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Do Student Loan Borrowers Opportunistically Default? Evidence from Bankruptcy Reform

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Abstract

Bankruptcy reform in 2005 eliminated debtors' ability to discharge private student loan debt and was motivated by the perceived incentive of some borrowers to declare bankruptcy even if they had sufficient income to service their debt. Using a national sample of credit bureau files, we examine whether private student loan borrowers distinctly adjusted their bankruptcy filing behavior in response to the reform. Our results indicate that nondischargeability increased access to private student credit, but we do not find evidence to indicate that the moral hazard associated with dischargeability pre-policy appreciably affected the behavior of private student loan borrowers.

Keywords: student loans, bankruptcy, bankruptcy reform, BAPCPA, default
JEL Codes: D14, G21, I22, K35

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1. Introduction

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. Student loan debtors, however, cannot clear their educational debt in bankruptcy barring exceptional circumstances. This restriction is because of laws that make student loan debt nondischargeable, meaning that obligations to repay survive after a bankruptcy filing. The underlying premise of such laws is that some strategic debtors abuse the bankruptcy system; therefore, these policies were enacted in an effort to reduce costly defaults 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 & Lacey, 2005). These concerns have spurred legislative proposals to roll back student loan debt nondischargeability policies.[1] There is little empirical evidence to inform the debate; therefore, we use a unique, nationally representative sample of millions of anonymized credit bureau files to examine whether student loan nondischargeability policy changes affected debtors' bankruptcy filing behavior.

We focus on a 2005 policy change — the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) — that generally made bankruptcy, particularly Chapter 7 filing, less attractive to debtors. Of importance to our study, private student loan (PSL) borrowers were specifically targeted, as the act included a new provision that prevented PSL debt from being discharged in bankruptcy. This change was motivated by arguments that some debtors, particularly those with few assets and high expected incomes, will act on the incentive to

[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.

"opportunistically" declare bankruptcy even if they have sufficient income to service their student loan debt.

We test whether the response to the 2005 policy change suggests that student loan borrowers were behaving opportunistically pre-policy by examining whether bankruptcy filing and student loan default rates changed after the law was enacted. Earlier bankruptcy reforms made government student loan (GSL) debt generally nondischargeable starting in the late 1970s. Therefore, to isolate the effect of PSL nondischargeability, we account for trends of those debtors whose incentives were not directly affected by the PSL nondischargeability policy change: student loan borrowers who did not borrow PSLs (GSL-only borrowers) and non-student loan borrowers.

Because BAPCPA made bankruptcy filing generally less attractive to all debtors, we observe that the policy change induced a large spike in Chapter 7 bankruptcy filings immediately before the law was enacted. This corresponds to prior research on the effect of bankruptcy reform on mortgage repayment behavior (Li, White & Zhu, 2011). After the policy went into effect, the rate of these filings declined substantially among all borrowers; however, we find that the filing rate did not decrease among PSL borrowers relative to GSL borrowers or non-student loan borrowers. Therefore, the 2005 nondischargeability provision does not appear to have reduced the likelihood of filing bankruptcy among PSL borrowers as compared with other debtors whose incentives were not directly affected by the policy.

Further, we test for evidence of a predictable expansion in the PSL credit supply and looser origination credit standards induced by the policy. We observe that riskier borrowers (as measured by credit score) appear to have gained access to the PSL market post-policy, and these relatively risky borrowers tended to borrow larger loan amounts. For example, post-policy loan

amounts among the least creditworthy PSL borrowers were more than 75% higher than pre-policy loan amounts. To examine whether changes in credit supply masked strategic behavior in our primary results, we analyze a group of borrowers who were likely not affected by the expansion of credit — those who obtained student loan debt prior to 2004. In this and other robustness checks, we continue to 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 benefits of expanded credit availability against the burden that the bankruptcy restrictions place on struggling non-opportunistic debtors.

We proceed as follows: We describe student loan markets and the incentives associated with the ability to discharge student loan debt in Sections 2 and 3. We present our empirical approach in Section 4 and the data sample in Section 5. Section 6 includes a discussion of results, and we conclude in Section 7.

2. Student Loan Markets

During the past 20 years, annual educational loan disbursements have grown from about $40 billion to more than $110 billion (in inflation-adjusted dollars; Baum & Payea, 2012). With student loan transactions, lenders provide current funds targeted toward educational expenses in return for a future stream of repayments.

A robust educational credit market can have both efficiency and equity benefits because of the many private and public returns associated with college (Avery & Turner, 2012).[2] Students, however, typically have thin credit files and usually do not place collateral against

[2] We note that research on credit constraints has not yielded consensus as to whether credit availability leads to increased educational attainment (e.g., Campaigne & Hossler, 1998; Carneiro & Heckman, 2002; Lochner & Monge-Naranjo, 2011; Brown, Scholz & Seshadri, 2011; and Stinebrickner & Stinebrickner, 2008).

student loan obligations. Therefore, the purpose of federally supported student loan programs is to promote college attendance among those who would otherwise likely face difficulty financing human capital investments, even with the expectation of some student loan defaults (Chatterjee & Ionescu, 2012).

Three broad categories of student loans are available to students and their families: from federal programs, from state- and institution-sponsored programs, and from private lenders. Federal loan programs typically have more favorable terms than private lender loans do. Loan approval and interest rates in federal programs do not vary with expected default risk as long as borrowers attend eligible institutions. Federal loan programs are subsidized; credit is offered at lower rates than can generally be obtained from private lenders, and some programs have extra benefits, such as the ability to postpone payments and interest accrual during times of enrollment or hardship. Nevertheless, a significant number of students borrow from private sources. Though federal loans comprise more than 90% of the total annual disbursements in recent years, private creditors lent nearly a quarter of the total educational debt as recently as the 2007–2008 school year (Baum & Payea, 2012). PSL debt is estimated to account for about 15% of the total outstanding educational debt, with more than 15% of undergraduates and nearly 11% of graduate students borrowing private loan money in recent years (Consumer Financial Protection Bureau [CFPB], 2012).

There are several reasons for the substantial use of the PSL market despite the relatively less favorable loan terms. Lochner and Monge-Naranjo (2011) demonstrate how the private lending market expands or contracts in response to changes in federal student loan programs. Because federal loan programs are 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 post-secondary institutions exceed available aid offered by public programs.

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). Some of this may reveal borrower preferences, but it is also likely to reflect the lack of access to federal lending programs available at some schools, particularly those attended by the most resource-constrained students (Cellini & Goldin, 2014). For example, a recent estimate indicates that approximately 9% of public community college students nationwide do not attend schools that participate in federal student loan programs (Institute for College Access and Success, 2011).

Student loan repayment, in particular, has become a prominent policy issue. Student loan debt delinquency rates have nearly doubled during the past decade nationally (Federal Reserve Bank of New York, 2014), and default rates on federally supported loan programs recently reached their highest level in more than 15 years (U.S. Department of Education, n.d.). These conditions led policymakers to propose a number of legislative bills and regulatory rulemaking related to student loan repayment.[3] Compared with other types of credit, such as mortgages, extant student loan research less conclusively establishes the determinants of default. 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 coming from a low-income family, having dependents, and being unemployed (Dynarski,

[3] For example, 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.

1994; Greene, 1989; Knapp & Seaks, 1992). Researchers have also examined the effect of college type on default behavior and have reported generally mixed findings (Belfield, 2013; Darolia, 2015).

3. Educational Debt Nondischargeability

The growing inability for debtors to service their debt obligations highlights the importance of the treatment of student loan debt in bankruptcy. Under the most common type of bankruptcy filing, Chapter 7 (referred to as *liquidation*), debtors surrender assets to pay secured debts.[4] Unsecured debts, in which borrowers do not place collateral against the loan, such as credit card debt, are often discharged. Student loans are considered unsecured debt and would have been discharged in this category before bankruptcy reform (discussed in more detail later in this paper). 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. In Chapter 13 proceedings, borrowers typically propose to service a small amount of unsecured debt, which would not be expected to exceed what would be serviced if they had filed Chapter 7 (Fay, Hurst & White, 2002).

The following expression depicts the borrower's expected gains from filing for bankruptcy prior to the BAPCPA, conditional on being eligible to file:[5]

$$Benefit = \max[(U_S + U_O) - A_7 - I_{13} - C, 0] \quad (1)$$

[4] 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).

[5] This generally follows Li, White & Zhu (2011).

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_7 is the value of nonexempt assets surrendered, which typically would be most relevant to Chapter 7 filings. I_{13} is the present value of future income pledged to service debt under Chapter 13 filing. *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 for debtors is the difference between the value of unsecured debt discharged and assets/income surrendered, net of the costs associated with filing. Before the BAPCPA, debtors could choose to file either Chapter 7 or Chapter 13 bankruptcy without restriction.

Individuals with high levels of assets, or those who want to keep their assets (such as their homes), have the incentive to file under Chapter 13 because these debtors can keep their property as long as they have regular income. 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 sufficient income to service their debt, some can achieve a positive financial benefit from filing Chapter 7 bankruptcy when $U_S + U_O > A_7 + C$; i.e., if they have high levels of student loan debt and few assets, as would be expected of many young student loan borrowers.

