young student loan borrowers).

In the top panel of Figure 1, we present a stylized illustration of the asset and income levels of debtors who could benefit from filing Chapter 7 bankruptcy pre-BAPCPA following the framework of White (2007). Nonexempt assets are on the x-axis, and income is on the y-axis. A student loan borrower could benefit from declaring bankruptcy if the value of her nonexempt assets is less than the amount of unsecured student loan debt net costs of filings, U^* , where $U^* =$

⁶ There is an automatic stay when a filer declares bankruptcy; creditors cannot try to collect payment during bankruptcy. This may be a benefit to debtors because they can avoid collector harassment. Borrowers might also be able to increase their incomes during the stay, so when they start making loan payments again, they will improve their ability to pay. Interest continues to accrue during the bankruptcy period, however.

$(U_S + U_O) - C$. Also consider some level of income, I^* , that is necessary for the debtor to be able to service the debt. Because debtors do not pledge income under Chapter 7, eligible debtors can benefit from filing Chapter 7 bankruptcy if they have asset values less than U^* , regardless of their income level. This is depicted by the shaded area to the left of U^* .

Concerns about this incentive for student loan borrowers to opportunistically default led to laws that prevented loan debtors from discharging their student loan debt except under exceptional circumstances. Nondischargeability means that obligations to pay educational debt survive even after a bankruptcy filing. It was first applicable to federally issued and guaranteed loans starting with the Higher Education Amendments of 1976 and the Bankruptcy Reform Act of 1978.⁷ Lawmakers feared that the perceived ease with which debtors could discharge educational loan obligations would encourage fraud (for example, see House Report No. 95-595, 1977).⁸ As a result, a prominent motivation for nondischargeability laws was the perceived effect of opportunistic default on the survival of federal loan programs.⁹

Creditor protections were extended to private lenders in 2005 as part of the BAPCPA bill that was signed into law in April 2005 and became effective in October 2005. The BAPCPA

⁷ See Pardo and Lacey (2005, 2009) or Pottow (2006) for a detailed history of the changes to bankruptcy codes related to student loans. In some circumstances, such as undue hardship, total and permanent disability, or military conscription, student loans can be discharged. The standard for proving hardship has been described as “impossibly high and inconsistently applied” (e.g., Lieber, 2012; Melear, 2011; and Salvin, 1996). However, Iuliano (2012) reports that, while only a small percentage of bankruptcy filers with student loan debt attempt to discharge this debt (about 0.1%), the few borrowers who pursued decisions had a high success rate of hardship discharges in bankruptcy disputes (nearly 40%). This led the author to conclude that claims of impossibly high standards are overstated. The National Consumer Law Center (2013) disputes this characterization, citing the high cost of litigation, the actions of student loan servicers to “very aggressively” fight discharges, and the lower rate of success when compared with typical civil litigation.

⁸ A U.S. representative set forth the following example: “It is dangerous to enact a law that is almost specifically designed to encourage fraud. For example, as a student leaves college to find a job, that student would have two options: (1) repay a substantial loan at a time when that student’s financial situation is probably at its lowest, or (2) discharge the debt in bankruptcy, having received the benefit of a free education. If Student A elects to repay the loan, honoring the legal and moral obligation that was incurred, he begins his career with a substantial debt and the accompanying financial pressure. Meanwhile, Student B (who chooses to declare bankruptcy) can begin with a clean slate and is free to spend his initial earnings on other items. By combining the clean slate with the excellent credit rating that accompanies a bankruptcy (since the discharged debtor cannot go bankrupt again for six years), Student B is rewarded for refusing to honor a legal obligation. The lesson that Students A and B have learned is that it ‘does not pay’ to honor one’s debts or other legal obligations” (House Report No. 95-595, 1977–1978, pp. 536–537).

⁹ For example, legislators feared that “the easy availability of discharge from educational loans threatens the survival of existing educational loan programs. ... the occurrence of a few instances of credit splurges on the eve of bankruptcy by individuals who promptly obtain discharges of the debts tends to bring discredit on the operation of the bankruptcy laws” (Commission on the Bankruptcy Laws of the United States, 1973, pp. 94–95).

affects the gains of all bankruptcy filers in a number of ways, most making bankruptcy overall less attractive to debtors.¹⁰ For example, bankruptcy filing fees increased (U.S. Government Accountability Office, 2008), and the BAPCPA gave courts the power to compel debtors with relatively high incomes to file under Chapter 13 instead of Chapter 7. This effectively imposed a maximum level of income that debtors could earn and still be eligible for filing Chapter 7 bankruptcy.

The change in BAPCPA that differentially affected PSL borrowers prevented the discharge of PSL debt in bankruptcy filings after the effective date of the policy in October 2005. The extension of nondischargeability to PSL debt was motivated by arguments analogous to GSL nondischargeability (i.e., the risk that some strategic borrowers will abuse the bankruptcy system and limit the availability of student loan credit).¹¹ As with the nondischargeability of GSL debt, however, the premise does not appear to have been reinforced by empirical analysis, and there were even claims that PSL nondischargeability provisions were slipped into the BAPCPA without explanation.¹²

The post-BAPCPA levels of income and assets at which debtors benefit from filing Chapter 7 bankruptcy are illustrated in the bottom panel of Figure 1, where the shaded region depicts the reduced benefit of filing Chapter 7 for many debtors. Since PSL debt can no longer be discharged, holding all else equal, the expected value of dischargeable unsecured debt for a PSL borrower declines from U^* to U^{**} , where $U^{**} = U_0 - C$, the amount of nonstudent loan unsecured debt net of filing costs. Therefore, positive gain from filing Chapter 7 by student loan borrowers would only be achieved when the value of nonexempt assets is lower than the value of nonstudent loan unsecured debt (i.e., when $U_0 > A - C$) and when debtor income does not exceed the allowable income level for filing under Chapter 7. Resource-constrained borrowers

¹⁰ During the 20 years leading up to the BAPCPA, bankruptcy filings increased almost fivefold, which led to arguments that there was an endemic bankruptcy crisis. See White (2007) for a discussion of changes under the BAPCPA.

¹¹ See the Congressional Record, *Daily Digest*. Volume 145, Issue 64, 1999, pp. H2655–02.

¹² For example, see remarks at the March 20, 2012, U.S. Senate Committee on the Judiciary’s subcommittee hearing on student loan debt at www.judiciary.senate.gov/meetings/the-looming-student-debt-crisis-providing-fairness-for-struggling-students. Additionally, in a press release introducing the *Fairness for Struggling Students Act of 2013*, Senator Sheldon Whitehouse remarked, “A basic principle of our country is a fresh start for those who get in over their heads with debt, if they’re willing to face the rigors of bankruptcy. Even this is denied for those drowning in private student loans, as the result of a provision *snuck into the 2005 bankruptcy reform legislation in the dead of night*. This bill gives us a chance to right that wrong” (emphasis added, as quoted in Durbin, 2013).

with relatively low incomes and high amounts of other types of unsecured debt, such as from credit cards, might still benefit from declaring bankruptcy if they are also struggling to meet other financial obligations.

The other common type of individual bankruptcy is Chapter 13 (considered *reorganization*). Under Chapter 13, filers can choose to retain their assets but use future earned income to pay back a portion of their obligations usually over a three- to five-year period. Individuals with high levels of assets, or those who wanted to keep their assets, such as their homes, had the incentive to file under Chapter 13 because these debtors can keep their property as long as they have a regular income. The incentive to file Chapter 13 bankruptcy did not drastically change with the BAPCPA; therefore, we use Chapter 13 filings as a robustness check to our methods estimating the effect of BAPCPA on Chapter 7 filings described in the next section.

In the top panel of Figure 2, we display the trends of Chapter 7 filings among all debtors on the primary y-axis with a solid line and filing rates among student loan borrowers in our sample (described in Section 4) plotted on the secondary y-axis with a dashed line. The trend of filing rates of student loan borrowers tracks closely to the national trend. The relatively flat number of Chapter 7 filings from the end of 2003 until the announcement of the policy in April 2005 are followed by a spike in filings until the policy was enacted in October 2005; after the policy, Chapter 7 filings dropped precipitously. In the bottom panel of Figure 2, we display corollary trends for Chapter 13 filings. National filings and student loan debtor filing trends similarly remain relatively flat over this time period.

3. Empirical Approach

The lack of empirical analysis on opportunistic bankruptcy filing of student loan debtors motivates our primary question: Does nondischargeability change the bankruptcy filing behavior of private student loan borrowers? Simply comparing postpolicy outcomes with prepolicy outcomes does not provide a clear answer to this question since BAPCPA made bankruptcy filing generally less attractive to all debtors. Therefore, we estimate the effect of PSL nondischargeability by examining the Chapter 7 bankruptcy filing rates of PSL borrowers before and after the policy went into effect while controlling for pre- and postpolicy trends of comparable debtors,

$$y_{it} = \beta_0 + \beta_1 PSL_i + \beta_2 Post_t + \delta(PSL_i \times Post_t) + d_s + d_t + d_c + \eta X_{it} + e_{it}. \quad (2)$$

In equation (2), y is equal to one if individual i filing for Chapter 7 bankruptcy in period t and zero otherwise. PSL is an indicator for having a private student debt; since the sample includes only student loan borrowers, students with only government student loans have PSL equal to zero. $Post$ is an indicator equal to one in all quarters postpolicy (enactment or implementation and later). β_1, β_2, δ , and η are estimated parameter vectors, and e is the error term. We estimate equation (2) as a linear probability model and cluster standard errors by state.¹³

Our primary interest is with the coefficient on the interaction term, δ . The coefficient provides an estimate of the effect of the bankruptcy reform on the outcomes of PSL borrowers while accounting for trends of borrowers with government loans, conditional on covariates. If the policy reduced the expected opportunistic default of PSL borrowers compared with GSL borrowers who should not be directly affected by the dischargeability clause in the BAPCPA, then we expect δ to be negative.¹⁴

A primary assumption that underlies this method is that unobserved factors in the error term are not systematically related to the policy change and trends in the outcome. The threat to causal inference from these estimates, therefore, is that unobserved (to the researcher) differences lead to varying bankruptcy rate *trends* in the absence of the policy. Descriptive graphs indicate that prepolicy bankruptcy filing trends among groups are similar until the law was signed in April 2005 (see Figure 3 and discussion of parallel trends assumptions in Section 5.1). After the law was signed, we observe a substantial increase in filing as eligible debtors raced to take advantage of the expiring option of discharging their private student loans in bankruptcy. This surge in filings is also apparent in the overall filings displayed in Figure 2. To account for this rush to file, in our preferred estimates, we consider all the periods after the law was signed to be the postpolicy period. We report test results in Section 5.1 that provide confidence that the parallel trends assumption is not violated prior to the time the law was announced.

