Private Student Loans and BAPCPA: Did Four-Year Undergraduates Benefit from the Increased Collectability of Student Loans?

Xiaoling Ang and Dalié Jiménez*

* RESULTS ARE PRELIMINARY AND SUBJECT TO REVISION *

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Since 1976, Congress has progressively amended the bankruptcy laws to treat various kinds of student loans differently from other unsecured debt. Until recently, this differing treatment was restricted to loans insured or originated by federal or state agencies, or by nonprofit institutions. In 2005, student loans originated by private companies—loans that were risk-priced at origination and not backed by the government—were added to the list of educational loans that are presumptively nondischargeable in bankruptcy. This means that unlike personal loans, credit card debt, or virtually any other type of unsecured debt, a debtor needs to prove to a bankruptcy court in a special proceeding that continuing to repay her student loans after bankruptcy would impose an "undue hardship" on her or her dependents. Originally the exception for student loans was justified in terms of preventing fraud and protecting the public fisc and the federal student loan program; neither justification applies to the provision of loans by the private market. The proffered rationale for the latest change was to ensure availability of loans originated by the private market ("private student loans") to students. Until now, there has been little to no evidence of the effects of this change.

We develop and test a theoretical model for the plausible effects of the law change on private student loans granted to students at four-year undergraduate institutions. Using a unique dataset of private student loan originations before and after the 2005 bankruptcy law change, we test that model and its resulting hypotheses using OLS, Oaxaca-Blinder, and matching methods. We find that the overall cost of private student loans at four year undergraduate institutions increased an average of 3.5 basis points as a result of the law change. We also find that the credit score composition of borrowers post-law change skewed towards the lower end of the credit score spectrum but the average borrower credit score only decreased slightly in practical terms. Finally, the volume of loans originated also increased three-fold in the post period, the majority of which is attributable to the law change.

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* Xiaoling Ang is an economist in the Office of Research at the Consumer Financial Protection Bureau. She can be contacted at xiaoling.ang@cfpb.gov. Dalié Jiménez is Associate Professor of Law and Jeremy Bentham Scholar at the University of Connecticut School of Law. She can be reached at dalie.jimenez@law.uconn.edu. Special thanks to Javier Galindo for his excellent research assistance and to CFPB brown bag participants for their comments. The views expressed are those of the authors and do not necessarily reflect those of the Consumer Financial Protection Bureau or the United States.

Two of the fundamental policies behind the bankruptcy laws are the equality of treatment of creditors in bankruptcy and the fresh start for the debtor.[1] The first policy prescribes that similarly situated creditors not receive an advantage over others—sometimes termed "equity is equality"—for our purposes, unsecured creditors are all asked to share the loss equally. The second policy prescribes that the debtor should exit bankruptcy unshackled from the debts that were weighing down her economic productivity, or in bankruptcy parlance, that the debtor receive a "fresh start," or a discharge of her debts.

Neither of these policies have ever been absolute—tax debts and debts obtained by fraud, for example, have both received priority over other unsecured creditors and been nondischargeable even as far back as the Bankruptcy Act of 1898.[2] Nonetheless, most of the nineteen "rifle-shot" exceptions to discharge as they are sometimes called, have become exceptions to the bankruptcy discharge—that is, shackles remaining on the debtor after bankruptcy—for strong policy reasons.[3]

This Article deals with the effect of the latest amendment to the student loan exception to discharge. First added in 1976, the special exception for student loans has been amended multiple times since then. The latest change occurred in 2005, when the Bankruptcy Abuse and Prevention Consumer Protection Act (BAPCPA) for the first time added privately-originated student loans to the list of exceptions to discharge. Private student loans (PSLs), that is, loans originated by the private market and not backed by any federal or state institution, are significantly different from other educational loans. Unlike other types of educational loans which were presumptively nondischargeable before the 2005 change, PSLs are originated by for-profit institutions—primarily but not exclusively banks—are not insured against default, and are only available to creditworthy individuals. In addition, unlike other educational loans protected in bankruptcy before 2005, PSLs are risk-priced at

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[1] *See, e.g.*, Rafael I. Pardo and Michelle R. Lacey, *Undue Hardship in the Bankruptcy Courts: An Empirical Assessment of the Discharge of Educational Debt*, 74 UNIV. OF CIN. L. REV. 405, 413-419 (2005); National Bankruptcy Review Commission, BANKRUPTCY: THE NEXT TWENTY YEARS 179, *Chapter 1 – Consumer Bankruptcy: Discharge, Exceptions to Discharge, and Objections to Discharge*, Oct. 20, 1997 http://govinfo.library.unt.edu/nbrc/report/07consum.pdf.

[2] An Act to establish a uniform system of bankruptcy in the United States, 30 Stat. 544 Section 17 (July 1, 1898).

[3] For example, there is an exception to the discharge of domestic support obligations. 11 U.S.C. §§ 523(a)(5), (a)(15). Speakers on the House and Senate floor stated that the "measure w[ould] provide new protections for parents and w[ould] strengthen their ability to collect child support," 108 Cong. Rec. H156 (2004) (statement of Rep. Cantor), and would "also provide[ ] tremendous benefits for women and children." 109 Cong. Rec. S1915 (2005) (statement of Sen. Sessions). Exceptions to discharge have also been added for various kinds of fraud or false representations or violations of the law, §§ 523(a)(2), (a)(4), (a)(6), (a)(9), (a)(11), (a)(12), (a)(13), (a)(19). Many are also concerned with excepting taxes or duties owed to a state or federal entity. *See, e.g.*, §§ 523(a)(1), (a)(7), (a)(11), (a)(12), (a)(14), (a)(14A), (a)(17), (a)(18), (a)(19).

origination, typically involve variable interest rates, and do not typically include any protections for delinquent borrowers.[4] In 2011, initial variable PSL interest rates varied between 2.98% and 19% for the riskiest borrowers.[5] By comparison, federal student loan rates in 2011 were either 4.5% or 6.8% fixed depending on the type of loan.[6]

Using a unique dataset of private student loan originations in 2005 and 2006, we attempt to discern the effect of the law change on the pricing and availability of private student loans. Part I of this Article provides context by detailing the changes to the bankruptcy laws excepting various forms of educational loans from discharge. Part II highlights the differences between privately-originated student loans and other student loans and proposes a hypothesis of what one would expect would happen to pricing and originations of private student loans after the law changed. Part III details the dataset used and the empirical methodology. Part IV presents our results and Part V concludes with a discussion of implications and next steps.