Following the framework of White (2007), the top panel of Figure 1 provides a stylized illustration of the asset and income levels of debtors who could benefit from filing Chapter 7 bankruptcy pre-BAPCPA. 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

[6] There is an automatic stay when a filer declares bankruptcy, such that creditors cannot try to collect payments 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 have a higher ability to pay. Interest continues to accrue during the bankruptcy period, however.

assets is less than the amount of unsecured student loan debt net costs of filings, U^*, where $U^* = (U_S + U_O) - C$. 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. 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, teaching borrowers that "it 'does not pay' to honor one's debts or other legal obligations" (House Report No. 95-595, 1977, p. 537).[8] As a result, a prominent motivation for nondischargeability laws was the perceived effect of opportunistic default on the survival of

[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; 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] Representative Allen Ertel 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, pp. 536–537).

federal loan programs. 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 Bankruptcy Laws of the United States, 1973, pp. 94–95).

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 affects the gains of all bankruptcy filers in a number of ways, most making bankruptcy overall less attractive to debtors.[9] For example, bankruptcy filing fees increased (U.S. Government Accountability Office, 2008), and the BAPCPA gave the 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 declaring Chapter 7 bankruptcy.

The BAPCPA change 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 — the risk that some strategic borrowers will abuse the bankruptcy system and limit the availability of student loan credit.[10] As with the nondischargeability of GSL debt, however, the premise does not appear to have been reinforced by empirical analysis, and there

[9] During the 20 years leading up to the BAPCPA, bankruptcy filing increased almost fivefold, supporting arguments that there was an endemic bankruptcy crisis. See White (2007) for a discussion of changes under the BAPCPA.

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

were even claims that PSL nondischargeability provisions were slipped into the BAPCPA without explanation.[11]

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 smaller 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 non-student 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 non-student loan unsecured debt (i.e., when $U_O > A_7 - C$) and when debtor income does not exceed the allowable income level for filing under Chapter 7. Resource-constrained borrowers with relatively low incomes and high levels 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.

Changes to student loan debt nondischargeability are expected to affect credit supply. This is because the prices and availability of credit are likely to vary with the lenders' expected recovery in the case of default, and expected recovery is negatively related to the ease in which debtors can file bankruptcy and the financial incentives of doing so (Han, Keys & Li, 2011; White, 1998). All else equal, the BAPCPA reduces some PSL debtors' financial incentives to declare bankruptcy and to discontinue servicing their student loan debt, thus increasing lenders'

[11] 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." (Durbin, 2013).

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 & Posner, 2002).

Loosened 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 availability of PSLs to borrowers with low credit scores for loan trust pools of one of the two loan servicers examined.

4. Empirical Methodology

The lack of empirical analysis on opportunistic bankruptcy filing of student loan debtors motivates our primary question: Does nondischargeability change the repayment and bankruptcy filing behavior of student loan borrowers? Simply comparing post-policy outcomes with pre-policy outcomes does not provide a clear answer to this question since BAPCPA made bankruptcy filing generally less attractive to all debtors. Therefore, we identify the effects of the BAPCPA on PSL borrowers by examining the bankruptcy filing and delinquency (which we define as becoming 120 or more days late on at least one student loan) rates of PSL borrowers before and after the policy went into effect while controlling for pre- and post-policy trends of two comparison groups: GSL-only borrowers and non-student loan borrowers.

First, we estimate the equation

$$Y_{it} = \alpha + \beta_1 P_i + \beta_2 A_t + \delta(P_i \times A_t) + d_{it} + \eta X_{it} + e_{it}, \quad (2)$$

where Y is an indicator for individual i declaring bankruptcy or becoming seriously delinquent on student loan obligations in period t, P is an indicator for having a PSL, and A is an indicator for the time frame post-policy (one if post-policy). 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.[12] In this model, we include only student loan borrowers, such that $P = 1$ if a borrower has a PSL, and $P = 0$ if the borrower has only GSL debt.

Our primary interest is with the coefficient on the interaction term, δ. The coefficient provides a difference-in-differences (DD) estimate of the effect of the bankruptcy reform on the outcomes of PSL borrowers, while accounting for trends of GSL-only borrowers (conditional on covariates):

$$\delta = [E(Y|P,A) - E(Y|P,B)] - [E(Y|G,A) - E(Y|G,B)]. \quad (3)$$

B indicates the pre-policy period, and G indicates the group of GSL-only borrowers in equation (3). If the policy reduces opportunistic default of PSL borrowers, compared with GSL borrowers who should not be directly affected by the dischargeability clause in the BAPCPA, then we would expect δ to be negative.[13]

The potential bias in the estimated policy effect depends on whether unobserved factors in the error term are systematically related to the policy change and trends in the outcome. Descriptive, unadjusted graphs discussed in the next section suggest similar pre-policy bankruptcy filing trends. Additionally, we include a robust set of covariates to account for differences across groups and over time. Specifically, we include a vector, d, that includes indicators for the state of residence and quarter-year, to account for variation in economic and

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

[13] 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.

local conditions and differences in wealth exemption policies by state. We also include in this vector two different student loan cohort controls: separately, the year in which the newest student loan was originated and the quarter in which the newest student loan was originated.[14] These controls account for seasonality, as well as 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.

Additionally, we control for a vector of factors in *X*, including borrower age and components of the credit profile — Equifax Risk Score (a type of credit score), credit bureau inquiries in the prior three months, age of newest account, age of 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 of all these measures to avoid the interrelationship between bankruptcy and contemporaneous credit characteristics.[15] We also include in *X* 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 that own their homes, as well as quarterly averages of monthly county unemployment rates from the Bureau of Labor Statistics. The data do not include individual income; we cannot directly observe assets, but we include indicators for having a mortgage, auto loan, or other securitized loan.

The policy change also had potential impacts on the borrowing and bankruptcy behavior of non-student loan borrowers. Therefore, we add a third comparison that includes non-student

[14] 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.

[15] Results are qualitatively similar when using two-quarter or four-quarter lags.

loan borrowers to obtain a difference-in-differences-in-differences (DDD) estimate of bankruptcy filing and delinquency rates:[16]

$$Y_{it} = \alpha + \beta_1 P_i + \beta_2 G_i + \beta_3 A_t + \gamma(P_i \times A_t) + \Gamma(G_i \times A_t) + d_{it} + \eta X_{it} + e_{it}. \quad (4)$$

We add to equation (2) an indicator for having only GSLs, *G*, and an interaction with this term and the post-policy indicator. From equation (4), our primary variable of interest is γ, which provides an estimate of the policy effect on PSL borrowers net of the policy effect on student loan borrowers who only borrow from government programs and net of non-student loan borrowers, *N*:

$$\gamma = [E(Y|P,A) - E(Y|P,B)] - [E(Y|G,A) - E(Y|G,B)] - [E(Y|N,A) - E(Y|N,B)]. \quad (5)$$

The difference between treatment effect estimates from the DD, δ and DDD, γ approaches is the difference in the pre- and post-policy trends of non-student loan borrowers: $\delta - \gamma = [E(Y|N,A) - E(Y|N,B)]$.

In addition to measures of bankruptcy, we use a similar econometric strategy to estimate the effect of the policy on two measures of changes in credit supply — initial risk scores and student loan balances. Lower risk scores at loan origination among PSL borrowers, and higher initial PSL balances may be evidence of looser credit standards. Therefore, examining these outcome measures may give us additional insight into changes in credit supply that may have occurred simultaneously with the BAPCPA. However, we are careful to note that these factors do not comprehensively capture all measures of credit supply, and we cannot directly analyze loan prices or underwriting decisions as they are not available in our data.

[16] By definition, borrowers without student loans cannot become seriously delinquent on student loan tradelines. Therefore, we only produce DDD estimates for Chapter 7 and Chapter 13 bankruptcy filing rates.

5. Data

5.1. Analysis Sample

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 (FRBNY) 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, 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 (MSA), and census tract). Most important, 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, as 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

[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 a 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 non-student loan borrowers while including all borrowers with student loans.

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, we find that 0.24% of individuals entered Chapter 7 bankruptcy in any given quarter, 0.07% of individuals entered Chapter 13 bankruptcy in any given quarter, and 0.57% of individuals became seriously delinquent (defined as becoming 120 or more days past due) on a student loan tradeline 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 score or a missing lagged risk score (10% 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 entered bankruptcy or became seriously delinquent were

[18] Individuals "enter" 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 very first quarter in which the flag is activated. To the extent that individuals file for bankruptcy or become seriously delinquent 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 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 Equifax data set 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).

considerably more likely to have a missing lagged risk score (37% of individuals who declare Chapter 7, 34% of individuals who declare Chapter 13, and 16% of individuals who become seriously delinquent in a given quarter).[20] We also exclude observations with any other missing independent variables (7% of the original sample).[21]

The resulting analysis sample consists of 12,839,042 person-quarter observations. Of these observations, 0.13% of individuals entered Chapter 7 bankruptcy and 0.03% of individuals entered Chapter 13 bankruptcy in a given quarter. Of this analysis sample, 6,283,413 observations have at least one student loan on file in a particular quarter. For the subsample of student loan borrowers, 0.15% of individuals entered Chapter 7 bankruptcy, 0.04% of individuals entered Chapter 13 bankruptcy, and 1.03% of individuals became seriously delinquent on at least one student loan in a given quarter at some point during the time period of interest. These percentages will form the basis of our results described in Section 6.