¹³ The results of models using probit specifications are available upon request; results are qualitatively consistent with results derived from the linear probability specifications.

¹⁴ In alternate specifications, we dynamically drop individuals who previously filed for bankruptcy. Results (available upon request) yield consistent conclusions to the models presented and discussed in the text.

To further control for level differences among groups, we include the fixed effects for state of residence, d_s , and quarter-year, d_t , to account for variation in economic and local conditions over time and differences in wealth exemption policies by state. We also include the fixed effects, d_c , to account for student loan cohort: separately, for the year in which the newest student loan was originated and for the quarter in which the newest student loan was originated.¹⁵ These controls account for seasonality and variation in loan seasoning and loan underwriting. They also control for the general economic conditions faced by student debtors when they initiate their student loan debt.

We include a vector of controls in X_{it} : debtor age, credit score, credit utilization, and liabilities in the credit report to account for financial profile and proxy for differences in family resources. Specifically, we account for Equifax Risk Score (a type of credit score), credit bureau inquiries in the past three months, age of the newest account, age of the newest student loan, student loan balance, total tradelines balance, number of tradelines, and number of tradelines 120 or more days past due. We use one-quarter lags for all these measures to avoid the interrelationship between bankruptcy and contemporaneous credit characteristics.¹⁶ The data do not include individual income; we cannot directly observe assets, but we include indicators for having a mortgage, auto loan, or other secured loan. We further include in the X -vector demographic characteristics of the borrowers' census tract from the 2000 Decennial Census: median income, percentage with a college education, percentage that is a minority race or ethnicity, and percentage homeowners. Finally, we include quarterly averages of monthly county unemployment rates from the Bureau of Labor Statistics.

It is possible that those who borrow private student loans have different levels of creditworthiness or financial literacy than those who borrow only federal student loans. To test this hypothesis, in sensitivity analyses, we split the sample into prime and subprime borrowers as a measure of financial savvy based on credit score and find that the results are qualitatively similar to our primary findings (see Section 6.3). It is also possible that students who borrow private student loans may attend colleges that do not participate in the government loan program,

¹⁵ We focus on the cohort of the last student loan to reflect the most recent educational finance decision of the borrower, but our results are qualitatively similar if we account for the cohort of the first student loan or the first and last student loans instead.

¹⁶ Results are qualitatively similar when using two-quarter or four-quarter lags.

although in Yannelis (2017), estimates of policy-induced default behavior changes are generally unchanged when controlling for type of college (public 4-year, public 2-year, for-profit) or college selectivity of the school the debtor attended. We cannot observe college attended in our data; therefore, to account for potential differences in access to government student loan programs, we split the private student loan debtors into two groups: debtors with only PSLs and debtors with both PSLs and GSLs. The latter group has GSL debt, which means that these debtors attended colleges that participate in government loan programs. We estimate:

$$y_{it} = \alpha_0 + \alpha_1 PSL\ Only_i + \alpha_2 PSL \ \& \ GSL_i + \alpha_3 Post_t + \gamma_1 (PSL\ Only_i \times Post_t) + \gamma_2 (PSL \ \& \ GSL_i \times Post_t) + d_s + d_t + d_c + \eta X_{it} + e_{it}. \quad (3)$$

From equation (3), our primary variables of interest are γ_1 and γ_2 , which are estimates of the pre/postpolicy effect on PSL-only debtors and PSL and GSL debtors net of the policy effect on student loan borrowers who only borrow from government programs, respectively. The coefficient γ_2 gives an estimate of the policy effect among private student debtors who had access to government loan programs.

Finally, we estimate all previously described equations with Chapter 13 filing as the outcome variable as a robustness check to our estimates of Chapter 7 filings in all tables. As previously described, incentives to file Chapter 13 bankruptcy did not meaningfully change for student loan borrowers because of BAPCPA. Therefore, we would not expect to observe differential responses to BAPCPA between PSL and GSL debtors.

4. Data

We take advantage of a unique longitudinal data set based on the anonymized credit bureau files of a 5% random sample of U.S. individuals with a credit bureau record: the Federal Reserve Bank of New York's (FRBNY's) Consumer Credit Panel/Equifax (hereafter referred to as the CCP).¹⁷ The CCP contains detailed information on consumer credit and debt and tracks individuals' and households' access to and use of credit at a quarterly frequency from Q1:1999 to the present. We have access to detailed summary loan information on mortgage accounts,

¹⁷ The random sample is based on the last two digits of the consumer's Social Security number (SSN), so the sample is restricted to those individuals with an SSN reported to at least one lender or as part of public record. For more information on the CCP, see Lee and van der Klaauw, 2010. For computational simplicity, we take a random 5% subsample of nonstudent loan borrowers while including all borrowers with student loans.

home equity revolving accounts, auto loans, bank card accounts, student loans, and other loan accounts as well as public record and collection agency data and limited personal background information (such as the consumer's age and geographic information in the form of state, zip code, metropolitan statistical area, and census tract). First and foremost, the CCP provides detailed anonymized account-level information on up to 20 student loan tradelines per consumer, including quarterly data on balances, high credit, open dates, and narrative codes that help us to distinguish between different types of student loans (e.g., PSL versus GSL). We make use of both summary and account-level data for our analysis.

Classifying student loans into government versus private is not trivial, given the information we have. For the purposes of this paper, student loans are classified as GSLs if the anonymous servicer ID for the loan appears as the servicer to a loan likely to be a GSL at some point in our sample, which is indicated by the presence of a GSL program name in a loan's narrative code. Servicers that never appear in a loan file with the identified narrative codes are classified as servicers of PSL programs, and all of their loans are classified as PSLs. In other words, we classify servicers as exclusive to either GSL programs or PSL programs based on the presence of loans with the identified narrative codes in the credit files of consumers in our sample. While it is certainly possible that not all loans will be classified correctly, the aggregate statistics on the distribution of loans and loan amounts in our sample track with other available sources.

For our primary analysis, we restrict our attention to the time period Q4:2003 to Q4:2007 (approximately two years before and after the BAPCPA took effect). Before any restrictions, the analysis sample consists of 10,110,010 person-quarter observations. We find that 0.32% of individuals filed for Chapter 7 bankruptcy in any given quarter, and 0.09% of individuals filed for Chapter 13 bankruptcy in any given quarter.¹⁸

To create a stable analysis sample, we exclude certain observations (individual-quarter combinations) from our analysis sample.¹⁹ First, we exclude observations with a missing risk

¹⁸ Individuals file for bankruptcy or serious delinquency in our data in the first quarter in which the relevant flag is activated. The relevant flag is equal to one only in the first quarter in which the flag is activated. To the extent that individuals file for bankruptcy more than once, only the first occurrence is picked up by our definition.

¹⁹ Our data are at the level of a consumer ID, which is based on the consumer's anonymized SSN. As stated previously, all individuals in the CCP have an SSN because the random 5% sample is based on the last two digits of the SSN. In that sense, a "person" or an "individual" is equivalent to a consumer ID, and most of our sample

score or a missing lagged risk score (4% of the original sample). Our results, however, do not change if we include individuals with a missing risk score and transform the risk score control into indicator variables for different ranges of the risk score value and include an indicator for the missing risk score. Individuals who filed for bankruptcy were more likely to have a missing lagged risk score (41% of individuals who file for bankruptcy under Chapter 7 and 39% of individuals who file for bankruptcy under Chapter 13 in a given quarter), and many of our other control variables.²⁰ We also exclude observations with any other missing independent variables (6% of the original sample).²¹ After the above-described exclusions, we use 9,119,433 observations for our sample of student loan borrowers. Of this sample, 0.15% of individuals filed for bankruptcy under Chapter 7 and 0.04% of individuals filed for bankruptcy under Chapter 13 in a given quarter at some point during the time period of interest.

Table 1 provides summary statistics for key variables in our analysis sample. While there are level differences in characteristics between groups, the key identifying assumption for our approach is based on parallel trends, for which we test later. Among student loan borrowers, those with only GSLs tended to have lower average risk scores and lower student loan balances than PSL borrowers. PSL and GSL borrowers tended to live in census tracts with similar education levels, median income, and unemployment rates.

Table 2 displays the average rates of filing bankruptcy under Chapter 7 and Chapter 13; the average, 10th percentile, and 25th percentile risk score at loan origination; and average student loan balance at loan origination among different types of student loan borrowers. For all

consists of individuals who appear in the data during the entire four-year period of interest. But some consumers enter or exit the sample during this time. In some cases, individuals apply for credit or obtain an SSN for the first time in the middle of our sample period and enter the CCP for this reason. Individuals can also enter the data set if they gain a public record (such as bankruptcy) but no other credit file information. Because of the restriction of having an SSN, attrition in the data set is intended to be due only to death or the change of an individual's SSN. For more details, see Lee and van der Klaauw (2010).