I. Background

In this Part, we provide background on PSLs, the history of the special treatment of student loans in bankruptcy, the effect that this special treatment has when a person files bankruptcy, and the empirical studies that have been conducted so far in this area.

A. Features of PSLs

Federal aid makes up by far the largest source of financial support for postsecondary students.[7] By comparison, PSLs are a drop in the bucket of educational aid. In January 2012, PSLs made up "less than 15% of total student debt outstanding."[8] This makes sense as PSLs were "originally designed to supplement federal loans and grants" as the cost of tuition and fees for postsecondary education kept rising.[9] However, a student need not exhaust her federal loan opportunities

[4] [discuss protections afforded by Stafford loans]
[5] Consumer Financial Protection Bureau, Private Student Loan Report, at 12.
[6] 4.5% fixed rate was available for undergraduate students taking out a subsidized Stafford loan; 6.8% was available for undergraduate unsubsidized Stafford loans and for graduate student subsidized and unsubsidized Stafford loans. FinAid, Historical Interest Rates, http://www.finaid.org/loans/historicalrates.phtml. The federal loan program has had multiple instances where loans were offered as variable rates but has always had a cap of 8.25% APR for Stafford loans and 9% for PLUS loans. *Id*.
[7] *Id*.
[8] CFPB PSLs Report, *supra* n. X at 9.
[9] *Id*.

before taking out PSLs. In fact, the CFPB found that "more than 54% of PSL borrowers do not exhaust their Stafford loan eligibility, or do not even apply for federal aid."[10]

PSLs share few features with Stafford loans. Like Stafford loans, most PSLs do not require the borrower to make payments while she attends school.[11] Any interest that accrues during school is capitalized (as it is for unsubsidized Stafford loans), and payments do not come due until six months after graduation. That is where the similarities end.

The main differences between PSLs and federally funded student loans are in the pricing and the protections for delinquent borrowers. As detailed above, Stafford loans have virtually no eligibility criteria, which means that any US citizen enrolled in a qualifying educational program is entitled to obtain Stafford loans, regardless of income or credit. In contrast, PSLs are only granted to credit-worthy individuals and are priced according to the lender's perception of risk for lending to that individual. Perhaps because Stafford loans are not priced ex-ante, the federal program has a number of protections for delinquent borrowers ex-post. These include the ability for borrowers to enter into income contingent repayment plans, temporarily suspend payments for up to two years, and extend the term of the loan for up to 30 years.[12] None of these features are found in PSLs.

Since the majority of undergraduate students do not have a significant credit history, most PSLs require students to secure a co-signer who will be responsible for the loan if the student does not repay. In fact, 90% of all PSLs required a co-signer in 2011, even if the student had a good credit history or was attending graduate school.[13] In addition, while federal loans have a fixed rate, most PSLs are variable-rate loans, fixed to LIBOR or some other index.[14] This means that students are offered a loan at an "index-plus" variable interest rate. That "plus" is presumed to be closely related to the risk-of-loss that the lender places on that borrower; in this paper we call that "plus" the "margin." All things being equal, a borrower with a higher credit score should receive a loan with a smaller margin than a borrower with a lower credit score.

Finally, another key difference between PSLs and federal loans is that private loans can be and have been sold in the securitization market. The securitization market

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[10] *Id*. at 10.
[11] *Id*.
[12] [cite, discuss more]
[13] [cite cfpb report, others]
[14] See Appendix Figure 1 for a graphical representation of the various indices used to calculate PSL interest rates from 2004-2012. CFPB PSLs Report, *supra* n. X at 96.

provided a ready source of capital to the PSL market between 2005 and the third quarter of 2007. According to the CFPB, a "large portion of student loan volume during [this time] was funded by asset backed securities ("ABS")."[15]

There is one place where we simply do not have enough information to say whether PSLs behave similarly to or differently from federal student loans: default rates. It is impossible to compare the default rate of federal loans versus PSLs due to differences in the methodology of calculating those rates. The Department of Education (DoE) also does not report how many individuals with federal student loans have filed for bankruptcy. The DoE publishes "cumulative lifetime default rates" for loans that enter repayment during a fiscal year and have defaulted through the end of the fiscal year. As an example, for the cohort that graduated or left school in 2006 that had Federal student loans, the Department of Education estimates that 9.2% will default over their lifetime.[16] In contrast, what we can say about PSL default rates is tied to origination years (also called "vintages") or to all loans outstanding at the end of a year. The best attempt at comparison we can make is to note that for all student loans that had been originated and were outstanding at the end of 2006 (even if they were in deferment because the student was in school), over 11% were at least 30 days late as of that year.[17] It is important to note that only 0.002% of all outstanding loans at the end of 2006 were involved in a bankruptcy.[18]

B. A Tortuous History: the Student Loan Exception to Discharge

The history of the student loan exception to discharge begins with loans conferred by the federal government. Consequently, we describe here both a brief history of the federal government's involvement in educational loans as well as changes to the bankruptcy laws pertaining to student loans. The exception to discharge for student loans is almost as old as the federal student loan program itself. While Congress first granted student loans in 1958, these loans applied to a limited set of students—primarily those studying science, mathematics, engineering, or a "modern foreign language" and to students who wanted to teach in an elementary or secondary school after graduation.[19] It was not until the Higher Education Act (HEA) of 1965 that Congress established the Guaranteed Student Loan Program (now the Stafford

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[15] CFPB Rpt at 17-18. For an explanation of asset-backed securitization, see CFPB Report at 104.
[16] Department of Education, Default Rates: Cohort Default Rates 2005-09, http://ifap.ed.gov/eannouncements/010512DefaultRates20052009.html.
[17] CFPB Rept at 64. Calculations done by computing from Table 15. (Total outstanding loans – Current – Deferment) / (Total outstanding loans).
[18] CFPB Rept at 64.
[19] National Defense Education Act, P.L. 85-864; 72 Stat. 1580 § 204.