Table 1 provides summary statistics for key variables in our analysis sample. As expected, student loan borrowers tended to be younger and to have lower risk scores, younger accounts, higher debt balances, more tradelines, and more past due tradelines than borrowers without student loans. Among student loan borrowers, those with only GSLs tended to have lower risk scores and student loan balances than PSL borrowers. Student loan borrowers (and particularly PSL borrowers) tended to live in census tracts with a higher percentage of college-

[20] Individuals who have declared bankruptcy sometimes enter the credit bureau data because the information is obtained from public records (instead of a financial institution). Since no historical 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 declare bankruptcy several years before entering Equifax data. By contrast, individuals who enter bankruptcy after having some credit history reported to Equifax appear to have declared bankruptcy in the preceding quarter. We 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.

educated individuals, similar median income, slightly lower homeownership rates, and similar county-level unemployment rate as borrowers without student loans.

5.2. Descriptive Trends

Table 2 displays the average rates of entry into Chapter 7 and Chapter 13 bankruptcy, the average rate of becoming seriously delinquent on a student loan, and the average risk score and student loan balance among PSL borrowers at loan origination. Post-policy Chapter 7 and Chapter 13 bankruptcy filings rates are about 30% and 70% of pre-policy rates, respectively, whereas student loan delinquency increased about 9% after the BAPCPA. 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 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 21 points and 12 points post-policy, respectively. Average initial student loan balances increased about 30% for PSL borrowers from the pre- to post-policy period, from $8,734 to $11,321.

These trends are shown graphically in Figures 2 and 3, along with a depiction of the trends for GSL-only borrowers and non-student loan borrowers (where applicable). Figure 2 depicts the share of borrowers who entered Chapter 7 bankruptcy in each quarter from Q4:2003 to Q4:2007. Student loan borrowers tended to enter Chapter 7 bankruptcy at higher rates than borrowers without student loans, with PSL borrowers entering at a somewhat lower rate than GSL-only borrowers. Approximately 0.22% of GSL-only borrowers, 0.19% of PSL borrowers, and 0.14% of borrowers without student loans entered Chapter 7 bankruptcy before the BAPCPA took effect. All three groups of borrowers experienced an increase in Chapter 7 filings around the time that the BAPCPA took effect (denoted with a vertical line). Following this spike, the

bankruptcy filing rates for Chapter 7 protection dropped to lower levels than before the policy change.

The pattern for Chapter 13 bankruptcy protection filings is depicted in Figure 3, panel (a). Chapter 13 bankruptcy was considerably less frequent, with only approximately 0.03%–0.04% of borrowers in any group filing for this type of protection in any given quarter. Compared with Chapter 7 filings, there is no corresponding spike in filings for the quarter before the BAPCPA took effect, and the filing rate actually decreased slightly for PSL borrowers in that quarter and the next quarter.

Figure 3, panel (b) shows an increase in the proportion of student loan borrowers who became seriously delinquent on at least some of their student loan tradelines four quarters before the BAPCPA took effect, with the increase considerably higher for GSL borrowers.[22] GSL-only borrowers continued to have somewhat higher rates of serious delinquency relative to PSL borrowers after the policy change relative to pre-policy levels, with rates of approximately 1.13% for GSL-only borrowers and 0.77% for PSL borrowers after the BAPCPA took effect.

6. Results

6.1. Bankruptcy and Delinquency

In Table 3, we display estimates of the effect of the policy change on Chapter 7 filings. In this table and Tables 4–7 that follow, we show only the parameter estimates and standard errors from the indicators for loan holdings, post-policy, and the interaction (which is the estimated policy effect). Full output for selected estimates is included in the Appendix, with full output for all models available upon request. First consider the DD estimates displayed in Table 3, column 1. Consistent with the descriptive trends presented in Section 3, estimates in Table 3 show that

[22] We discuss concerns about advantageous selection in the PSL-borrower pool post-policy following a "rush to file" in the following section. In summary, our results do not suggest that any rush to file behavior biases our results.

PSL borrowers tended to declare Chapter 7 bankruptcy at lower rates relative to GSL-only borrowers and that all student loan borrowers had lower filing rates after the BAPCPA.

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 that 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 4 basis points (about 19% of the pre-policy Chapter 7 filing rate of PSL borrowers as displayed in Table 2). This signifies that the decline in Chapter 7 filing rates post-policy for PSL borrowers was less steep than the decline in the filing rates of GSL-only borrowers.

Next, consider the DDD estimates in Table 3, column 2. The post-policy decline in Chapter 7 bankruptcy rates for GSL-only borrowers relative to borrowers without student loans is about 9 basis points (the coefficient on GSL X post-policy), or 35% of the pre-policy borrower Chapter 7 filing rate for GSL borrowers of 0.26%. This exceeds the corresponding decline for PSL borrowers, a statistically insignificant 5 basis points. In other words, both types of student loan borrowers reduced their Chapter 7 bankruptcy filing rates after the BAPCPA, but the decrease was larger for GSL-only borrowers.

Even considering the possible loosening of credit standards (as discussed in more detail in Section 6.2), this finding brings into question the notion of opportunistic default as a phenomenon specific to PSL borrowers and prevalent before the BAPCPA. In addition, since the effect on Chapter 7 filing rates was stronger for GSL borrowers relative to PSL borrowers, any policy effects are unlikely to be attributable to advantageous selection following a “rush to file” in the quarter that the BAPCPA took effect and the opportunity to file under old rules expired for PSL borrowers. In other words, even if some PSL borrowers rushed to file before

nondischargeability took effect, we would expect the post-policy Chapter 7 filing rate relative decline to be steeper for PSL borrowers than if no PSL borrowers rushed to file. Instead, we find that the Chapter 7 filing rate falls more for GSL-only borrowers than for PSL borrowers, which is inconsistent with such advantageous selection effects post-policy.

Table 4 displays analogous estimates for Chapter 13 bankruptcy filings and serious delinquency. As discussed earlier, the BAPCPA predominantly changed incentives to declare Chapter 7 bankruptcy among PSL borrowers; therefore, we expect little differential effect of the policy on Chapter 13 filings for this group. Our results confirm this, as we see no evidence that the policy change affected Chapter 13 filing rates among PSL borrowers specifically. The policy effect is statistically insignificant for PSL borrowers relative to GSL-only borrowers in column 1 or when adding the third difference to account for non-student loan borrowers in column 2. We observe that the Chapter 13 filing rate of GSL-only borrowers increased less than a basis point relative to non-student loan borrowers after the policy. This suggests that the BAPCPA did not differentially reduce Chapter 13 filing behavior of PSL borrowers in a meaningful way, while Chapter 13 filing rates for GSL-only borrowers appear to be relatively higher than non-student loan borrowers. As can be seen in the Appendix, the coefficients on debt collateralized by homes are generally higher in the Chapter 13 estimates, reflecting that the hypothesis of asset protection as an important feature of Chapter 13 bankruptcy protection bears out in our data.

Next, consider the likelihood of serious student loan delinquency, which we define as becoming 120 or more days late on at least one student loan.[23] We only produce DD estimates for this outcome measure because borrowers without student loans do not, by definition, have any student loans on which they can become delinquent. As our descriptive figures show, the

[23] As mentioned previously, the serious delinquency indicator is equal to one only in the very first quarter of the first occurrence (in our data) of an individual being 120 or more days late.

BAPCPA may have altered the likelihood of serious delinquency among student loan borrowers. From the last column of Table 4, we observe a negative point estimate for PSL borrowers, corresponding to lower delinquency rates overall (likely reflecting the stricter underwriting standards of PSL lenders), though this result is not statistically significant. Both types of student loan borrowers had slightly higher probability of delinquency post-policy, but the results in column 3 do not indicate that the post-policy increase in serious delinquency for PSL borrowers was statistically different than that for GSL-only borrowers. The imprecisely estimated policy effect point estimate is directionally consistent with results from the Chapter 7 regressions, though smaller in magnitude. This effect is directionally inconsistent with expectations for the policy to differentially decrease incentives to default among PSL borrowers.

6.2. Credit Supply

The seemingly counterintuitive post-policy increases in Chapter 7 filing and delinquency rates among PSL borrowers could be a result of the expansion of credit to riskier borrowers. Although we cannot observe lenders' actual underwriting standards or loan terms in our data, we examine changes in the risk score and initial student loan balances for PSL borrowers at 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. Since we focus on borrowers with student loans in this analysis, we cannot compare risk scores or initial student loan balances of PSL borrowers with non-student loan borrowers.

Average risk scores of PSL borrowers at the time of loan origination did not substantially change relative to the pre-policy period (a 2-point decrease as displayed in Table 2), whereas initial student loan balances increased by an average of $2,587 (which is about a 30% increase)

for PSLs relative to the pre-policy period. Figure 4 presents graphical trends. Consistent with the descriptive trends, regression results in Table 5 show that PSL borrowers with new student loans had slightly higher risk scores than GSL-only borrowers with new student loans pre-policy (about 8 points in column 1) but that the risk scores of these PSL borrowers did not appreciably change (point estimate is 1.28 points but not statistically significant) relative to GSL-only borrowers following the BAPCPA. In Table 5, column 2, we see that post-policy PSL borrowers took out a total of about $2,044 more in loans at origination than did GSL-only borrowers.