²⁰ Individuals who have declared bankruptcy sometimes enter the credit bureau data because the information on their bankruptcy filing is obtained from public records (instead of a financial institution). Since no historical credit bureau information is available for such individuals, no lagged risk score can be calculated. Based on additional data on the individual credit card accounts of consumers in the CCP obtained by the Federal Reserve Bank of Philadelphia, it appears that individuals who have a new bankruptcy flag but no credit history tended to file for bankruptcy several years before being included in Equifax data. By contrast, individuals who filed for bankruptcy after having some credit history reported to Equifax appear to have filed for bankruptcy in the preceding quarter. By excluding individuals without lagged risk score, we necessarily focus on the latter group in our analysis.

²¹ Loan balance and number of inquiries are the variables with the majority of missing values. These missing values appear to be distributed fairly randomly.

PSL borrowers, postpolicy Chapter 7 and Chapter 13 bankruptcy filings rates are about 30% and 70% of their pre-BAPCPA values, respectively. Because of a mean preserving spread (an increase in both the left and right tail of the distribution), there was only a small decrease of 2 points in the average risk score of PSL borrowers with new student loans. However, we also observe that the left tail of the credit score distribution expanded to include riskier borrowers. The 10th and 25th percentiles of risk scores among PSL borrowers declined 17 points and 8 points postpolicy, respectively. Average initial student loan balances increased about 18% for PSL borrowers from the pre- to postpolicy period, from \$10,923 to \$12,887. GSL borrowers experienced less pronounced shifts in the score distribution, and their average balance was similar pre- and postpolicy.

5. Estimates of Policy Effects

5.1. Testing Parallel Trends Assumptions

We begin with tests of parallel trends. We show the trends of bankruptcy filings in Figure 3. Figure 3, Panel (a) depicts the share of borrowers who filed bankruptcy under Chapter 7 in each quarter from Q4:2003 to Q4:2007. We fit a linear line for each relevant time period (preannouncement, from announcement to enactment, and postenactment). While the PSL and GSL debtors had lower preannouncement Chapter 7 rates than PSL only and GSL-only debtors, all three lines are visually parallel. The lines begin to diverge post-announcement, with the filing rates of GSL- only groups increasing at a higher rate than the PSL debtors until enactment, after which all group filing rates fall to similar postpolicy levels. The pattern for Chapter 13 bankruptcy protection filings is depicted in Figure 3, Panel (b). Chapter 13 bankruptcy was considerably less frequent, but trends among these groups seem generally similar in all three time periods, as expected.

We more formally examine these preannouncement trends in Table 3. Here, we consider the filing rates from the beginning of our analysis period (Q4:2003) through the first quarter of 2005. We estimate equations (2) and (3) using a placebo “post” period to be after the midpoint of this time frame (Q3:2004). If there were differential trends in the preannouncement period, this would be captured in the coefficients on the *PSL X Post* interaction term in Panel A or the *PSL Only X Post* and *PSL & GSL X Post* interaction terms in Panel B. We find no significant coefficients, and point estimates are small. We interpret these findings, along with the graphical

evidence, to provide support for our identifying assumptions in the difference-in-differences research design.

5.2. Effect on Bankruptcy Filings

In Table 4, we display estimates for the effect of the policy change on Chapter 7 filings. In this table and Tables 5–7 that follow, we show only the parameter estimates and standard errors from the indicators for loan holdings, postenactment or postannouncement, and the interactions between these terms (i.e., the estimated policy effect). Full output for all models is available upon request.

First consider the estimates displayed in Panel A of Table 4. Consistent with the descriptive trends presented in Section 3, the coefficient on the postpolicy indicator indicates that Chapter 7 bankruptcy filings declined substantially after the BAPCPA was enacted. If opportunistic defaults were prevalent before the BAPCPA for PSL borrowers, we would expect their Chapter 7 filing rates to fall faster after the policy change than those of the comparator group of GSL borrowers. We find an estimated effect of the policy change on PSL borrowers relative to GSL borrowers in the opposite direction, with a magnitude of about 5 basis points (column 1; the effect is approximately 25% of the prepolicy Chapter 7 filing rate of PSL borrowers from Table 2). This signifies that the decline in Chapter 7 filing rates postpolicy for PSL borrowers was less than the decline in the filing rates of GSL-only borrowers. As expected, we do not observe meaningful changes to Chapter 13 filings postpolicy or across groups in column 2.

Next consider columns 1 and 2 in Panel B. In this panel, we split the PSL debt holders into two groups: those with only PSL debt and those with both PSL and GSL debt. The coefficients on the corresponding interaction terms with the postpolicy period are positive and different than zero for both groups, with magnitudes comparable with the policy effect identified in Panel A. This suggests that it is not differences in access to GSL loan programs driving observed postenactment differentials.

To account for bankruptcy filing behavior changes induced by the announcement of the bill prior to enactment, we next consider all the quarters after the announcement to be the post-policy period in in columns 3 and 4. Similar to column 1, Chapter 7 filing rates decline from the preannouncement to postannouncement periods (point estimates of 11 basis points in both Panels A and B). The point estimates of postannouncement filing rate effects for Chapter 7 have

attenuated relative to postenactment rates, although they continue to be statistically significant in some cases. We continue to find no meaningful differences in Chapter 13 bankruptcy filings among groups.

The seemingly counterintuitive postpolicy increases in Chapter 7 filing rates among PSL borrowers are likely to be the result of the expansion in student credit to riskier borrowers. Changes to student loan debt nondischargeability may affect credit supply because lenders' expected recovery in the case of default is negatively related to the ease with which debtors can file for bankruptcy protection and the financial incentives of doing so (Han, Keys, and Li, 2011; White, 1998). All else equal, BAPCPA made bankruptcy more costly, thus increasing lenders' expected collectability and revenue associated with PSL transactions. This could lead to an increased extension of PSL credit and reduced minimum credit standards for borrowers (Hynes and Posner, 2002).

Looser underwriting standards that followed bankruptcy reform were one contributor to the rapid growth of PSL lending in the mid-2000s (from about \$5 billion in 2001 to more than \$20 billion in 2008). Ang and Jimenez (2015) analyzed administrative data from nine large PSL lenders and found an expansion in the volume of loans by these lenders post-BAPCPA. These authors also observed that less creditworthy borrowers could obtain private educational credit more easily than in the past. Descriptive evidence from Kantrowitz (2007) suggests a small post-BAPCPA increase in the availability of PSLs to borrowers with low credit scores for loan trust pools of one of the two loan servicers examined.

Although we cannot observe lenders' actual underwriting standards or loan terms in our data, we examine changes in the distribution of risk scores and initial student loan balances for PSL borrowers at the time of loan origination. Similarly to the previously described analysis, we also compare these trends with the trends of borrowers with GSLs to account for economic and business-cycle trends that might affect both groups.

As discussed previously, the average risk scores of PSL borrowers at the time of loan origination did not substantially change relative to the prepolicy period (a 2-point decrease as displayed in Table 2, Panel A), whereas initial student loan balances increased by an average of \$1,964 (which is about an 18% increase) for PSLs relative to the prepolicy period. This is represented graphically in Figure 4, which shows the growth in loan amounts far outpacing the increase in average risk score after policy announcement. The limited change in average credit

scores appears to have resulted from a mean preserving spread (the distribution of credit scores widened at both the low and high ends). Consistent with prior data (Ang and Jimenez, 2015; Kantrowitz, 2007), we observe evidence that suggests riskier PSL borrowers were obtaining loans postpolicy. From Table 2, Panel A, the 10th and 25th percentiles of risk scores among PSL borrowers declined 17 points and 8 points postpolicy, respectively.

It is important to note that the postpolicy increase in PSL average balances is driven by increases among borrowers with relatively low credit scores. Figure 5 plots the average initial loan amount in credit score deciles pre- and postpolicy. PSL loan amounts among borrowers with credit scores in the 60th percentile and above are at most 15% higher postpolicy than prepolicy (and PSL loan amounts actually dropped for the top decile, relative to prepolicy) per Panel (a) of Figure 5. Yet, the average loan amounts for borrowers in the bottom half of the credit score distribution increased substantially. For example, postpolicy loan amounts in the lowest 50% of the credit score distribution were nearly 30% higher than prepolicy loan amounts (with the increase most pronounced for the lowest score decile).²² No comparable increase was observed in GSL loan amounts, as displayed in Panel (b) of Figure 5, partially because federal loans are statutorily limited in amount. Nevertheless, the supply side outcomes we can observe in these data — a larger proportion of borrowers with relatively lower risk scores and larger loan amounts among these relatively risky borrowers — suggest an entry of riskier borrowers into the PSL pool postpolicy.

To isolate the policy effect among borrowers who would not be subject to supply responses from PSL lenders, we examine only PSL borrowers who obtained student loans before 2004.²³ These borrowers obtained loans that should be unaffected by supply effects after the announcement or implementation of PSL bankruptcy reform, even though their bankruptcy filing incentives are affected ex post. We compare the repayment outcomes of these borrowers with GSL-only borrowers under the same time restriction. Although this analysis misses the behavior of more recent student loan borrowers, the borrowers we consider should be unaffected by any changes to the student loan supply brought about by the BAPCPA that might complicate the

²² This pattern is even more pronounced when considering *median* initial loan balances by risk score decile.

²³ We also examined borrowers with student loans that originated before 2005 and found qualitatively similar results.

interpretation of the results presented so far. We display estimates from models in Table 5 using the announcement as the policy inducement.

Table 5 shows point estimates of the policy effect attenuate further and are statistically indistinguishable from zero. We continue to find no evidence of statistically significant reductions in Chapter 13 filings for PSL borrowers relative to the comparison group. Therefore, when we use a sample of borrowers unaffected by policy-induced supply changes, we do not see differential declines in the Chapter 7 filing rates because of the policy. This finding raises the question whether PSL borrowers were systematically, strategically defaulting prior to the nondischargeability policy change in the BAPCPA.