Loan program) which applied regardless of educational program.[20] From 1965 until 1978 the HEA restricted eligibility for federally subsidized student loans to students whose family income was below $15,000.[21]

It was during this period that Congress first restricted the dischargeability of federal student loans in bankruptcy. Before 1976, all types of student loans were treated the same as most other unsecured obligations in bankruptcy. That is, same as other installment loans or credit card debt, a consumer could file for protection under the Bankruptcy Act and obtain a discharge of all of her student loans upon meeting the requirements of the Act.[22]

The Higher Education Amendments of 1976 marked the first time that student loans received a different treatment from other types of consumer debt.[23] The amendments imposed a five-year moratorium on discharging loans "insured or guaranteed" by the federal government for educational purposes.[24] That is, student loans insured or guaranteed by the federal government that had become due less than five years before the bankruptcy filing could not be discharged. The only exception provided to this was "if the court . . . determines that payment from future income of other wealth will impose an undue hardship on the debtor or his dependents."[25]

Congress did not elaborate on what "undue hardship" meant. The only mentions on the congressional record that discuss the phrase are from opponents of the amendments who call it "vague" and who argue that the provision itself "may create an undue hardship for good faith bankrupts" because "the standard is a very hard one. It will be very difficult to meet. Worse, it will be variously interpreted by

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[20] Pub. L. No. 89-329, 79 Stat. 1219 (Nov. 8, 1965), Robert B. Archibald, REDESIGNING THE FINANCIAL AID SYSTEM: WHY COLLEGES AND UNIVERSITIES SHOULD SWITCH ROLES WITH THE FEDERAL GOVERNMENT 33-34, 40 (2002).

[21] *Id*. $15,000 in 1978 represents roughly $52,000 in 2012. The loans were actually provided by private institutions, but the interest was subsidized by the federal government while in school, the government paid the private institutions for the interest between 5% and the market rate, and the government also insured the loans against default. *Id*.

[22] Requirements which included, *inter alia*, that the loans were not obtained by fraud.

[23] *See* H.R. Rep. No. 95-595, at 132 (1977), reprinted in 1978 U.S.C.C.A.N. 5963, 6094 (section 439A, effective September 30, 1977).

[24] It did so by adding section 439A to the Higher Education Act, codified at 20 U.S.C. 1087-3 (1976). That section was repealed by Pub.L. 95-598, Title III, § 317, Nov. 6, 1978, 92 Stat. 2678, eff. Nov. 6, 1978 and moved to the Bankruptcy Code at 11 U.S.C. 523(a)(8) (1978). At least one member of Congress discussed wanting to introduce an amendment to except "any loan designated for an educational purpose." Allen E. Ertel, H.R. Rep. No. 95-595, at 132 (1977), reprinted in 1978 U.S.C.C.A.N. 5963, 6425 (section 439A, effective September 30, 1977).

[25] 20 U.S.C. 1078-3 (1978); Higher Education Amendments of 1976, P. L. 94-482 § 439 (Oct. 12, 1976).

different judges around the country and even in the same judicial district."[26] The nondischargeability provision has changed a number of times over the years, but the opacity the undue hardship requirement has remained and there has been no further Congressional clarification of its meaning.[27]

Mechanically, the "undue hardship" requirement which has been in place from 1976 until today means that educational loans are presumptively non-dischargeable. A consumer seeking bankruptcy protection and wanting to discharge their student loans must file a special adversary proceeding (AP) within the bankruptcy proceeding. In a sense, the consumer must request a "mini-trial" where they must convince the court by a preponderance of the evidence that they meet the undue hardship standard. A consumer is not required to hire an attorney to litigate the AP,[28] but if they wish to do so, they will almost certainly have to pay the attorney separately from the payment for filing the bankruptcy case and typically on an hourly basis. Part B below describes how this standard has been interpreted by the courts.

The primary concern expressed by those pushing for this amendment in 1976 was that students were using bankruptcy opportunistically to wipe out their student debt soon after graduating and on the eve of a "lucrative career."[29] Supporters of the exception to discharge cited specific instances where individuals seemed to have been doing just that.[30] For example, a letter to the committee from the Vermont Student Assistance Corporation detailed the story of a student who filed for bankruptcy within one month of graduating from community college and discharged $1,957.85, $1,500 of which was student loan indebtedness, even though the student loans had not even yet come due.[31] Representative Erlenborn alluded to a "wide variety of articles" describing instances of this opportunistic filing and focused in particular on "instances where students just out of law school have filed

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[26] Testimony of Don Edwards. H.R. Rep. No. 95-595, at 154-55 (1977), reprinted in 1978 U.S.C.C.A.N. 5963, 6115-6116 (section 439A, effective September 30, 1977). Representative Edwards advised that "[i]f the exception to discharge is to be enacted, we must provide for a more definite standard that will not encourage forum shopping." *Id*. That unfortunately, did not happen.

[27] For an empirical account of undue hardship determinations made by bankruptcy courts arguing that the legal outcomes in the determination of undue hardship can be best explained by "differing judicial perceptions of how the same standard applies to similarly situated debtors," see Pardo & Lacey, *supra* n. X.

[28] In fact, there is evidence that consumers who file APs succeed even without an attorney. *See* Iuliano [cite page]. However, this study was only looking at the less than 1% of individuals who do file APs seeking to discharge student loans, and those individuals seemed to be in very bad financial and medical shape. *See* Iuliano [cite page]. It is not clear that the same results would hold if more debtors sought a discharge of their student loan debt.

[29] Pardo & Lacey, *supra* n. X at 427; *see id.* at n. 112, and 113 for citations to illustrative cases.