The limited change in average credit scores, however, was due to a mean preserving spread (the distribution of credit scores widened at both the low and high ends), and consistent with prior data (Ang & Jimenez, 2015; Kantrowitz, 2007), we observe evidence that suggests riskier PSL borrowers were obtaining loans post-policy. From Table 2, the 10th and 25th percentiles of risk scores among PSL borrowers declined 21 points and 12 points post-policy, respectively.

Importantly, the post-policy 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 post-policy. PSL loan amounts among borrowers with credit scores in the 70th percentile and above are at most 18% higher post-policy than pre-policy; however, average loan amounts for borrowers in the bottom half of the credit score distribution increased substantially. For example, post-policy loan amounts in the lowest 20% of the credit score distribution were over 50% higher than pre-policy loan amounts. No such increase was observed in GSL loan amounts, as displayed in the bottom half of Figure 5. Therefore, 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 post-policy.

6.3. Alternate Estimates

In this section, we discuss results from alternate estimates. Our general inferences remain with these robustness checks: We do not find conclusive evidence of a decrease in Chapter 7 filings post-BAPCPA that would suggest that PSL borrowers were opportunistically declaring bankruptcy at meaningful rates prior to the policy change relative to other individuals (whether GSL-only borrowers or non-student loan borrowers).

6.3.1. Pre-2004 Borrowers

In an effort to isolate the 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.[24] 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 and all non-student loan borrowers with 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 interpretation of the results presented so far. We display estimates from models in Table 6.

Table 6, column 1, shows a point estimate of about 4 basis points that is similar to our primary models for Chapter 7 filings by PSL borrowers, as compared with filings by GSL borrowers. In column 2, when we also account for trends of the second comparison group of

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

non-student loan borrowers, we find a statistically significant decrease in filings by PSL borrowers relative to non-student loan borrowers with a generally consistent magnitude (about 6 basis points, or about 30% relative to the pre-policy baseline of PSL borrowers). This negative coefficient is some of the only evidence consistent with a story that nondischargeability policies stemmed opportunistic bankruptcy filing, but we do not interpret this finding too strongly since the magnitude of the decrease in Chapter 7 filings for GSL-only borrowers continues to significantly exceed the magnitude of the decrease for PSL borrowers.

We continue to find no evidence of statistically significant reductions in Chapter 13 filings for PSL borrowers relative to comparison groups. We again observe evidence on serious delinquency that is inconsistent with a disproportionate post-policy decline in delinquency rates for PSL borrowers. Therefore, these estimates do not indicate that changes in the supply of PSLs offset changes in Chapter 7 filings and serious delinquency rates of PSL borrowers who took out loans once the BAPCPA was public knowledge. In fact, these results suggest that potential ex-post selection is unlikely to substantially affect our results.

6.3.2. One Year Before and After Policy Change

Next, we restrict our sample period to a shorter time period — one year before and after the BAPCPA — to avoid potential confounding economic effects for which we do not adequately control. This may produce more direct estimates of the policy effect, but it comes with a cost of a smaller window for observing post-policy outcomes and lost precision because of the smaller sample size.

Our results are fairly robust with respect to the change in the time period of interest, as is displayed in the top panel of Table 7 (see A. Q4:2004–Q4:2006). As before, post-policy Chapter 7 filing rates decreased for all borrowers with student loans relative to borrowers without student

loans but more so for GSL-only borrowers. Chapter 13 filing rate policy effects are virtually zero and not statistically significant when including either just GSL borrowers or both GSL and non-student loan borrowers. We now see a statistically significant increase in the rate of serious delinquency among PSL borrowers of 16 basis points relative to GSL-only borrowers. Our estimates of the policy effects on risk scores and initial student loan balances do not change appreciably from base models; we observe a small positive but statistically insignificant increase in risk score and a statistically significant increase in student loan initial balances relative to the comparison group.

6.3.3. Excluding the Quarter the BAPCPA Took Effect

To test whether our results are biased by the spike in bankruptcy filings around the time the BAPCPA took effect, we repeat our analysis excluding Q4:2005 (i.e., the pre-period is Q4:2003 to Q3:2005, and the post-period is Q1:2006 to Q1:2008). Our estimates for the BAPCPA effects on Chapter 7 bankruptcy filing and serious delinquency rates, displayed in the bottom panel of Table 7 (see B. Excluding Q4:2005), are similar to our base DD estimates. Although the Chapter 7 DDD point estimate is statistically significant, the model again produces a larger decline in Chapter 7 filing rates for the ostensibly unaffected GSL-only group than for PSL borrowers. Our policy effect estimates for Chapter 13 filings and serious delinquency are not statistically significant in all specifications. Our estimates of the BAPCPA effects for the observable supply-side factors are also robust to the exclusion of Q4:2005. In results omitted for brevity, we find similar results when excluding both Q3:2005 and Q4:2005 to account for both announcement and implementation of the policy.

6.3.4. 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 post-policy period. A cosigner on one or more of the borrower's loans may affect the borrower's likelihood of filing for bankruptcy protection or of becoming seriously delinquent on the student loan, particularly if the cosigner is a close family member. We test for whether cosigners affect results in two ways, with results from estimates of equation (2) displayed in Table 8. We first include an indicator for at least one of the borrower's student loans being cosigned in panel A. The point estimate for the cosigned student loan indicator is not statistically significant in any of the outcomes, suggesting that borrowers with cosigned student loans are not less likely to file for bankruptcy protection or become seriously delinquent on their student loan obligations. Point estimates and inferences on the estimated policy effect from models with and without inclusion of the control for cosigned student loans are very similar.

Additionally, we estimate our core models using only a sample of borrowers who do not have cosigned loans, and we find similarly robust policy effects on PSL borrowers (see panel B, Table 8). Policy point estimates for the two types of bankruptcy filings are similar, though the statistical significance of the policy estimate for Chapter 7 filing declines to the 10% level. The point estimate for delinquency declines in magnitude, but it becomes statistically significant. In summary, we do not observe evidence that increases in cosigned loans alters our conclusions that the BAPCPA does not appear to have disproportionally affected bankruptcy and serious delinquency behavior of PSL borrowers.

7. Concluding Remarks

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 encourage individuals to attend college, which can improve earnings potential and economic mobility (Avery & Turner, 2012). Beyond private benefits, this can lead to increased workforce productivity, economic growth, and social welfare (Goldin & Katz, 2008; Oreopoulos & 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 & Li, 2014; Brown & Caldwell, 2014; Elliot & Lewis, 2014). The inability for some student borrowers to service their debt is of particular concern 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 the U.S. 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 declare Chapter 7 bankruptcy. 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 & Lacey, 2005).[25] 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 appears to have reduced rates of 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 borrowers at meaningful levels. This result is robust to analyzing a subsample of PSL borrowers who obtained student loans before the credit supply was potentially influenced by the policy; we do not find evidence that the looser credit standards demonstrably offset changes in repayment behavior post-policy. 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 with White's (2007) prediction that the BAPCPA would primarily harm nonopportunistic struggling debtors, with only a few opportunists affected by changing incentives.

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

[25] 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 & Lacey, 2005).

the policy inducing an expansion of PSL credit, particularly among student borrowers who would have the most difficulty obtaining private credit. Post-policy, we observe evidence that riskier borrowers gained access to the PSL market and that PSL borrowers' initial loan amounts grew, with such increases largely driven by the riskiest borrowers. 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).[26] 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.

[26] 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).

Brown, Meta, John Karl Scholz, and Ananth Seshadri. 2012. "A New Test of Borrowing Constraints for Education," *Review of Economic Studies*, 79(2), pp. 511–538.

Campaigne, David, and Don Hossler. 1998. "How Do Loans Affect the Educational Decisions of Students? Access, Aspiration, College Choice, and Persistence," in Richard Fossey and Mark Bateman, eds., *Condemning Students to Debt: College Loans and Public Policy*. New York: Columbia University, pp. 85–104.

Carneiro, Pedro, and James Heckman. 2002. "The Evidence on Credit Constraints in Post-Secondary Schooling," *Economic Journal*, 112(482), pp. 705–734.

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 February 4, 2015).

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 April 2, 2015).

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).

Durbin, Dick. 2013. “As Student Loan Debt Surpasses $1 Trillion, Senators Introduce Legislation to Address Crisis.” Press release, January 1, http://www.durbin.senate.gov/newsroom/press-releases/as-student-loan-debt-surpasses-1-trillion-senators-introduce-legislation-to-address-crisis (last accessed August 4, 2015).

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.

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

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

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 (U.S.).

House Report No. 95-595. (1978). 92 Stat. 2541 (November 4), http://www.gpo.gov/fdsys/pkg/STATUTE-92/pdf/STATUTE-92-Pg2541.pdf (last accessed April 2, 2015).

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.

Institute for College Access and Success. 2011. "Still Denied: How Community Colleges Shortchange Students by Not Offering Federal Loans," http://projectonstudentdebt.org/files/pub/still_denied.pdf (last accessed February 4, 2015).

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, http://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," http://www.finaid.org/educators/20070814pslFICOdistribution.pdf (last accessed February 4, 2015).

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), http://www.newyorkfed.org/research/staff_reports/sr479.pdf (last accessed February 4, 2015).

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, http://www.nytimes.com/2012/09/01/business/shedding-student-loans-in-bankruptcy-is-an-uphill-battle.html (last accessed February 4, 2015).