6. Robustness

6.1. Considering Cosigned Student Loans

Private student loans are considerably more likely to be cosigned, and the prevalence of cosigned private student loans increased in the postpolicy period. A cosigner on one or more of the borrower's loans may affect the borrower's likelihood of filing for bankruptcy. In Table 6, we test for whether cosigners affect results by estimating our core models using only a sample of borrowers who do not have cosigned loans, and, similar to our base specification in Table 5, we find no differential effect of the policy on Chapter 7 filings for PSL borrowers. The increased prevalence of cosigners might be one reason that lenders were willing to extend more credit to less creditworthy borrowers even though dischargeability itself does not appear to affect borrower behavior relative to the behavior of borrowers with only federal student loans.

6.2. Prime and Subprime Borrowers

It is possible that debtors who borrow private student loans have different levels of creditworthiness or financial literacy than those who only borrow federal student loans. To test this hypothesis, in Table 7 we split our sample into prime and subprime borrowers (at the time of newest student loan origination) based on risk score above as a measure of being a prime borrower. Overall, our results for prime and subprime borrowers reinforce the narrative of no evidence of strategic default among borrowers with private student loans relative to borrowers of federal student loans, but they reveal some interesting patterns for prime versus subprime borrowers.

The results are consistent with other documented facts about prime compared with subprime borrowers. Chapter 7 bankruptcy filings of subprime borrowers declined after BAPCPA (estimate on Postpolicy in column 3) and at a much higher rate than for prime borrowers (estimate on Postpolicy in column 1), which is expected given that borrowers with weaker credit histories are more likely to file for full liquidation. Our difference-in-differences estimates for PSL only and PSL and GSL groups are generally directionally consistent with previous results from Table 5. We find no differential effect on Chapter 7 filings for PSL only or PSL and GSL borrowers relative to GSL only borrowers (Panel B), but a coefficient of 0.02 for Chapter 7 filings of PSL borrowers relative to GSL only borrowers (Panel A) postannouncement for prime borrowers (statistically significant at the 5% level in Panel A only). We find no statistically significant policy effects for subprime PSL borrowers relative to GSL-only borrowers in any specification.

6.3. Alternative Time Periods

In the interest of brevity, we omit results in which we performed additional tests for bias in our results from the spike in bankruptcy filings around the time the BAPCPA took effect (in addition to our consideration of postannouncement versus postenactment policy periods). Among other permutations, we performed the following data restrictions: a) setting the preperiod to Q4:2003 to Q1:2005 and the postperiod to Q1:2006 to Q1:2008 (i.e., excluding the quarters between policy announcement and enactment), and b) setting the pre- and postperiods to one year before and after the BAPCPA instead of two. Overall, our analyses using different time periods are qualitatively similar to our main results.

7. Discussion

The promise and the risk of student loans have been at the forefront of recent policy discussions in the U.S. A robust educational credit market can have both efficiency and equity benefits because of the many private and public returns associated with college, even with the expectation of some student loan defaults (Avery and Turner, 2012; Chatterjee and Ionescu, 2012; Goldin and Katz, 2008; and Oreopoulos and Salvanes, 2011). Escalating student loan debt levels, however, have led to fears about reduced access to credit, reduced consumption, diminished returns to college, and inequitable repayment burdens (Jagtiani and Li, 2014; Brown and Caldwell, 2013; and Elliot and Lewis, 2014). The inability for some student borrowers to

service their debt is especially concerning because defaults are costly to both the individual and the public.

Calls to allow debtors to expunge student loan obligations in bankruptcy have manifested themselves in a number of bills proposed in Congress. Based on legislative records and extant research, the nondischargeability of PSLs in the BAPCPA was intended to address the perceived ease with which borrowers can discharge PSL debt. These policy changes were motivated by the belief that some student loan borrowers, even if they had expected incomes with which they could service their repayment obligations, have the financial incentive to opportunistically file for bankruptcy under Chapter 7. Bankruptcy abuse related to easy dischargeability has the potential to increase educational debt prices for all borrowers and to inhibit student loan availability for the neediest students (e.g., Cole, 2012).

A cost of nondischargeability, however, is that it can impede the ability for the “honest but unfortunate debtor” to make a fresh start and may impede the economic mobility of those who face economic challenges (Pardo and Lacey, 2005).²⁴ Nondischargeability has been criticized for being unjustified and for being particularly harmful to those students who had the most difficulty judging their need for credit in the first place; rhetoric has gone as far as to claim harm that resembles “medieval indenture” (Dayen, 2013; Loonin, 2012).

Our findings contribute to this debate by providing evidence on bankruptcy filing and default behavior using a unique sample of anonymized credit bureau records. Although the 2005 bankruptcy reform reduced rates of Chapter 7 bankruptcy overall, the provisions making PSL debt nondischargeable do not appear to have reduced the bankruptcy filing or default behavior of PSL borrowers relative to other types of student loan borrowers at meaningful levels. Therefore, our analysis does not reveal debtor responses to the 2005 bankruptcy reform that would indicate widespread opportunistic behavior by PSL borrowers before the policy change. We interpret these findings as a lack of evidence that the moral hazard associated with PSL dischargeability pre-BAPCPA appreciably affected the behavior of student loan borrowers. This is consistent

²⁴ An underlying principle in bankruptcy policy in the U.S. is to “grant a fresh start to the honest but unfortunate debtor,” providing an opportunity for the debtor to eliminate payment commitments and economically rehabilitate (Howard, 1987). In addition to contradicting the “fresh start” principle, critics of student loan dischargeability claim that it also violates the other fundamental principle underlying bankruptcy law in the U.S.: that similarly situated creditors are equally treated (Pardo and Lacey, 2005).

with the prediction by White (2007) that the BAPCPA would primarily harm nonopportunistic struggling debtors, with only a few opportunists affected by changing incentives. Combined with the increased prevalence of cosigned PSLs — the industry’s primary guarantee of repayment — we interpret our findings as weakening the case for nondischargeability of private student loans.

The costs associated with limiting the ability of struggling student loan borrowers to discharge debt in bankruptcy need to be weighed against the apparent benefits associated with the policy inducing an expansion of PSL credit, particularly among student borrowers who would have the most difficulty obtaining private credit. Postpolicy, we observe evidence that riskier borrowers gained access to the PSL market and that PSL borrowers’ initial loan amounts grew, with increases largely driven by the riskiest borrowers. The increase in the prevalence of cosigned private student loans is likely to have also contributed to this credit expansion. This enhanced private student credit availability has been criticized for leading students to overborrow and to obtain subprime-style loans with relatively inferior loan terms (CFPB, 2012; Woodruff, 2012).²⁵ However, the growth in educational credit availability has the potential to yield benefits to the extent that it allows more students to finance college investments that lead to an array of private and public returns.

²⁵ We cannot observe loan terms in our data and are therefore unable to comment on changes to prices.

References

- Ang, Xiaoling, and Dalie Jimenez. 2015. "Private Student Loans and Bankruptcy: Did Four-Year Undergraduates Benefit from the Increased Collectability of Student Loans?" in Brad Hershbein and Kevin Hollenbeck, eds., *Student Loans and the Dynamics of Debt*. Kalamazoo, MI: W.E. UpJohn Institute for Employment Research.
- Avery, Cristopher, and Sarah Turner. 2012. "Student Loans: Do College Students Borrow Too Much — Or Not Enough?" *Journal of Economic Perspectives*, 26(1), pp. 165–192.
- Baum, Sandy, and Kathleen Payea. 2012. *Trends in Student Aid, 2012*. Washington, D.C.: College Board Advocacy and Policy Center.
- Belfield, Clive. 2013. "Student Loans and Repayment Rates: The Role of For-Profit Colleges." *Research in Higher Education*, 54(1), pp. 1–29.
- Brown, Meta, and Sydnee Caldwell. 2013. "Young Student Loan Borrowers Retreat from Housing and Auto Markets," *Liberty Street Economics*, April 17, 2013, <http://libertystreeteconomics.newyorkfed.org/2013/04/young-student-loan-borrowers-retreat-from-housing-and-auto-markets.html#.VNY9ay6FGhp> (last accessed February 19, 2015).
- Cellini, Stephanie Riegg, and Claudia Goldin. 2014. "Does Federal Student Aid Raise Tuition? New Evidence on For-Profit Colleges," *American Economic Journal: Economic Policy*, 6(4), pp. 174–206.
- Chatterjee, Satyajit, and Felicia Ionescu. 2012. "Insuring Student Loans Against the Financial Risk of Failing to Complete College," Working Paper 12-15. Federal Reserve Bank of Philadelphia, www.philadelphiafed.org/research-and-data/publications/working-papers/2012/wp12-15.pdf.
- Cole, G. Marcus. "Statement of Prof. G. Marcus Cole, the Wm. Benjamin Scott & Luna M. Scott Professor of Law, Stanford University, Before the United States Senate Committee on the Judiciary Subcommittee on Administrative Oversight and the Courts," March 20, 2012, www.judiciary.senate.gov/imo/media/doc/12-3-20ColeTestimony.pdf (last accessed July 25, 2017).
- College Board. 2016. *Trends in Student Aid*, https://trends.collegeboard.org/sites/default/files/2016-trends-student-aid_0.pdf (last accessed June 28, 2017).
- Commission on the Bankruptcy Laws of the United States. 1973. "Report of the Commission on the Bankruptcy Laws of the United States," *Business Lawyer*, 29(1), pp. 75–116.
- Congressional Record. 1999. *Daily Digest*. Volume 145, Issue 64. U.S. Government Publishing Office, May 5, pp. H2655–02, www.gpo.gov/fdsys/pkg/CREC-1999-05-05/html/CREC-1999-05-05-pt1-PgD485.htm (last accessed July 25, 2017).

Consumer Financial Protection Bureau and the U.S. Department of Education. 2012. *Private Student Loans: Report to the Senate Committee on Banking, Housing and Urban Affairs*. Washington, D.C.: Consumer Financial Protection Bureau.