[30] H.R. Rep. No. 95-595, at 132 (1977), reprinted in 1978 U.S.C.C.A.N. 5963, 6120.

[31] *Id*.

bankruptcy."[32] Another concern expressed by some supporters of the amendment was that bankruptcy discharges of student loans threatened to destroy the federal student loan program itself.[33] Opponents of the amendment cited the extremely low portion of defaulted loans that involved bankruptcy filings, but to no avail.

The amendment passed but nonetheless it was decided to push the effective date until September 30, 1977 in order to give the Judiciary Committee an opportunity to review a study that the Government Accountability Office (GAO) was asked to undertake to develop more data concerning educational loans and bankruptcy.[34] The Judiciary Committee was at the time undertaking a revision of the bankruptcy laws, a revision that eventually became the current Bankruptcy Code, with the Bankruptcy Reform Act of 1978. The idea in postponing the effectiveness of the amendment was presumably to learn whether the anecdotes alluded to in the discussion of the amendments bore out in the data.

The GAO study revealed that these anecdotes were the exception rather than the rule. Despite a general default rate on educational loans of 18%, less than 0.75% of all education loans were discharged in bankruptcy.[35] The GAO reported that for fiscal years 1972 through 1976, the cumulative loss rate based on matured loans was 17.6% for the federally insured loans and 8.9% for the guarantee agency loans.[36] Bankruptcies accounted for 4.5% and 3.4% respectively of total losses.[37]

It also seemed that the majority of students were not filing for bankruptcy immediately upon graduation. The average time between when a student obtained a loan and when they filed for bankruptcy in the GAO sample was 41 months.[38] In addition, lucrative careers were not significantly represented among those who sought to discharge their student loans. While seventy-two percent of the individuals who discharged student loans in the GAO sample were employed, the top occupations were: teacher (10%), clerk (8%), salesman (6%), housewife (5%), student (4.5%).[39] The individuals seeking the protection of the bankruptcy laws were not particularly well off. The average earnings for the individuals studied for

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[32] *Id*. at 6117-6118.
[33] [cite to Ertel on the USCANN record]
[34] Pardo & Lacey, *supra* n. X at 422; Letter from Acting Comptroller of the United States to the Honorable Don Edwards, Chairman, Subcommittee on Civil and Constitutional Rights, Committee on the Judiciary, House of Representatives (April 15, 1977), available at http://archive.gao.gov/f1102a/101903.pdf.
[35] H.R. Rep. No. 95-595, at 132 (1977), reprinted in 1978 U.S.C.C.A.N. 5963, 6094.
[36] *Id.* at 6096.
[37] *Id*.
[38] *Id.* at 6103-04.
[39] [pin cite]

the year prior to filing for bankruptcy were $5,361 in 1977 dollars ($20,787.42 today).[40]

Before the effective date of the amendments, the House considered whether they should be repealed in light of the GAO findings.[41] There was strong support for repealing the amendments by members of Congress as well as by the American Bankers Association (ABA) and the Consumer Bankers Association (CBA).[42] Walter W. Vaughn of the ABA supported the repeal of the amendments believing that the five year delay was "contrary to the Bankruptcy Act policy of providing the bankrupt with a fresh start and we suspect that the damage done to the many 'poor but honest debtors' will far exceed any possible benefit."[43] The ABA was skeptical that the "hardship" exception would be "meaningful due to its vagueness" and believed that the "privileged treatment" afforded to government agencies and educational institutions was not warranted.[44] In the view of the ABA, the proposed change "simply suggests that if sufficient political pressure can be generated, a special interest group can obtain special treatment under the bankruptcy law."[45]

The chairman of the subcommittee on Postsecondary Education, Representative William D. Ford, stated on the Congressional record that he had seen no evidence of the need for such a "discriminatory" remedy as treating student loans differently than other debts.[46] He also stated that he did "not believe that bankruptcies involving student loans are increasing at such a rate as to require a provision this drastic, nor am I convinced that young debtors are declaring bankruptcy for the main purpose of 'ripping off' the government by not paying back their student loans."[47]

Nevertheless, the amendments to the Bankruptcy Act remained law and became effective in 1977. Proponents of the amendments stated that to remove them would mean that the bankruptcy laws would then be "almost specifically designed to

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[40] *Id.* at 6105.
[41] [cite]
[42] [cite]
[43] *Id.* at 6111.
[44] *Id*.
[45] *Id*.
[46] H.R. Rep. No. 95-595, at 132 (1977), reprinted in 1978 U.S.C.C.A.N. 5963, 6121. He added "When the Guaranteed Student Loan program was established, Congress determined that it was in the public interest to support postsecondary education and to underwrite these loans. If, in fact, the underlying premise of this social program no longer enjoys the support of Congress, then the program should be re-evaluated. But as long as the program retains Congressional support and Congress is willing to underwrite the loans, section 439A of the Higher Education Act is inappropriate and should be repealed."
[47] *Id*.

encourage fraud."[48] They also stated that there was a basis for separating educational loans from other type of debt because "the lack of collateral necessary for the educational loan is an indicator that educational loans do differ substantially from other forms of debt [and that] these bankruptcies could easily destroy the federal student loan programs, a harm that would be at least as great as the fraud-type problem."[49]

After the 1976 amendments became effective, Congress passed the Middle-Income Student Assistance Act of 1978, for the first time making all students eligible for subsidized student loans regardless of income or financial need.[50] This expansion proved to be only momentary, however, because in 1981 the Reagan administration introduced need into the calculation of student loan eligibility and imposed a 5% origination fee.[51] During this period, however, student loan volume "grew dramatically."[52]

It was in the midst of this growth in student loan originations that Congress passed the 1978 Bankruptcy Code. The Code removed the discharge exception language from the Higher Education Act and enshrined it in 11 U.S.C. § 523(a)(8) as one of the individually enumerated exceptions to discharge from bankruptcy. The language became even more expansive with this change. Instead of only federally insured or guaranteed educational loans being protected, now any educational loans issued by "a governmental unit, or a nonprofit institution of higher education" were covered by the nondischargeability provision so long as the loans had been due for less than five years. There is no commentary on the congressional record discussing the reason for this change, but presumably it was made to protect states that were also issuing student loans.