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,” http://www.studentloanborrowerassistance.org/wp-content/uploads/2007/03/iulianoresponse.pdf (last accessed February 5, 2015).

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.

Stinebrickner, Ralph, and Tod R. Stinebrickner. 2008. “The Effect of Credit Constraints on the College Drop-Out Decision: A Direct Approach Using a New Panel Study,” *American Economic Review*, 98(5), pp. 2163–2184.

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,” http://www2.ed.gov/offices/OSFAP/defaultmanagement/defaultrates.html (last accessed February 5, 2015).

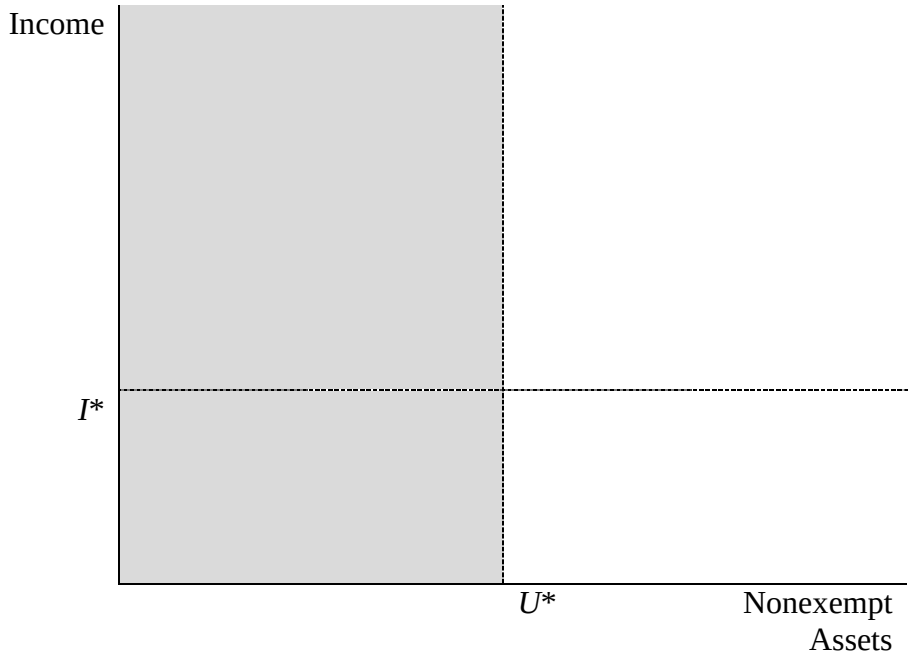
U.S. Government Accountability Office. 2008. “Dollar Costs Associated with the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005,” GAO-08-697. Washington, D.C.

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*, http://www.businessinsider.com/heres-how-private-student-loan-debt-became-a-150-billion-burden-2012-7 (last accessed February 5, 2015).

(a) Pre-BAPCPA



(b) Post-BAPCPA

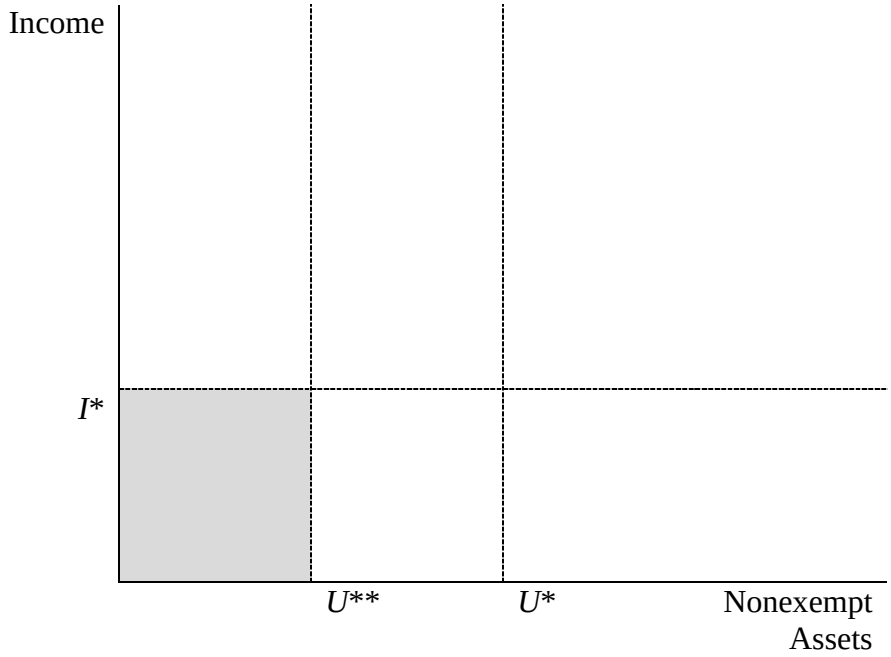


Figure 1: Income and asset levels at which debtors benefit from filing Chapter 7 bankruptcy

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

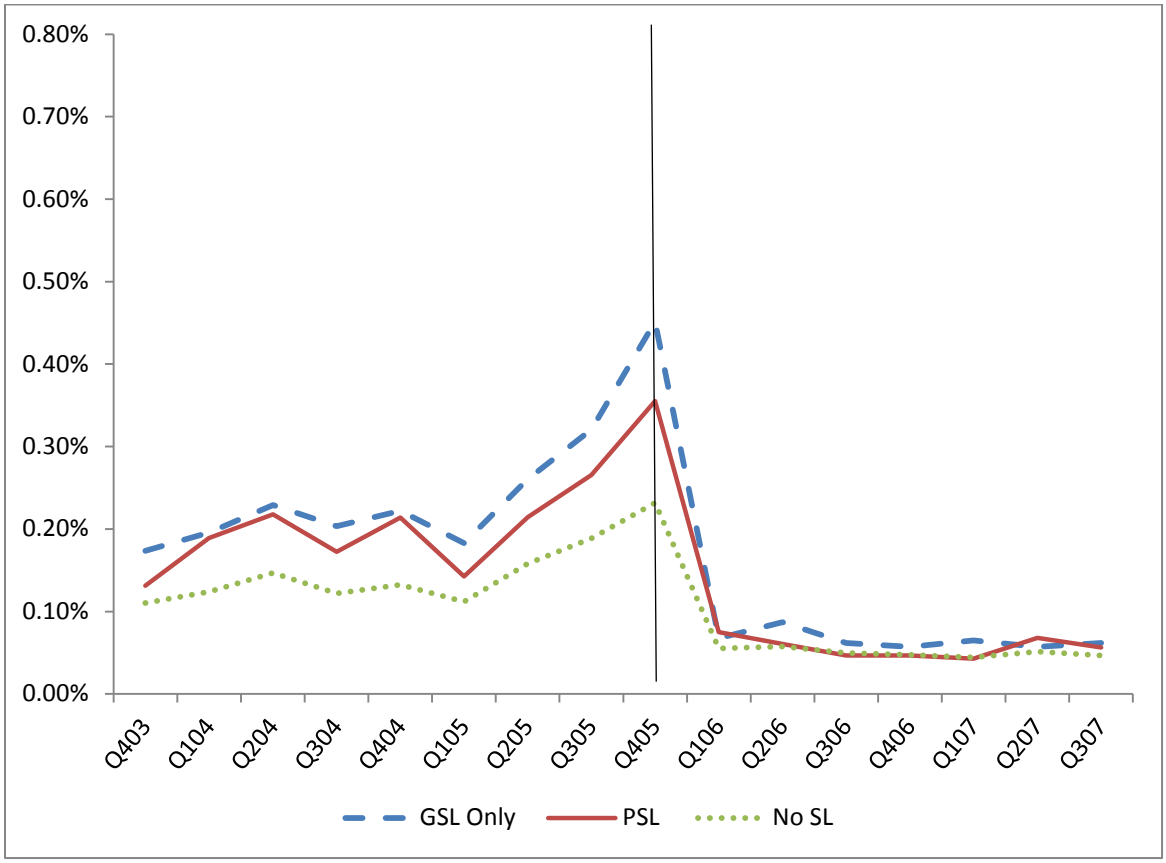
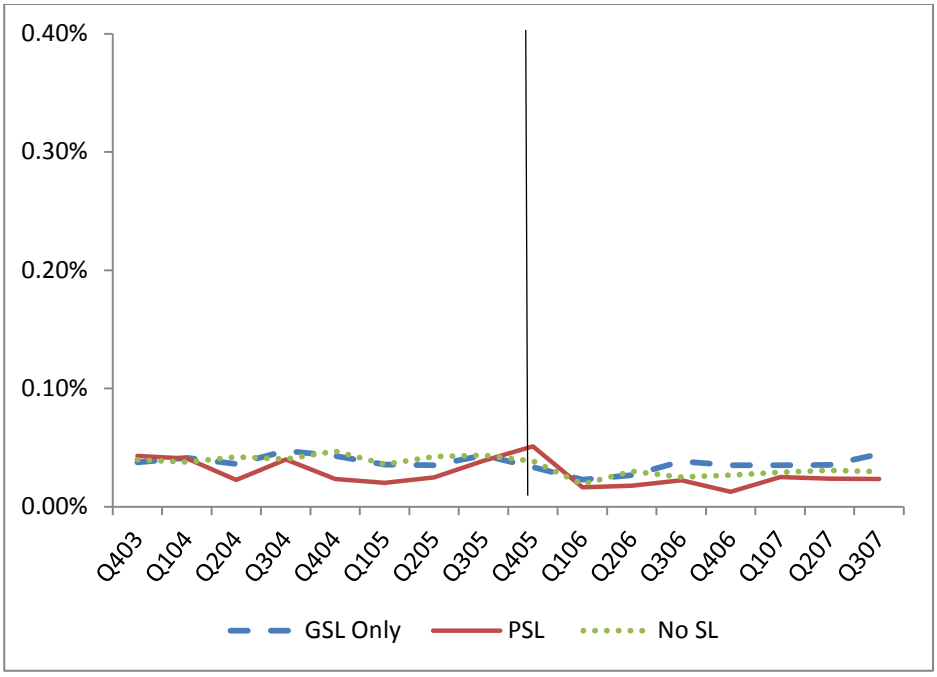