Darolia, Rajeev. 2015. "Messengers of Bad News or Bad Apples? Student Debt and College Accountability," *Education Finance and Policy*, 10(2), pp. 277–299.

Dayen, David. 2013. "Your Student Loan Isn't Really a Loan," Salon.com, June 5, http://www.salon.com/2013/06/05/let_college_students_go_bankrupt/ (last accessed February 4, 2015).

Dobbie, Will, and Jae Song. 2015. "Debt Relief and Debtor Outcomes: Measuring the Effects of Consumer Bankruptcy Protection." *American Economic Review*, 105(3): 1272-1311.

Durbin, Dick. 2013. "As Student Loan Debt Surpasses \$1 Trillion, Senators Introduce Legislation to Address Crisis." Press release, January 1, www.durbin.senate.gov/newsroom/press-releases/as-student-loan-debt-surpasses-1-trillion-senators-introduce-legislation-to-address-crisis (last accessed July 25, 2017).

Dynarski, Mark. 1994. "Who Defaults on Student Loans? Findings from the National Postsecondary Student Aid Study," *Economics of Education Review*, 13(1), pp. 55–68.

Elliot, William, and Melinda Lewis. 2014. *The Student Loan Problem in America: It Is Not Enough to Say, "Students Will Eventually Recover,"* Lawrence, KS: Assets and Education Initiative.

Fay, Scott, Eric Hurst, and Michelle White. 2002. "The Household Bankruptcy Decision," *American Economic Review*, 92(3), pp. 706–718.

Federal Reserve Bank of New York. 2014. *Quarterly Report on Household Debt & Credit (February)*. New York: Federal Reserve Bank of New York.

Goldin, Claudia, and Lawrence Katz. *The Race Between Education and Technology*. Cambridge, MA: Harvard University Press, 2008.

Greene, Laura. 1989. "An Economic Analysis of Student Loan Default," *Educational Evaluation and Policy Analysis*, 11(1), pp. 61–68.

Han, Song, Benjamin Keys, and Geng Li. 2011. "Credit Supply to Personal Bankruptcy Filers: Evidence from Credit Card Mailings," Finance and Economics Discussion Series 2011-29. Board of Governors of the Federal Reserve System.

House Report No. 95-595. (1977–1978). 92 Stat. 2541 (November 4), <http://www.gpo.gov/fdsys/pkg/STATUTE-92/pdf/STATUTE-92-Pg2541.pdf> (last accessed July 25, 2017).

- Howard, Margaret. 1987. "A Theory of Discharge in Consumer Bankruptcy," *Ohio State Law Journal*, 48, pp. 1047–1088.
- Hynes, Richard, and Eric Posner. 2002. "The Law and Economics of Consumer Finance," *American Law and Economics Review*, 4(1), pp. 168–207.
- Iuliano, Jason. 2012. "An Empirical Assessment of Student Loan Discharges and the Undue Hardship Standard," *American Bankruptcy Law Journal*, 86, pp. 495–525.
- Jagtiani, Julapa, and Wenli Li. 2014. "Credit Access After Consumer Bankruptcy Filing: New Evidence," Working Paper 14-25. Federal Reserve Bank of Philadelphia, www.philadelphiafed.org/research-and-data/publications/working-papers/2014/wp14-25.pdf.
- Kantrowitz, Mark. (2007). "Impact of the Bankruptcy Exception for Private Student Loans on Private Student Loan Availability," www.finaid.org/educators/20070814psIFICOdistribution.pdf (last accessed July 25, 2017).
- Knapp, Laura Greene, and Terry Seaks. 1992. "An Analysis of the Probability of Default on Federally Guaranteed Student Loans," *Review of Economics and Statistics*, 74(3), pp. 404–411.
- Lee, Donghoon, and Wilbert van der Klaauw. 2010. "An Introduction to the FRBNY Consumer Credit Panel." *Federal Reserve Bank of New York Staff Reports* (November 2010), www.newyorkfed.org/research/staff_reports/sr479.pdf (last accessed July 25, 2017).
- Li, Wenli, Michelle White, and Ning Zhu. 2011. "Did Bankruptcy Reform Cause Mortgage Defaults to Rise?" *American Economic Journal: Economic Policy*, 3 (November 2011), pp. 123–147.
- Lieber, Ron. 2012. "Last Plea on School Loans: Proving a Hopeless Future," *New York Times*, August 31, 2012, www.nytimes.com/2012/09/01/business/shedding-student-loans-in-bankruptcy-is-an-uphill-battle.html (last accessed July 25, 2017).
- Lochner, Lance, and Alexander Monge-Naranjo. 2011. "The Nature of Credit Constraints and Human Capital," *American Economic Review*, 101 (October 2011), pp. 2487–2529.
- Loonin, Deanne. "The Looming Student Debt Crisis: Providing Fairness for Struggling Students," Testimony before the U.S. Senate Judiciary Subcommittee on Administrative Oversight and the Courts, March 20, 2012.
- Melear, Kerry Brian. 2011. *The Devil's Undue: Student Loan Discharge in Bankruptcy, the Undue Hardship Standard, and the Supreme Court's Decision in United Student Aid Funds v. Espinosa*. IHELG Monograph 11-01. Houston: Institute for Higher Education Law and Governance.

National Consumer Law Center. 2013. “The Truth About Student Loans and the Undue Hardship Discharge,” www.studentloanborrowerassistance.org/wp-content/uploads/2007/03/iulianoresponse.pdf (last accessed July 25, 2017).

Oreopoulos, Philip, and Kjell Salvanes. 2011. “Priceless: The Nonpecuniary Benefits of Schooling,” *Journal of Economic Perspectives*, 25(1), pp. 159–184.

Pardo, Rafael, and Michelle Lacey. 2005. “Undue Hardship in the Bankruptcy Courts: An Empirical Assessment of the Discharge of Educational Debt,” *University of Cincinnati Law Review*, 74(2005), pp. 405–529.

Pardo, Rafael, and Michelle Lacey. 2009. “The Real Student-Loan Scandal: Undue Hardship Discharge Litigation,” *American Bankruptcy Law Journal*, 81(1), pp. 179–236.

Pottow, John. 2006. “The Nondischargeability of Student Loans in Personal Bankruptcy Proceedings: The Search for a Theory,” *Canadian Business Law Journal*, 44(2), pp. 245–278.

Salvin, Robert. 1996. “Student Loans, Bankruptcy, and the Fresh Start Policy: Must Debtors Be Impoverished to Discharge Student Loans?” *Tulane Law Review*, 71(1996), pp. 139–202.

U.S. Census Bureau, *2012 Statistical Abstract of the United States*.

U.S. Department of Education. n.d., “National Student Loan Two-Year Default Rates,” www2.ed.gov/offices/OSFAP/defaultmanagement/defaultrates.html (last accessed July 25, 2017).

U.S. Government Accountability Office. 2008. “Dollar Costs Associated with the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005,” GAO-08-697. Washington, D.C.

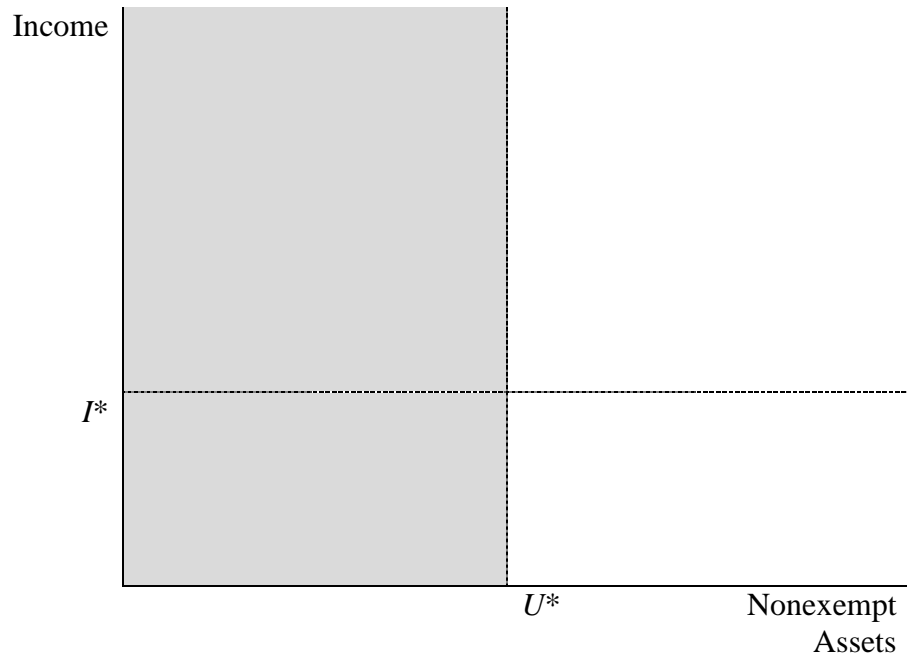
White, Michelle. 1998. “Why It Pays to File for Bankruptcy: A Critical Look at the Incentives Under U.S. Personal Bankruptcy Law and a Proposal for Change,” *University of Chicago Law Review*, 65 (Summer 1998), pp. 685–732.

White, Michelle. 2007. “Abuse or Protection? Economics of Bankruptcy Reform Under BAPCPA,” *University of Illinois Law Review*, (1), pp. 275–304.

Woodruff, Mandi. 2012. “Here’s How Private Student Loan Debt Became a \$150 Billion Burden,” *Business Insider*, www.businessinsider.com/heres-how-private-student-loan-debt-became-a-150-billion-burden-2012-7 (last accessed July 25, 2017).

Yannelis, Constantine. 2017. “Strategic Default on Student Loans,” Working Paper, New York University.