Only a year later, Congress passed the 1979 Higher Education Amendments which amended the Bankruptcy Code further. The 1979 amendments extended the protection against discharge to also include loans that had been "made under any program funded in whole or in part by a governmental unit or a nonprofit institution of higher education."[53] This effectively added loans originated by states and nonprofit colleges to the mix. In the same way as in the prior two versions of the provision, loans that had been due for more than five years could be discharged

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[48] 6424.
[49] *Id.*
[50] *Id*. at 40-41.
[51] CITE
[52] Congressional Budget Office, THE EXPERIENCE OF THE STAFFORD LOAN PROGRAM AND OPTIONS FOR CHANGE 4 (Dec. 1991), http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/62xx/doc6283/doc08-entire.pdf.
[53] 11 U.S.C. 523(a)(8) (1979) (Pub.L. 96-56, § 3 (1979)).

automatically. Again we could find no commentary in the congressional record explaining the reasoning of this change.

Total default rates between 1979 and 1990 hovered between 5-7% of loans in repayment.[54] Nonetheless, in 1990, the Bankruptcy Act was amended to extend the five year presumptive nondischargeability period to seven years.[55] The amendments also extended the protection to cover not just educational loans, but also "an obligation to repay funds received as an educational benefit, scholarship or stipend."[56] There was no discussion on the record about the changes.

In 1992, the brief expansion of the student loan program that Reagan had put a stop to returned, this time to stay. The Higher Education Act reauthorization created a new, unsubsidized loan option not restricted by student need.[57] A few years later, in 1998, the Bankruptcy Code was amended to remove the seven-year moratorium on discharge of educational loans so that all educational loans or benefits became nondischargeable irrespective of how long they had been outstanding.[58] Once again there is nothing in the congressional record explaining the reasons for this amendment.

In 1999 and 2000, the House and Senate passed bills which were vetoed by President Clinton.[59] The House and Senate versions of both bills included language in section 523 adding private student loans to the list of presumptively nondischargeable loans. The only comments on the Congressional record about this provision were made on the House floor. Representative Graham (SC) introduced the amendment by stating that it was "designed to correct . . . a flaw in the Bankruptcy Code regarding student loans."[60] Rep. Graham noted that Congress protected both the federally guaranteed student loans and those issued by nonprofit

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[54] Congressional Budget Office, THE EXPERIENCE OF THE STAFFORD LOAN PROGRAM AND OPTIONS FOR CHANGE 4, 27 (Dec. 1991), http://www.cbo.gov/sites/default/files/cbofiles/ftpdocs/62xx/doc6283/doc08-entire.pdf.

[55] 11 U.S.C. 523(a)(8) (1990) (see Pub.L. 101-647, § 3621(1) (1990)).

[56] *Id*.

[57] [cite]

[58] 11 U.S.C. 523(a)(8) (1998) (see Pub.L. 105-244, § 971(a) (1998)). The new section read:

> (a) A discharge . . . does not discharge any individual debtor from any debt—,
> (8) for an educational benefit overpayment or loan made, insured, or guaranteed by a governmental unit, or made under any program funded in whole or in part by a governmental unit or a nonprofit institution, or for an obligation to repay funds received as an educational benefit, scholarship or stipend, unless excepting such debt from discharge under this paragraph will impose an undue hardship on the debtor and the debtor's dependents;

[59] "Clinton vetoes bankruptcy bill." Associated Press, December 20, 2000. Retrieved on April 11, 2007.

[60] 145 Cong. Rec. H2655-02, 1999 WL 272237 (Cong.Rec.) at H2711 (May 5, 1999).

lending institutions from discharge from bankruptcy, a move that he thought reflected "just a common-sense approach to a problem that existed in the past."[61] He then gave the reasons for extending this protection to privately-originated student loans: increased availability of private student loans.

> There is a growing industry in the private sector. There is a $1.25 billion loan volume for where private lenders who will loan money to students for their college expenses as the federally guaranteed program does not in every occasion meet the needs of the student, and we are trying to give the private lender the same protection under bankruptcy that the federally guaranteed loan program has and nonprofit organizations have. We are trying to make sure they are [sic.] available loans, loans are available to students to meet their financial needs, and this would have a beneficial effect, make sure that the loan volume necessary to take care of college expenses are available for students . . . [62]

Representative Gekas (PA) noted that this provision "draws attention to our intent to treat everybody fairly, and the student loan quotient [sic.] is one of the most important features in all of bankruptcy."[63]

Nothing more was said on the congressional record about the purpose of extending the exceptions to discharge to cover private student lenders, but the same provision vetoed in 1999 and 2000 became law in 2005 when the Bankruptcy Abuse Prevention and Consumer Protection Act was enacted.[64] Since then, here have been efforts to overturn the protection to private student lenders, but so far all of them have failed.[65]

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[61] *Id*.
[62] 145 Cong. Rec. H2655-02, 1999 WL 272237 (Cong.Rec.) at H2711 (May 5, 1999).
[63] *Id*.
[64] 11 U.S.C. 523(a)(8) (2005) (see Pub.L. 109-8, § 220 (2005)). The provision currently in force reads:

> (a) A discharge under section 727, 1141, 1228 (a), 1228 (b), or 1328 (b) of this title does not discharge an individual debtor from any debt—
> (8) unless excepting such debt from discharge under this paragraph would impose an undue hardship on the debtor and the debtor's dependents, for—
> (A) (i) an educational benefit overpayment or loan made, insured, or guaranteed by a governmental unit, or made under any program funded in whole or in part by a governmental unit or nonprofit institution; or (ii) an obligation to repay funds received as an educational benefit, scholarship, or stipend; or
> (B) any other educational loan that is a qualified education loan, as defined in section 221(d)(1) of the Internal Revenue Code of 1986, incurred by a debtor who is an individual;

[65] *See, e.g.*, Pardo & Lacey 2009, *The Real Student Loan Scandal: Undue Hardship Discharge Litigation*, 83 AM. BANKR. L. J. 179, 182 at n. 18 (2009) (citing H. AMEND. 939 to H.R. 4137 (offered Feb. 7, 2008). "The amendment failed by a recorded vote of 179 to 236.")