Figure 2: Chapter 7 filing rate, Q4:2003–Q4:2007

Notes: Vertical line is quarter of the BAPCPA enactment. PSL = private student loan holders, GSL = government student loan holders, and No SL = non-student loan borrowers.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax

(a) Chapter 13 Filing Rate



(b) Student Loan 120+ Day Delinquency Rate

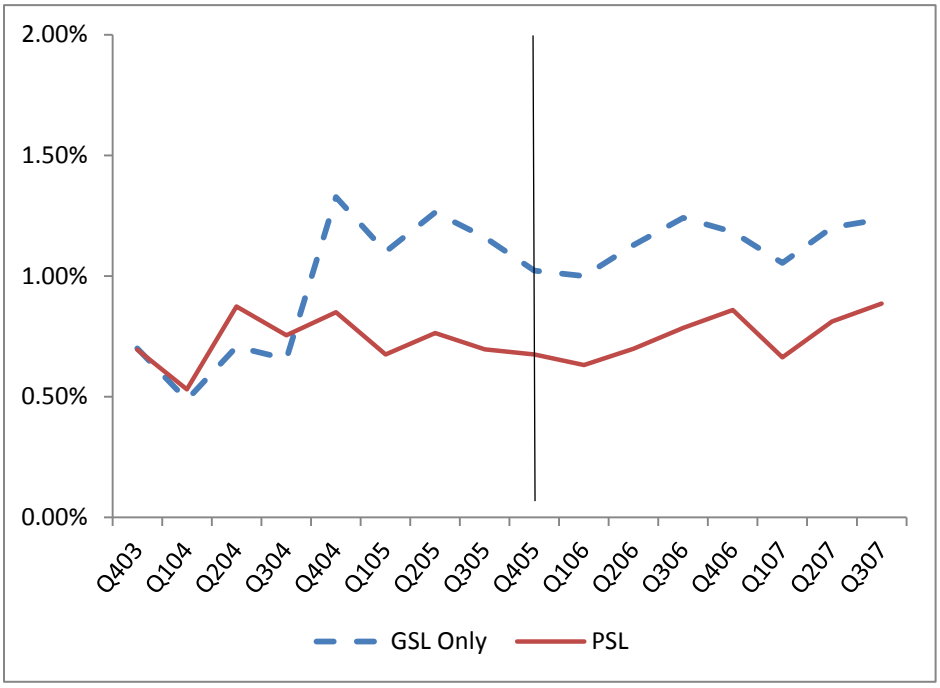
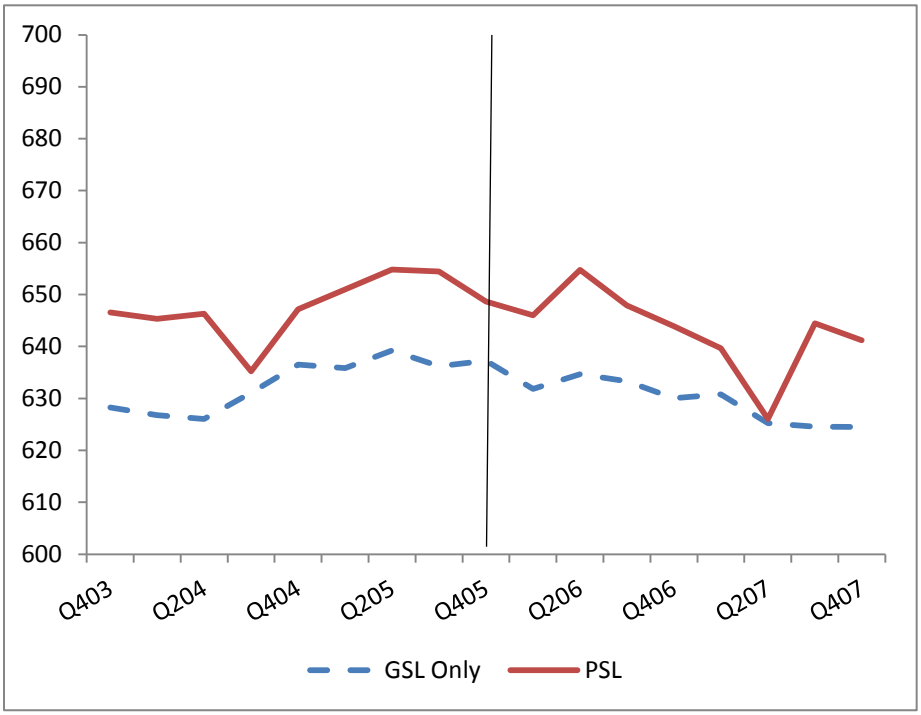


Figure 3: Chapter 13 filing and student loan delinquency rates, Q4:2003–Q4:2007

Notes: Vertical line is quarter of the BAPCPA enactment. PSL = private student loan holders, GSL = government student loan holders, and No SL = non-student loan borrowers.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax

(a) Average Risk Score at Origination (Seasonally Adjusted)



(b) Student Loan Average Balance at Origination (Seasonally Adjusted)

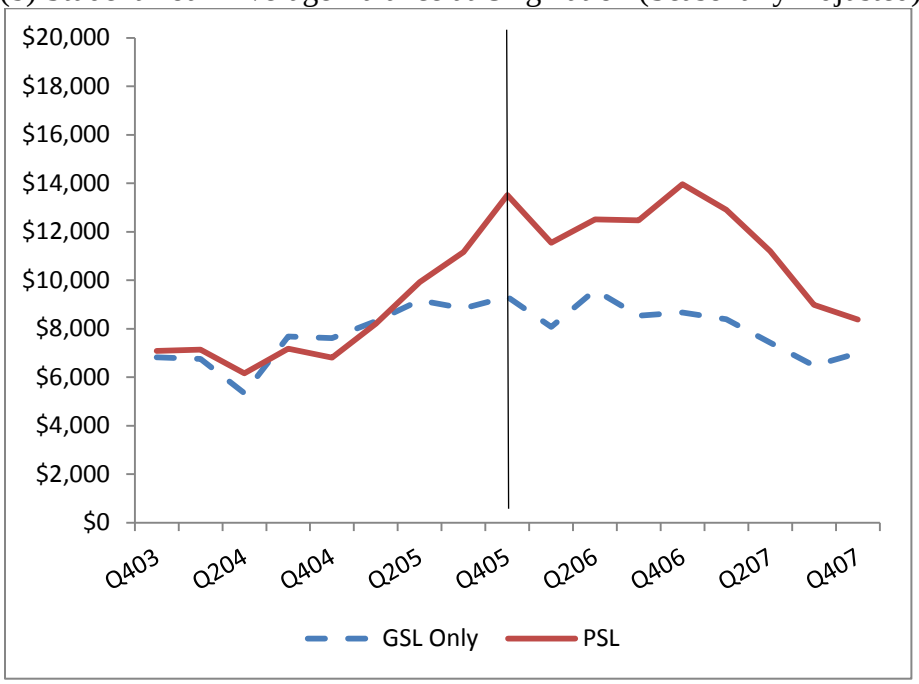
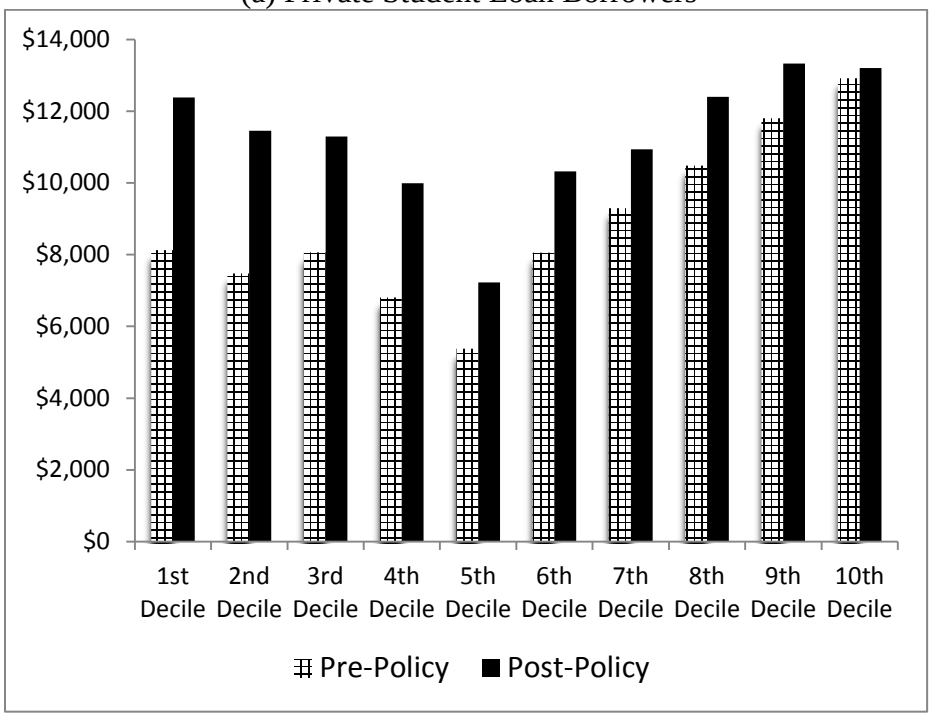