(a) Pre-BAPCPA



(b) Post-BAPCPA

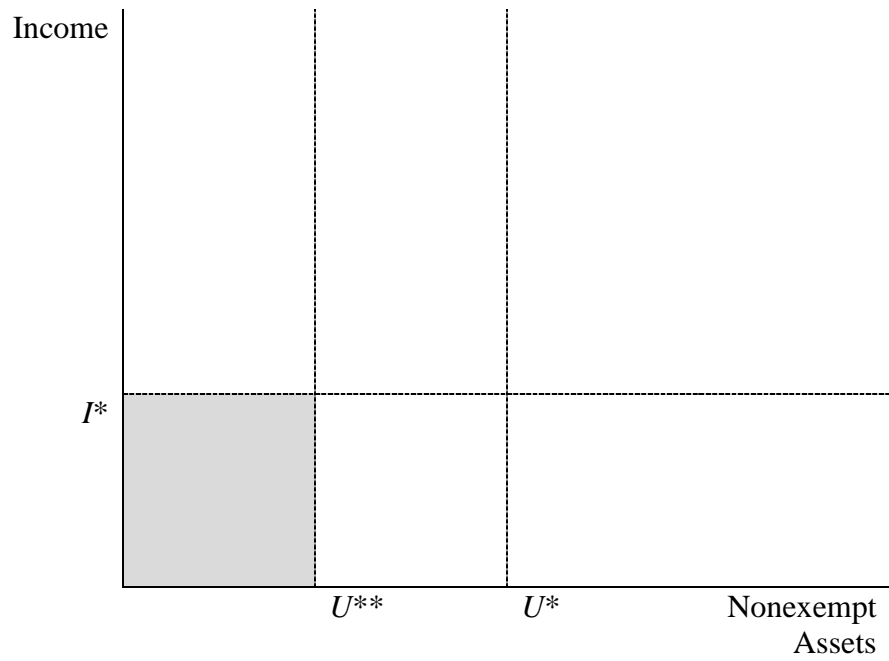
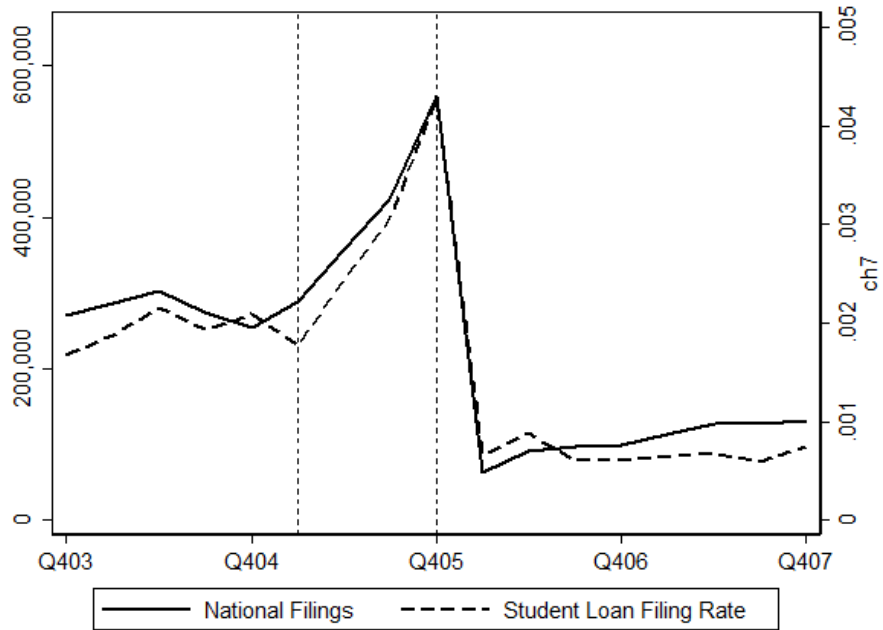


Figure 1: Income and Asset Levels at Which Debtors Benefit from Filing for Chapter 7 Bankruptcy Protection

Note: Relative sizes are not explicit measurements of the changes.

(a) Chapter 7 Filing



(b) Chapter 13 Filing

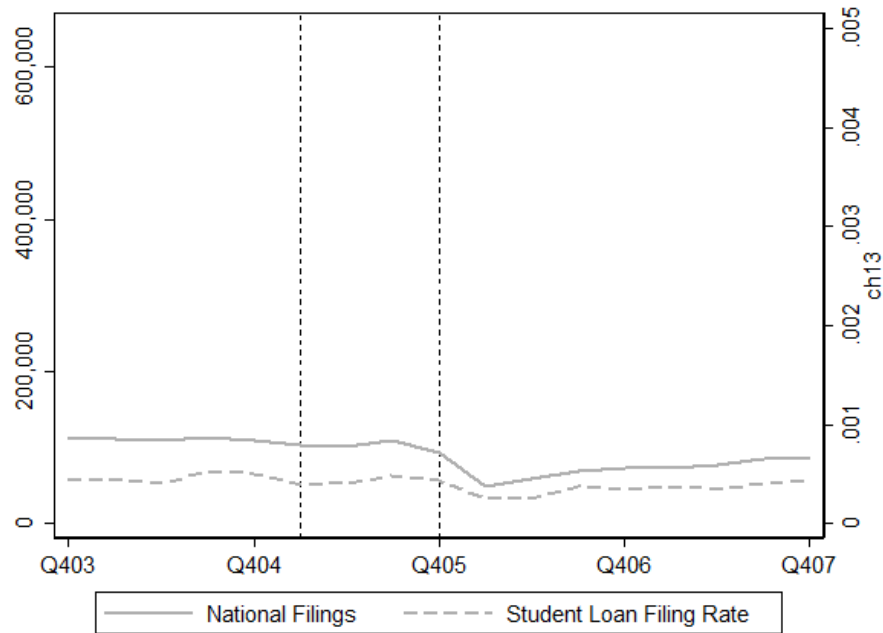
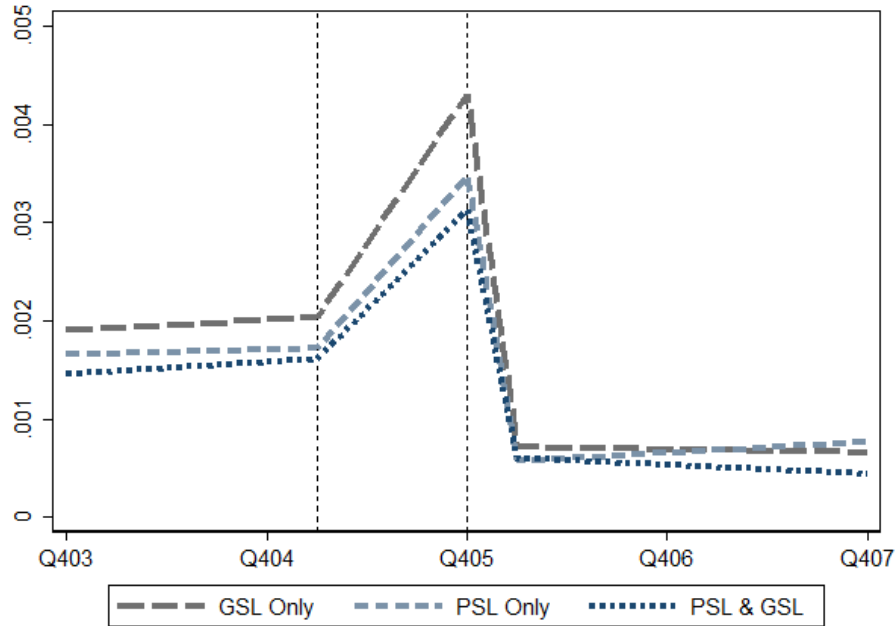


Figure 2: Bankruptcy Filings, Q4:2003–Q4:2007

Notes: Vertical lines are quarters of the BAPCPA announcement and enactment.
Source: National filings are from the Administrative Office of the U.S. Courts (www.uscourts.gov/report-name/bankruptcy-filings). Student loan filing rates are from authors' calculations using data from FRBNY Consumer Credit Panel/Equifax.

(a) Chapter 7 Filing Rate



(b) Chapter 13 Filing Rate

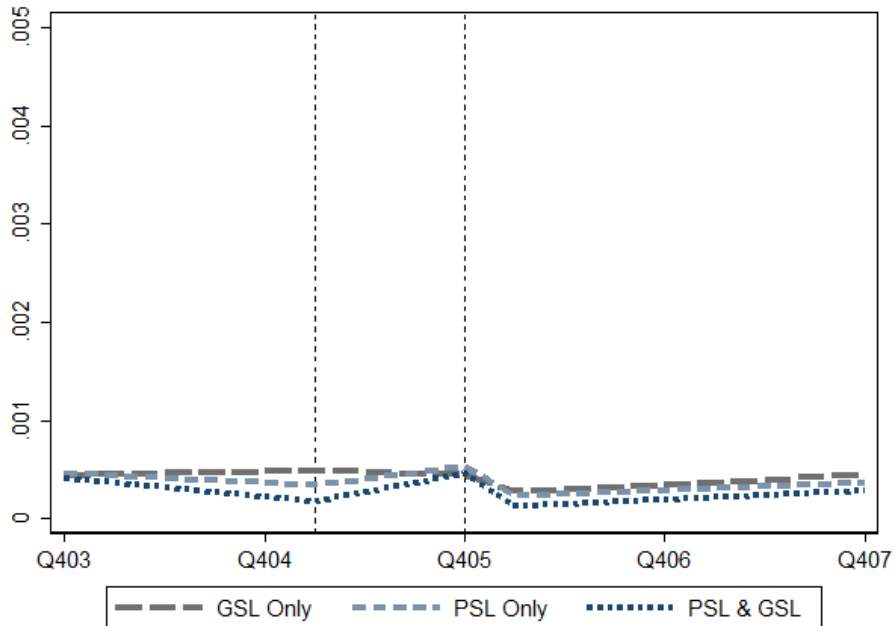


Figure 3: Chapter 7 and Chapter 13 Filing Rates, Q4:2003–Q4:2007

Notes: Vertical lines represent quarters of the BAPCPA announcement and enactment, respectively. We fit a linear line for each relevant time period (preannouncement, from announcement to enactment, and post-enactment). PSL = private student loan holders, GSL = government student loan holders, and PSL & GSL = holders of both private and government student loans.