C. Discharging Student Loans in Bankruptcy

We have called the special treatment of student loans in bankruptcy "presumptively nondischargeable." Rebutting the presumption can be a difficult task. A consumer seeking to do so must file an "adversary proceeding" with the bankruptcy court—effectively a lawsuit—against her student loan creditors and show that repaying those loans would present an undue hardship.[66] The issue must be litigated and the bankruptcy court must make a determination as to undue hardship even if the creditor does not request one.[67] If the debtor loses the lawsuit, or does not file one in the first place, her student loans are unaffected by the bankruptcy. They continue to accrue interest and fees and she is still liable for all that the contract obligates her to pay when she receives her bankruptcy discharge.

Since the passage of BAPCPA, a handful of empirical studies have examined whether consumers sought to discharge student loans in bankruptcy arguing undue hardship and how they fared in the courts.

In 2005, Pardo and Lacey used a sample of 261 undue hardship opinions issued by bankruptcy courts between 1993 and 2003 to explore how the standard of undue hardship was being applied.[68] Their study found few statistically significant differences between debtors who were granted a discharge of their student loans versus those who were denied.[69] The authors also found that the majority of the debtors in their sample had tried various avenues to mitigate or resolve their student debt issues and had only come to bankruptcy as a last resort.[70] At the time, this was the only study examining the undue hardship standard, but it suffered from serious limitations since it was based on published judicial opinions, a rare and not at all random event.[71]

In a subsequent study in 2009, Pardo and Lacey examined a dataset of 115 student-loan discharge proceedings that were filed between 2002-2006 in the Western District of Washington.[72] While restricted to one bankruptcy district court, this study captured proceedings that did not result in published opinions. The mean educational debt in their sample was $76,139.[73] Approximately 57% (or 65

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[66] *See* Fed. Bankr. R. Proc. 7001; Iuliano, *supra* n. X at 496.
[67] United Student Aid Funds v. Espinosa, 559 U.S. ___, ____ (2010).
[68] Pardo & Lacey 2005, *supra* n. X.
[69] *Id*. at 433.
[70] *Id*. at 477.
[71] By definition, this study was composed of only cases that went to trial and produced a published opinion. Not all trials produce a published opinion and not all attempts to discharge student debt go to trial.
[72] Pardo & Lacey 2009, *supra* note X, at 200.
[73] *Id*. at 208.

individuals) of the adversary proceedings in their study resulted in at least a partial discharge.[74] Troubling from an access to justice perspective, Pardo and Lacey also found that "factors unrelated to the command of the law (e.g., the identity of the judge assigned to the debtor's adversary proceeding), rather than factors deemed relevant by the legal doctrine (e.g., the debtor's income and expenses), account[ed] for the substantive outcomes" in the case.[75]

In 2012, Iuliano used a dataset designed to capture most adversary proceedings seeking discharge of student loans that were filed nationwide in 2007.[76] Using data from the 2007 Consumer Bankruptcy Project to make some assumptions, Iuliano estimated that only 0.1% of individuals who had student loan debt when they filed for bankruptcy filed an adversary proceeding to discharge their student loans.[77] Iuliano's study, like Pardo and Lacey's study in 2009, did not distinguish between federal or private student loans. In Iuliano's sample, the median educational debt sought to be discharged was $47,610 (mean: $80,476).[78] Of the individuals who filed an adversary proceeding in Iuliano's sample, 39% (or 81 individuals) received either a full or a partial discharge of their student loans.[79] Most of those discharges came about as a result of a settlement with a student loan creditor (56 cases or 69% of all debtors who obtained relief). In 20 cases (22% of cases in which a debtor obtained a partial discharge or more), the bankruptcy judge made a determination that the debtors made the undue hardship standard.[80]

The only study we are aware of that has looked at the effect of BAPCPA on the availability of PSLs was a report by Mark Kantrowitz from the website FinAid.org.[81] The report looked at FICO score distributions for PSLs included in the prospectuses of asset backed securitizations (student loan asset backed securities, or SLABs for short) done between 2002 and 2007.[82] The securitization pools in 2006 and 2007 included some loans that were originated before BAPCPA, which would affect the size of the impact seen in the data.[83] Nonetheless the report found an overall slight

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[74] *Id*. at 184.
[75] Pardo & Lacey 2009, *supra* n. X at 185.
[76] Jason Iuliano, *An Empirical Assessment of Student Loan Discharges and the Undue Hardship Standard*, 86 AM. BANKR. L. J. 495 (2012).
[77] Iuliano at 504-05.
[78] Iuliano, *supra* n. X at 510.
[79] Iuliano, *supra* n. X at 505.
[80] *Id*. at 512.
[81] Mark Krantowitz, FinAid.org, *Student Aid Policy Analysis: Impact of the Bankruptcy Exception for Private Student Loans on Private Student Loan Availability* (Aug. 14, 2007), http://www.finaid.org/educators/20070814pslFICOdistribution.pdf.
[82] *Id*. at 1.
[83] *Id*. at 2. Another problem with the study is that one of the SLABs examined included loans that may have been nondischargeable before BAPCPA because of the involvement of a nonprofit entity. In the

expansion in loan availability to borrowers with lower FICO scores. The difference between FICO scores before and after BAPCPA in the SLABs examined showed a 1.2% increase in loans to borrowers with FICO scores less than 650 (typically considered subprime borrowers).[84] When looking only at loans originated without a co-borrower, however, the report found a 1.7% decrease in availability to borrowers with a less than 650 FICO and a modest increase (5.2%) in availability to borrowers with a FICO score between 651-710 (generally considered prime).[85] In at least one of the SLABs examined, the average FICO score post-BAPCPA dropped from 719 to 715, further indicating a slight increase in availability to borrowers with lower creditworthiness.[86] The report also noted that the prospectuses for the SLABs examined did not disclose any change in underwriting criteria for loans originated after BAPCPA.[87]

To our knowledge, these are the only studies examining the effect of the special exception to discharge for student loans, whether federal, issued by nonprofits, or by private institutions.