Figure 4: Risk score and loan size at origination, Q4:2003–Q4:2007

Notes: Seasonally adjusted by quarter; sample includes all individuals with a credit bureau record and at least one new student loan originated in a given quarter. Vertical line is quarter of the BAPCPA enactment. PSL = private student loan holders, GSL = government student loan holders.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax

(a) Private Student Loan Borrowers



(b) Government-Only Student Loan Borrowers

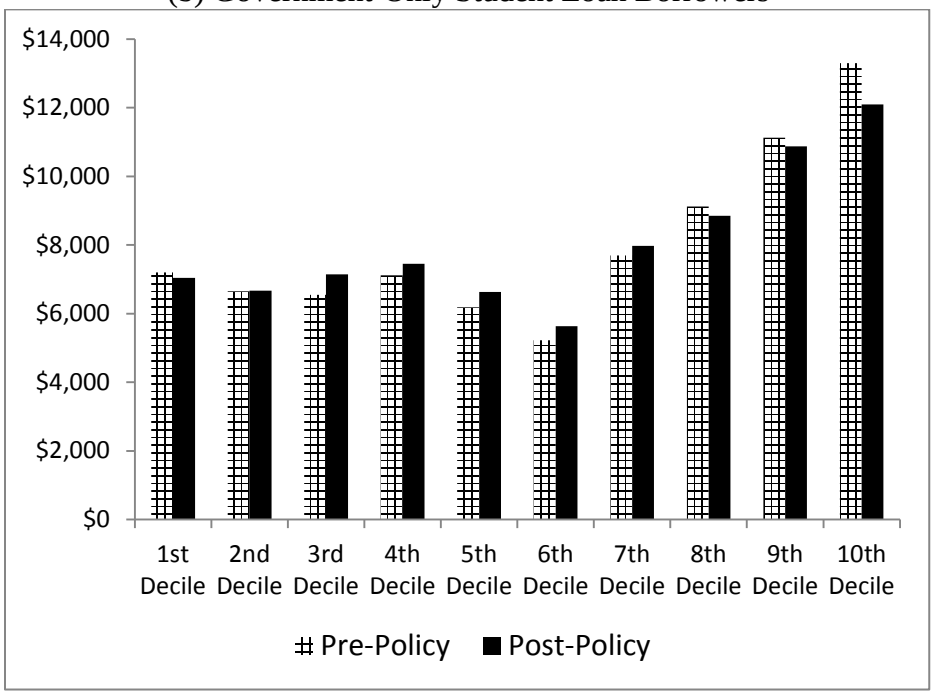


Figure 5: Loan size by credit score decile at origination

Notes: Subsample of individuals with a credit bureau record and at least one new student loan originated in a given quarter.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax

Table 1: Analysis Sample Summary Statistics

	PSL	GSL-Only	No SL
Chapter 7 Filing (%)	0.13	0.15	0.10
	(3.62)	(3.91)	(3.18)
Chapter 13 Filing (%)	0.03	0.04	0.03
	(1.68)	(1.92)	(1.85)
120+ Days Delinquent on a Student Loan (%)	0.76	1.08	na
	(8.67)	(10.34)	na
Risk Score	654	638	703
	(99)	(105)	(103)
Total Tradeline Balance ($)	40,565	33,198	15,966
	(43,385)	(39,930)	(39,113)
Total Student Loan Balance ($)	26,812	19,359	na
	(35,589)	(27,675)	na
Number of Tradelines	7.97	7.57	5.33
	(4.90)	(4.82)	(4.33)
Number of Tradelines 120+ Days Past Due	0.13	0.22	0.04
	(0.72)	(0.91)	(0.27)
Inquiries Within 3 Months	0.68	0.73	0.48
	(1.20)	(1.26)	(1.02)
Age of Newest Account (qtrs.)	9.52	10.97	26.38
	(11.56)	(14.45)	(44.36)
Average Age of Student Loans (qtrs.)	13.88	14.39	na
	(11.57)	(13.47)	na
Individual's Age (years)	33.47	34.48	51.01
	(12.37)	(12.09)	(17.10)
Tract College Educated (%)	35.74	33.84	31.86
	(17.52)	(17.36)	(17.47)
Tract Median Income ($)	47,965	47,668	48,266
	(19,032)	(19,548)	(20,964)
Tract Homeowner (%)	66.66	65.75	69.54
	(22.75)	(23.09)	(20.84)
County Unemployment Rate (%)	4.87	4.84	5.01
	(1.36)	(1.40)	(1.52)
Observations (person-quarters)	955,617	5,327,796	6,555,629

Notes: Standard deviation listed underneath in parentheses. PSL = private student loan holders, GSL = government student loan holders, and No SL = non-student loan borrowers.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax

Table 2: Private Student Loan Borrowers Pre- and Post-Policy

	Pre-Policy	Post-Policy
Chapter 7 Filing Rate (%)	0.21 (4.60)	0.06 (2.43)
Chapter 13 Filing Rate (%)	0.03 (1.83)	0.02 (1.53)
Serious Student Loan Delinquency Rate (%)	0.72 (8.48)	0.79 (8.83)
Average Risk Score for New Student Loans	650 (81)	648 (91)
25^{th} Percentile Risk Score for New Student Loans	607	595
10^{th} Percentile Risk Score for New Student Loans	541	520
Average Student Loan Initial Balance ($)	8734 (15051)	11321 (16466)

Notes: Analysis is at the person-quarter level. Standard deviation of averages listed in parentheses.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax

Table 3: Policy Effect Estimates on Chapter 7 Filings (%), Q4:2003–Q4:2007

	(1)	(2)
PSL	-0.0131	-0.0844***
	(0.0123)	(0.0234)
Post-Policy	-0.1082***	-0.0471***
	(0.0108)	(0.0063)
PSL X Post-Policy	0.0399***	-0.0514
	(0.0155)	(0.0175)
GSL		-0.0709***
		(0.0191)
GSL X Post-Policy		-0.0920***
		(0.0094)
Sample: PSL & GSL	X	
Sample: PSL, GSL & Non-SL		X
Observations	6,283,413	12,839,042

Notes: PSL = private student loan holders, GSL = government student loan holders, and Non-SL = individuals without student loans. Chapter 7 filings are defined as a consumer's Chapter 7 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 using 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 Chapter 13 Filings and SL Delinquency, Q4:2003–Q4:2007

	Chapter 13 Filings (%)		SL Delinquency (%)
	(1)	(2)	(3)
PSL	0.0032	-0.0386***	-0.0220
	(0.0029)	(0.0131)	(0.0253)
Post-Policy	0.0017	-0.0070***	0.0673*
	(0.0050)	(0.0025)	(0.0367)
PSL X Post-Policy	-0.0039	0.0040	-0.0134
	(0.0048)	(0.0049)	(0.0303)
GSL		-0.0430***	
		(0.0133)	
GSL X Post-Policy		0.0080***	
		(0.0028)	
Sample: PSL & GSL	X		X
Sample: PSL, GSL & Non-SL		X	
Observations	6,283,413	12,839,042	6,283,413

Notes: PSL = private student loan holders, GSL = government student loan holders, and Non-SL = individuals without student loans. Chapter 13 filings are defined as a consumer's Chapter 13 bankruptcy flag turning on in a particular quarter. Serious student loan delinquency is defined as having at least one student loan 120 or more days delinquent after having no student loans 120 or more days delinquent in the previous 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 using data from FRBNY Consumer Credit Panel/Equifax
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; standard errors are clustered by state.

Table 5: Policy Effect Estimates on Credit Scores and Balances — New Student Loans, Q4:2003–Q4:2007

	Risk Score at Loan Origination	Initial Student Loan Balance ($)
	(1)	(2)
PSL	7.97***	600
	(1.55)	(389)
Post-Policy	-5.45***	-210*
	(1.19)	(113)
PSL X Post-Policy	1.28	2,044***
	(1.67)	(224)
Observations	504,776	504,776

Notes: PSL = private student loan holders. Both specifications include all individuals who have a new student loan in a particular quarter. Controls in estimates of student loan balances 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). Controls in estimates of risk score include quarter-year, state, student loan cohort (separately, year and quarter), and contemporaneous county unemployment rate and census tract characteristics.