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

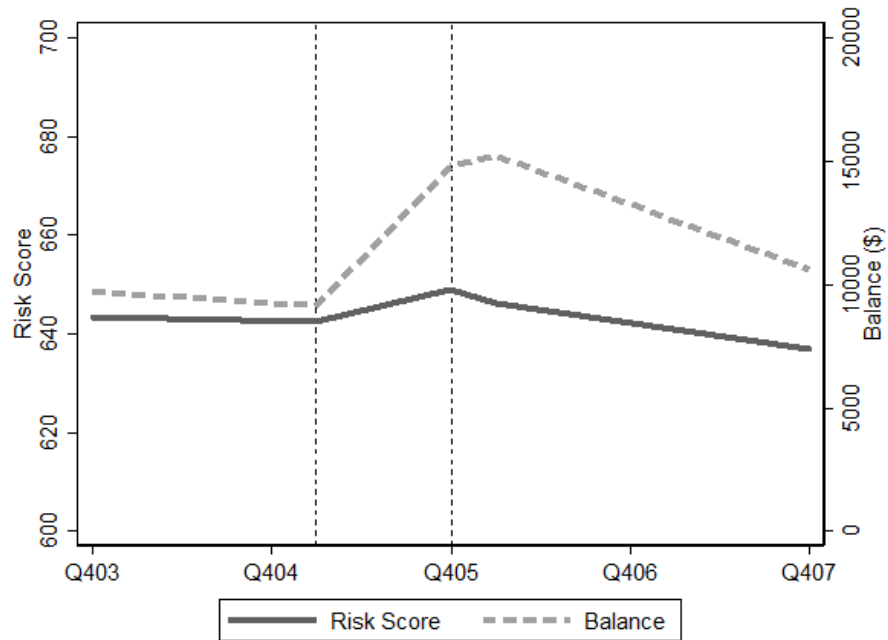
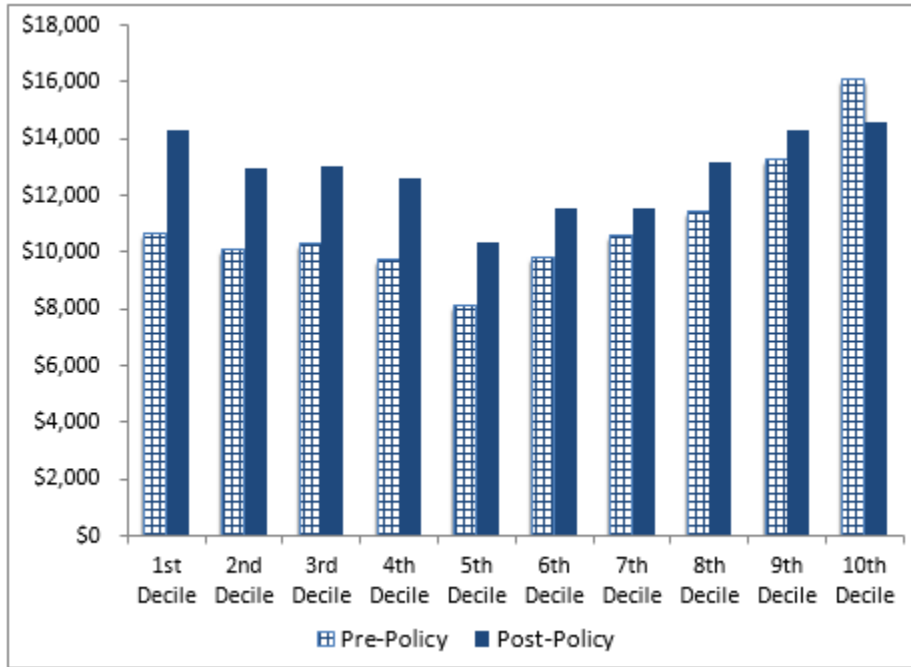


Figure 4: Private Student Loan Borrower Risk Score and Loan Amount at Origination, Q4:2003–Q4:2007

Notes: Both series are seasonally adjusted by quarter; the sample includes all individuals with a credit bureau record and at least one new student loan originated in a given quarter. Vertical lines represent quarters of the BAPCPA announcement and enactment, respectively.

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

(a) Private Student Loan Borrowers (All PSL)



(b) Government-Only Student Loan Borrowers

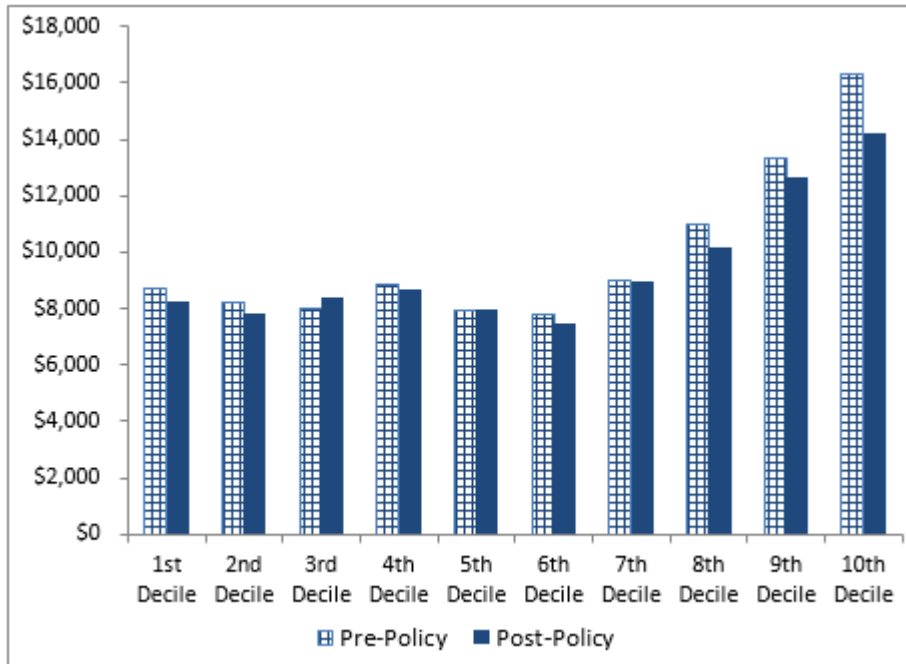


Figure 5: Loan Amount by Risk Score Decile at Origination

Notes: Subsample of individuals with a credit bureau record and at least one new student loan originated in a given quarter. PSL = private student loan holders.

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

Table 1: Analysis Sample Summary Statistics

	PSL	GSL-Only
Chapter 7 Filing (%)	0.13 (3.55)	0.16 (3.95)
Chapter 13 Filing (%)	0.03 (1.77)	0.04 (2.02)
Risk Score	655 (100)	638 (104)
Total Tradeline Balance (\$)	38,804 (42,741)	31,213 (38,413)
Total Student Loan Balance (\$)	24,312 (33,869)	17,331 (25,436)
Number of Tradelines	7.40 (4.88)	6.68 (4.82)
Number of Tradelines 120+ Days Past Due	0.12 (0.66)	0.17 (0.79)
Inquiries Within 3 Months	0.67 (1.19)	0.72 (1.25)
Age of Newest Account (qtrs.)	9.82 (12.45)	11.40 (14.41)
Average Age of Student Loans (qtrs.)	14.61 (12.74)	14.70 (13.18)
Individual's Age (years)	33.67 (12.32)	34.33 (11.93)
Tract College Educated (%)	35.82 (17.54)	33.77 (17.44)
Tract Median Income (\$)	47,932 (19,127)	47,321 (19,496)
Tract Homeowner (%)	66.61 (22.76)	65.62 (23.10)
County Unemployment Rate (%)	4.87 (1.38)	4.89 (1.42)
Observations (person-quarters)	1,254,591	7,864,842

Notes: Standard deviation listed underneath in parentheses. PSL = private student loan holders, GSL = government student loan holders.

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

Table 2: Private Student Loan Borrowers Pre- and Postpolicy, Q4:2003–Q4:2007

	Prepolicy	Postpolicy
<i>A. PSL Debtors</i>		
Chapter 7 Filing Rate	0.20 (4.42)	0.06 (2.44)
Chapter 13 Filing Rate	0.04 (1.93)	0.03 (1.60)
Average Risk Score, New Student Loans	648 (85)	646 (93)
25th Pctile. Risk Score, New Student Loans	597	589
10th Pctile. Risk Score, New Student Loans	531	514
Average Student Loan Initial Balance (\$)	10,923 (16,760)	12,887 (17,724)
<i>B. GSL-Only Debtors</i>		
Chapter 7 Filing Rate	0.25 (5.00)	0.07 (2.63)
Chapter 13 Filing Rate	0.05 (2.14)	0.04 (1.90)
Average Risk Score, New Student Loans	638 (89)	634 (93)
25th Pctile. Risk Score, New Student Loans	581	575
10th Pctile. Risk Score, New Student Loans	517	506
Average Student Loan Initial Balance (\$)	9,933 (17,921)	9,456 (16,495)

Notes: Analysis is at the person-quarter level. Standard deviation of averages listed in parentheses. PSL = private student loan holders, GSL = government student loan holders.