II. Theory & Hypotheses

This Article examines effect of the one of the changes to the bankruptcy laws in 2005. In particular, we are interested in whether there were any changes to the pricing and availability of private student loans (PSLs) as for-profit student lenders reacted to the change in the law. The law was enacted on April 20, 2005, but most of its provisions—including the exception from discharge of private student loans—did not take effect until October 17, 2005. In this Part, we connect theories about why Congress might have expanded the nondischargeability provision to protect private lenders, develop a theoretical model to predict what we would expect would happen as a result of BAPCPA, and discuss our hypotheses for the effect of BAPCPA on the pricing and availability of private student loans.

A. Theories Explaining Special Treatment of PSLs

In searching for hypotheses to predict what we expect would happen after the bankruptcy law change, we begin with an attempt to explain the reasons behind the

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case of one of the SLABs examined in the report, First Marblehead, the loans were guaranteed by The Education Resources Institute, or TERI, a national nonprofit. *Id*. at 5. It is not entirely unclear that these loans would have been nondischargeable prior to BAPCPA, *id.*, but the uncertainty can also cloud the results.

[84] *Id*. at 4.

[85] *Id*.

[86] *Id*. at 5.

[87] *Id*. at 5.

law change itself. One source of explanations is the congressional record and discussions of the reasons for the amendments to the bankruptcy laws. A second source is theoretical, and for this we draw upon John Pottow's work developing a theory for this special treatment.[88] In particular, Pottow's work draws on economic theory, and it is to that theory that we turn in this subpart when attempting to develop hypotheses.

The congressional record provides a few possible explanations for the special treatment afforded to student loans. As described in Part I, supra, there is scant discussion of the reasoning for most of the changes to the bankruptcy code between 1976 and 2005. The majority of the discussion centers around the initial change in 1976 which granted an exception to discharge to federally insured or funded student loans and the change that eventually became law in 2005 granting the same protection to privately-originated student loans. In the 1976 discussion, the arguments center around the moral hazard problem of allowing students to wipe out their debts immediately upon graduation. The concern was that without the five-year moratorium on discharge, the bankruptcy laws would encourage fraud by design. The second concern expressed in the record was a concern that student loan defaults—and in particular those due to bankruptcies—could destroy the student loan program. Neither of these reasons apply to private student loans, however.[89]

Student loans are unique because they fund investment in human capital. As Gary Becker has observed, "[e]conomists have long emphasized that it is difficult to borrow funds to invest in human capital because such capital cannot be offered as collateral, and courts have frowned on contracts that even indirectly suggest involuntary servitude."[90] Consequently, student loans are typically uncollateralized personal loans. Since the returns to higher education are heterogeneous and students often have little to no credit history due to their age, risk-based underwriting of private student loans can be challenging.

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[88] John A.E. Pottow, *The Nondischargeability of Student Loans in Personal Bankruptcy Proceedings: The Search for a Theory*, 44 Canadian Business L. J. 245, 250 n. 22 (2006).

[89] With regards to government-insured or funded student loans in particular, proponents of the exception noted that the federally-funded student loan program itself might be called into jeopardy without the exception and that unscrupulous students should not be permitted to get away with perpetuating a fraud on the taxpayer. Professor John Pottow notes in his article examining the theoretical justifications for the special treatment of student loans in bankruptcy, the 2005 changes to the bankruptcy law "eviscerates one of the plausible justifications for nondischargeability in the first place (safeguarding the public fisc)." John A.E. Pottow, *The Nondischargeability of Student Loans in Personal Bankruptcy Proceedings: The Search for a Theory*, 44 Canadian Business L. J. 245, 250 n. 22 (2006).

[90] Becker, Gary S. Human capital: A theoretical and empirical analysis, with special reference to education. University of Chicago Press, 2009.

In the discussions surrounding the extension of protection to private student loans, proponents of the amendment focused in on the fact that the private student loan industry was serving a need for students that the federal government was unable to meet. Accordingly supporters stated that they were "trying to make sure [that] loans are available to students to meet their financial needs" and that believed that this would "make sure that the loan volume necessary to take care of college expenses are available for students . . . ."[91] It seems then that Congress was primarily worried about the availability of private student loans in the amounts and numbers necessary to meet students' needs.[92]

The second source of possible explanations for the different treatment of student loans in bankruptcy is theoretical. Pottow explores six possible theories to explain the special treatment. The first two theories center around fraud: one relies on an assumption that the student loan debtor seeking a bankruptcy discharge is presumptively fraudulent.[93] The second concerns what Pottow terms "soft fraud," a display of rational economic behavior that has the same effect as what the proponents of the 1976 amendments to the bankruptcy laws claimed was widespread.[94] The third theory starts from a position that education confers a private benefit and thus the student should be the one to bear—or internalize—the cost.[95] The fourth focuses on a potential desire by the public to shame debtors who do not repay their student debt and is somewhat related to the fifth, protecting the public fisc.[96] Only the sixth and final theory provides a plausible theoretical explanation for the expansion of nondischargeability to PSLs.