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

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

Table 6: Policy Effect Estimates — Pre-2004 Student Loan Borrowers

	Chapter 7 Filing (%)		Chapter 13 Filing (%)		SL Delinquency (%)
	(1)	(2)	(3)	(4)	(5)
PSL	-0.0125	-0.0806***	0.0043	-0.0242**	-0.0836**
	(0.0106)	(0.0258)	(0.0040)	(0.0115)	(0.0377)
Post-Policy	-0.0940***	-0.0421***	0.0046	-0.0049*	-0.3689***
	(0.0110)	(0.0063)	(0.0061)	(0.0026)	(0.0435)
PSL X Post-Policy	0.0430**	-0.0615***	-0.0087	-0.0017	-0.0221
	(0.0178)	(0.0212)	(0.0086)	(0.0090)	(0.0573)
GSL Only		-0.0668***		-0.0308***	
		(0.0204)		(0.0119)	
GSL X Post-Policy		-0.1129***		0.0067*	
		(0.0100)		(0.0037)	
Sample: PSL & GSL	X		X		X
Sample: PSL, GSL & Non-SL		X		X	
Observations	3,123,726	9,679,355	3,123,726	9,679,355	3,123,726

Notes: PSL = private student loan holders, GSL = government student loan holders, and Non-SL = individuals without 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. Serious student loan delinquency is defined as having at least one student loan 120 or more days delinquent after having no student loans 120 or more days delinquent in the previous 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 using data from FRBNY Consumer Credit Panel/Equifax
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; standard errors are clustered by state.

Table 7: Policy Effect Estimates — Alternative Time Periods

	Chapter 7 Filing (%)		Chapter 13 Filing (%)		SL Delinquency (%)	Risk Score	Student Loan Balance ($)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Q4:2004-Q4:2006							
PSL	-0.0163	-0.1229***	-0.0023	-0.0548***	-0.1971***	7.77***	804
	(0.0165)	(0.0324)	(0.0037)	(0.0167)	(0.0270)	(1.73)	(462)
Post-Policy	-0.1013***	-0.0251***	-0.0077*	-0.0160***	-0.0080	-4.11***	-353***
	(0.0097)	(0.0083)	(0.0044)	(0.0032)	(0.0362)	(0.98)	(111)
PSL X Post-Policy	0.0447**	-0.0683***	-0.0057	0.0025	0.1557***	1.92	2,087***
	(0.0211)	(0.0234)	(0.0053)	(0.0064)	(0.0361)	(1.50)	(308)
GSL Only		-0.1077***		-0.0580***			
		(0.0317)		(0.0157)			
GSL X Post-Policy		-0.1124***		0.0082			
		(0.0103)		(0.0033)			
Observations	3,486,582	6,948,510	3,486,582	6,948,510	3,486,582	276,794	276,794
B. Excluding Q4:2005							
PSL	-0.0095	-0.0936***	-0.0004	-0.0353***	-0.0139	8.27***	190
	(0.0114)	(0.0228)	(0.0032)	(0.0119)	(0.0259)	(1.62)	(322)
Post-Policy	-0.1132***	-0.0554***	-0.0002	-0.0067***	0.0557	-5.48***	-228**
	(0.0099)	(0.0061)	(0.0051)	(0.0025)	(0.0378)	(1.20)	(113)
PSL X Post-Policy	0.0316**	-0.0412***	-0.0002	-0.0053	-0.0214	0.97	2,465***
	(0.0138)	(0.0147)	(0.0054)	(0.0053)	(0.0314)	(1.67)	(223)
GSL Only		-0.0862***		-0.0363***			
		(0.0193)		(0.0123)			
GSL X Post-Policy		-0.0722***		0.0059**			
		(0.0081)		(0.0027)			
Observations	5,903,099	12,073,569	5,903,099	12,073,569	5,903,099	473,535	473,535
Sample: PSL & GSL	X		X		X	X	X
Sample: PSL, GSL & Non-SL		X		X			

Notes: PSL = private student loan holders, GSL = government student loan holders, and Non-SL = individuals without student loans. Risk score and loan balance are at origination. 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. Serious student loan delinquency is defined as having at least one student loan 120 or more days delinquent after having no student loans 120 or more days delinquent in the previous quarter. Specifications (1)-(5) include all individuals, whereas specifications (6)-(7) include only individuals who have a new student loan in a particular quarter. Controls in estimates other than risk score 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). Controls in estimates of risk score include quarter-year, state, student loan cohort (separately, year and quarter) and county unemployment rate and census tract characteristics.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; standard errors are clustered by state.

Table 8: Policy Effect Estimates — Considering Cosigned Loans

	Chapter 7 Filing (%)	Chapter 13 Filing (%)	SL Delinquency (%)
	(1)	(2)	(3)
A. With cosigned loan control			
PSL	-0.0131	0.0032	-0.0232
	(0.0124)	(0.0029)	(0.0252)
Post-Policy	-0.1082***	0.0017	0.0676*
	(0.0107)	(0.0051)	(0.0368)
PSL X Post-Policy	0.0399***	-0.0039	-0.0136
	(0.0155)	(0.0048)	(0.0304)
Cosigned Student Loan	0.0006	0.0002	0.0130
	(0.0049)	(0.0022)	(0.0108)
Observations	6,283,413	6,283,413	6,283,413
B. Excluding cosigned loans			
PSL	-0.0076	0.0041	0.0059
	(0.0145)	(0.0032)	(0.0311)
Post-Policy	-0.1185***	0.0029	0.0427
	(0.0124)	(0.0057)	(0.0409)
PSL X Post-Policy	0.0351*	-0.0037	-0.0928***
	(0.0182)	(0.0055)	(0.0342)
Observations	5,290,662	5,290,662	5,290,662

Notes: PSL = private student loan holders, GSL = government student loan holders, and Non-SL = individuals without 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. Serious student loan delinquency is defined as having at least one student loan 120 or more days delinquent after having no student loans 120 or more days delinquent in the previous quarter. Specifications (1)-(5) include all individuals, whereas specifications (6)-(7) include only individuals who have a new student loan in a particular quarter. Controls in estimates other than risk score 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). Controls in estimates of risk score include quarter-year, state, student loan cohort (separately, year and quarter) and county unemployment rate and census tract characteristics.
Source: Authors' calculations using data from FRBNY Consumer Credit Panel/Equifax
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$; standard errors are clustered by state.

Appendix Table 1: Full Output of Selected Estimates

	Chapter 7 (%)	Chapter 13 (%)	SL Delinquency (%)
Intercept	1.373***	0.317***	8.415***
PSL	-0.013	0.003	-0.022
Post-Policy	-0.108***	0.002	0.067*
PSL X Post-Policy	0.040***	-0.004	-0.013
Risk Score	-0.002***	-0.001***	-0.013***
Total Student Loan Balance	0.000***	0.000	0.000***
Total Tradeline Balance	0.000***	0.000	0.000**
# of Tradelines	0.016***	0.001**	-0.021***
# of Tradelines 120+ Days Past Due	0.023***	0.002	N/A
Mortgage Loan	0.046***	0.062***	0.248***
Auto Loan	0.029**	0.021***	-0.035***
Home Equity Loan	0.013**	0.012***	0.143***
Inquiries = 1	0.015***	0.002	-0.066***
Inquiries = 2	0.013	0.014***	-0.147***
Inquiries ≥ 3	0.002	0.037***	-0.257***
Inquiries Missing	-0.008	-0.004	0.181*
4 <= New Acct. Age <= 12 (Months)	0.075***	0.018***	0.192***
13 <= New Acct. Age <= 36 (Months)	0.129***	0.025***	0.585***
37 <= New Acct. Age <= 72 (Months)	0.040***	-0.003	-0.139***
New Acct. Age > 72 (Months)	-0.029*	0.006	-0.429***
3 <= New SL Age <= 4 (Quarters)	-0.017***	-0.007***	0.894***
5 <= New SL Age <= 12 (Quarters)	-0.036***	-0.012***	0.958***
13 <= New SL Age <= 24 (Quarters)	-0.065***	-0.010*	0.381***
New SL Age > 24 (Quarters)	-0.124***	-0.021**	0.128
26 <= Debtor Age <= 35	0.094***	0.012***	-0.178***
36 <= Debtor Age <= 45	0.108***	0.036***	-0.211***
46 <= Debtor Age <= 55	0.094***	0.030***	-0.012
56 <= Debtor Age <= 65	0.102***	0.036***	0.035
Debtor Age: > 65 Years	0.136***	0.044***	0.263***
Debtor Age: Missing	0.028***	0.015***	-0.121***
% College Educated	0.000	0.000***	-0.004***
% Minority	-0.001***	0.000**	0.002***
Median Income	0.000	0.000	0.000***
% Homeowners	-0.011	0.028**	-0.072
Unemployment Rate	0.002	0.002*	-0.007
Mean Dependent Variable	0.150	0.036	1.031
Observations	6,283,413	6,283,413	6,283,413

Notes: PSL = private student loan holders. 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. Serious student loan delinquency is defined as having at least one student loan 120 or more days delinquent after having no student loans 120 or more days delinquent in the previous quarter. Coefficients on time, state, and cohort indicators not displayed. All independent variables are one-quarter lags, with the exception of student loan dummies and census controls. Reference groups are Inquiries = 0; 0 ≤ New Acct. Age ≤ 3; 0 ≤ New SL Age ≤ 2; 18 ≤ Debtor Age ≤ 25.

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

* p < 0.10, ** p < 0.05, *** p < 0.01; standard errors are clustered by state.