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

Table 3: Placebo Test — Prepolicy Bankruptcy Filing Trends

	Placebo Policy Q3:2004	
	Chapter 7 (%) (1)	Chapter 13 (%) (2)
<i>A. All PSL</i>		
PSL	0.00 (0.01)	0.00 (0.01)
Post	0.00 (0.01)	0.00 (0.00)
PSL X Post	-0.02 (0.01)	0.00 (0.01)
<i>B. PSL Only/PSL & GSL</i>		
PSL Only	0.03 (0.02)	0.00 (0.01)
PSL & GSL	-0.03* (0.01)	0.00 (0.01)
Post	0.00 (0.01)	0.00 (0.00)
PSL Only X Post	-0.01 (0.01)	0.01 (0.01)
PSL & GSL X Post	-0.01 (0.02)	-0.01 (0.01)
Observations	4,380,192	4,380,192

Notes: PSL = private student loan holders, GSL = government student loan holders, and PSL & GSL = holders of both private and government student loans. Chapter 7 and Chapter 13 filings are defined as a consumer's Chapter 7 or Chapter 13 bankruptcy flag turning on in a particular quarter. Controls include quarter-year, state, student loan cohort (separately, year, and quarter); one-quarter lags of borrower age, risk score, student loan, and total tradeline balances; number of tradelines; number of tradelines 120 or more days past due; whether the individual has a mortgage, auto, or home equity loan; number of credit profile inquiries; age of newest tradeline; age of newest student loan; and contemporaneous county unemployment rate and census tract characteristics (percentage of tract that is college educated, percentage of tract that is minority race/ethnicity, percentage of tract that are homeowners, and median tract income).

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

* $p < 0.05$, ** $p < 0.01$; standard errors are clustered by state.

Table 4: Policy Effect Estimates on Bankruptcy Filings, Q4:2003–Q4:2007

	<u>Postenactment</u>		<u>Postannouncement</u>	
	<u>Chapter 7 (%)</u>	<u>Chapter 13 (%)</u>	<u>Chapter 7 (%)</u>	<u>Chapter 13 (%)</u>
	(1)	(2)	(3)	(4)
<i>A. All PSL</i>				
PSL	-0.02 (0.01)	0.00 (0.00)	-0.01 (0.01)	0.00 (0.00)
Post	-0.12** (0.01)	-0.00 (0.00)	-0.11** (0.01)	0.00 (0.00)
PSL X Post	0.05** (0.02)	0.00 (0.00)	0.02* (0.01)	0.01 (0.01)
<i>B. PSL Only/PSL & GSL</i>				
PSL Only	0.00 (0.02)	0.01 (0.01)	0.01 (0.01)	0.00 (0.01)
PSL & GSL	-0.05** (0.01)	-0.01 (0.00)	-0.03** (0.01)	-0.01 (0.00)
Post	-0.12** (0.01)	0.00 (0.01)	-0.11** (0.01)	0.00 (0.00)
PSL Only X Post	0.05** (0.02)	0.00 (0.01)	0.02* (0.01)	0.01 (0.01)
PSL & GSL X Post	0.05** (0.01)	0.00 (0.01)	0.02 (0.01)	0.01 (0.01)
Observations	9,119,433	9,119,433	9,119,433	9,119,433

Notes: PSL = private student loan holders, GSL = government student loan holders, and PSL & GSL = holders of both private and government student loans. Chapter 13 filings are defined as a consumer's Chapter 13 bankruptcy flag turning on in a particular quarter. Controls include quarter-year, state, student loan cohort (separately, year, and quarter); one-quarter lags of borrower age, risk score, student loan, and total tradeline balances; number of tradelines; number of tradelines 120 or more days past due; whether the individual has a mortgage, auto, or home equity loan; number of credit profile inquiries; age of newest tradeline; age of newest student loan; and contemporaneous county unemployment rate and census tract characteristics (percentage of tract that is college educated, percentage of tract that is minority race/ethnicity, percentage of tract that are homeowners, and median tract income).

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

* $p < 0.05$, ** $p < 0.01$; standard errors are clustered by state.

Table 5: Postannouncement Policy Effect Estimates
 — Pre-2004 Student Loan Borrowers, Q4:2003–Q4:2007

	<u>Chapter 7 (%)</u>	<u>Chapter 13 (%)</u>
	(1)	(2)
<i>A. All PSL</i>		
PSL	-0.02 (0.01)	-0.00 (0.00)
Post	-0.10** (0.01)	0.00 (0.01)
PSL X Post	0.01 (0.01)	0.01 (0.01)
<i>B. PSL Only/PSL & GSL</i>		
PSL Only	0.01 (0.01)	0.00 (0.01)
PSL & GSL	-0.05** (0.01)	-0.01 (0.00)
Post	-0.10** (0.01)	0.00 (0.01)
PSL Only X Post	0.01 (0.01)	0.00 (0.01)
PSL & GSL X Post	0.00 (0.01)	0.01 (0.01)
Observations	4,968,989	4,968,989

Notes: PSL = private student loan holders, GSL = government student loan holders, and PSL & GSL = holders of both private and government student loans. Chapter 7 and Chapter 13 filings are defined as a consumer's Chapter 7 or Chapter 13 bankruptcy flag turning on in a particular quarter. Controls include quarter-year, state, student loan cohort (separately, year, and quarter); one-quarter lags of borrower age, risk score, student loan, and total tradeline balances; number of tradelines; number of tradelines 120 or more days past due; whether the individual has a mortgage, auto, or home equity loan; number of credit profile inquiries; age of newest tradeline; age of newest student loan; and contemporaneous county unemployment rate and census tract characteristics (percentage of tract that is college educated, percentage of tract that is minority race/ethnicity, percentage of tract that are homeowners, and median tract income). Includes student loan debtors who obtained a student loan prior to 2004.

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

** $p < 0.01$; standard errors are clustered by state.

Table 6: Postannouncement Policy Effect Estimates —
Pre-2004 Student Loan Borrowers Without Cosigned Loans, Q4:2003–Q4:2007

	<u>Chapter 7%</u>	<u>Chapter 13 (%)</u>
	(3)	(4)
<i>A. All PSL</i>		
PSL	-0.02 (0.01)	-0.01 (0.01)
Post	-0.11** (0.01)	0.00 (0.01)
PSL X Post	0.01 (0.01)	0.01 (0.01)
<i>B. PSL Only/PSL & GSL</i>		
PSL Only	0.01 (0.02)	-0.00 (0.01)
PSL & GSL	-0.05** (0.01)	-0.01 (0.01)
Post-Policy	-0.11** (0.01)	0.00 (0.01)
PSL Only X Post-Policy	0.01 (0.02)	0.01 (0.01)
PSL & GSL X Post-Policy	-0.00 (0.02)	0.01 (0.01)
Observations	4,466,542	4,466,542

Notes: PSL = private student loan holders, GSL = government student loan holders, and PSL & GSL = holders of both private and government student loans. Chapter 7 and Chapter 13 filings are defined as a consumer's Chapter 7 or Chapter 13 bankruptcy flag turning on in a particular quarter. Controls include quarter-year, state, student loan cohort (separately, year, and quarter); one-quarter lags of borrower age, risk score, student loan, and total tradeline balances; number of tradelines; number of tradelines 120 or more days past due; whether the individual has a mortgage, auto, or home equity loan; number of credit profile inquiries; age of newest tradeline; age of newest student loan; and contemporaneous county unemployment rate and census tract characteristics (percentage of tract that is college educated, percentage of tract that is minority race/ethnicity, percentage of tract that are homeowners, and median tract income). Includes student loan debtors who obtained a student loan prior to 2004.

Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

** p < 0.01; standard errors are clustered by state.

Table 7: Postannouncement Policy Effect Estimates —
Pre-2004 Student Loan Borrowers by Prime/Subprime Status, Q4:2003–Q4:2007

	Prime Borrowers		Subprime Borrowers	
	Chapter 7	Chapter 13	Chapter 7	Chapter 13
	(1)	(2)	(3)	(4)
<i>A. All PSL</i>				
PSL	-0.01 (0.01)	0.00 (0.00)	-0.03 (0.02)	-0.01 (0.01)
Post	-0.02* (0.01)	0.01 (0.00)	-0.16** (0.02)	-0.00 (0.01)
PSL X Post	0.02* (0.01)	0.01 (0.00)	0.00 (0.02)	0.01 (0.01)
<i>B. PSL Only/PSL & GSL</i>				
PSL Only	0.01 (0.01)	0.01 (0.00)	0.00 (0.03)	-0.01 (0.01)
PSL & GSL	-0.04** (0.01)	-0.00 (0.00)	-0.07** (0.02)	-0.02* (0.01)
Post-Policy	-0.02* (0.01)	0.01 (0.00)	-0.16** (0.02)	-0.00 (0.01)
PSL Only X Post-Policy	0.02 (0.01)	-0.01 (0.01)	-0.00 (0.03)	0.01 (0.02)
PSL & GSL X Post-Policy	0.01 (0.01)	-0.01 (0.00)	-0.01 (0.02)	0.02 (0.02)
Observations	2,263,132	2,263,132	2,705,857	2,705,857

Notes: PSL = private student loan holders, GSL = government student loan holders, and PSL & GSL = holders of both private and government student loans. Chapter 7 and Chapter 13 filings are defined as a consumer's Chapter 7 or Chapter 13 bankruptcy flag turning on in a particular quarter. Controls include quarter-year, state, student loan cohort (separately, year, and quarter); one-quarter lags of borrower age, risk score, student loan, and total tradeline balances; number of tradelines; number of tradelines 120 or more days past due; whether the individual has a mortgage, auto, or home equity loan; number of credit profile inquiries; age of newest tradeline; age of newest student loan; and contemporaneous county unemployment rate and census tract characteristics (percentage of tract that is college educated, percentage of tract that is minority race/ethnicity, percentage of tract that are homeowners, and median tract income). Individuals are defined to be prime/subprime based on their risk score in the quarter of the newest student loan origination (risk score < 660 indicates that the individual is a subprime borrower). Includes student loan debtors who obtained a student loan prior to 2004 and do not hold any student loans cosigned by another borrower. Source: Authors' calculations use data from FRBNY Consumer Credit Panel/Equifax.

* p < 0.05, ** p < 0.01; standard errors are clustered by state.