Pottow's sixth theory, which he terms "the cost of private capital," is congruent with what the congressional record tells us about the expressed reasons for the protection to PSLs. This theory argues that nondischargeability can be justified "as an attempt to make private loans 'cheaper' for students." In other words,

> [i]f an otherwise dischargeable unsecured debt is rendered nondischargeable by the law, then the bankruptcy-state scenario regarding that debt becomes worse for the debtor (it does not go away) and better for the lender (it does

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[91] 145 Cong. Rec. H2655-02, 1999 WL 272237 (Cong.Rec.) at H2711 (May 5, 1999).
[92] From a policy perspective, this might have actually been problematic. It is certainly a chicken-and-egg problem, but the increasing amounts of money available to be borrowed by students has been posited as a driver for the astonishing rising tuition costs we have seen in the last 20 years. *See*, *e.g.*, Andrew Gillen, Center for College Affordability and Productivity, *Introducing Bennett Hypothesis 2.0* (Feb. 2012), http://centerforcollegeaffordability.org/uploads/Introducing_Bennett_Hypothesis_2.pdf.
[93] Pottow, *supra* note X, at XX
[94] *Id*. at [pin cite]
[95] *Id*. at [pin cite]
[96] *Id*. at [pin cite]

> not go away). In a world of competitive, zero-profit lending markets, this increased payoff for the lender must be translated *ex ante* into an improved cost of capital for the borrower.[97]

Furthermore, we might also expect, in "a robust private lending market . . . a bountiful capital supply available for loans."[98] These dual expectations underpin our hypotheses and model described below.

B. Hypotheses and Economic Model

In order to frame ideas about the implications of BAPCPA, we consider credit provision in the private student loan market in a Stiglitz-Weiss model.[99] We assume that there is credit rationing in the private student loan market.[100] Private student loan borrowers are analogous to the firms in the Stiglitz-Weiss model: projects, or school-major choices, with different mean returns can be distinguished from each other—to the lender returns to education for individuals in the same major at the same school are drawn from the same distribution.[101] Private student loan borrowers with the same expected mean return differ from each other in their risk parameter, which Stiglitz-Weiss denote θ, where risk is increasing in θ. In the analysis below, we consider credit score a proxy for $-\theta$, since risk is decreasing in credit score. The BAPCPA reforms that effectively made most loans nondischargeable in bankruptcy decrease the risk associated with any given loan, which effectively increases the expected return to the creditor, as described in Stiglitz and Weiss's Theorem 3.[102]

Given the Stiglitz-Weiss model and the theories described above, our hypotheses for the effect of the change to the bankruptcy laws making private student loans presumptively nondischargeable can be stated as follows:

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[97] Pottow, *supra* n. X at 262.
[98] *Id*. at [pin cite]. There is some evidence of this to be gleaned from the securitization markets. Between 2005 and 2006, the issuance of student loan asset backed securities (SLABS, only composed of PSL*s*) spiked from a bit over $9 billion dollars to almost $17 billion. The CFPB has found that during the SLABS boom (2005 through the third quarter of 2007) high investor demand for SLASBs allowed issuers to "create structures with very low collateralization ratios. As a result of these factors, $100 in student loans could generate immediate cash proceeds from securitization of $105 or more." CFPB PSL Rept., *supra* note X, at 17-18.
[99] Stiglitz, Joseph E., and Andrew Weiss. "Credit Rationing in Markets with Imperfect Information." *American Economic Review* 71, no. 3 (June 1981): 393–410.
[100] This assumption is based on our informal understandings of the market. More research is needed.
[101] One can think of a choice of major at a particular school as an investment with uncertain returns. For example, a freshman liberal arts student might know the distribution of returns of liberal arts majors from his school, but does not know what his particular return will be ex ante.
[102] *Id*.

- *H_1 – Loan pricing (that is, lender margins) should remain the same for originations after the law change.*
  Since the profitability of a given loan increases for creditors, following Theorem 3[103], the supply of credit should increase. Assuming an interior mode for the return to the creditor of lending at a given interest rate, Theorem 5 implies that credit rationing will still exist. Given these conditions, Corollary 1 states that "as the supply of funds increases, the excess demand for funds decreases, but the interest rate charged remains unchanged, so long as there is credit rationing."[104]
- *H_2 – Lenders should be willing to lend to borrowers with lower credit quality than they were willing to lend before the law change.*
  This is essentially a decrease in the critical value $\hat{\theta}$, which Theorem 1 states that an individual will borrow from the creditor if and only if the borrower's value of θ exceeds $\hat{\theta}$.[105]
- *H_3 – Overall loan volumes should increase.*
  This follows from the argument presented for H_1.

A number of scholars have argued that the Stiglitz-Weiss model is no longer applicable in a world of sophisticated credit scoring models and "big data" number crunching lenders can differentiate between good and bad risks and thus can price products according to risk.[106] Risk-based pricing is very much alive in the context of PSLs. The rise of the securitization market has also been cited as a reason why credit rationing may no longer occur as in the Stiglitz-Weiss model, given that there is more capital available to lenders.[107] Given our preliminary findings described below, we will consider these arguments further in subsequent revisions.

III. Methodology

This Part describes our data and the empirical strategy we undertook to analyze it.

A. Data

Our dataset was created by the Consumer Financial Protection Bureau in preparation for the Congressionally-mandated report on Private Student Loans

[103] Theorems refer to theorems in Stiglitz and Weiss's paper. These are available in the appendix.
[104] *Id*. at 398.
[105] Consider Stiglitz and Weiss's equation 5.
[106] *See* Susan Block-Liebb and Edward J. Janger, *The Myth of the Rational Borrower: Rationality, Behavioralism, and the Misguided "Reform" of Bankruptcy Law*, 84 Texas L. Rev. 1481 (2005) and Kathleen C. Engel and Patricia A. McCoy, *A Tale of Three Markets: The Law and Economics of Predatory Lending*, 80 Texas L. Rev. 1255 (2002).
[107] [cite McCoy paper pincite]

issued in 2012.[108] The dataset includes aggregate PSLs originations from the nine largest PSLs from the first quarter of 2005 until the last quarter of 2011.[109] The data does not permit differentiation of loans originated by individual lenders but it does contain information at the individual loan level. Variables available include the loan amount, credit score of the borrower, credit score of any co-borrowers, interest rate for fixed-rate loans, margin and index used for variable rate loans,[110] and the state of residence of the borrower. This dataset was merged to two public administrative datasets maintained by the Department of Education: the Integrated Post-secondary Education System (IPEDS) and the Post-secondary Education Participants System (PEPS).[111] IPEDS "gathers information from every college, university, and technical and vocational institution that participates in the federal student financial aid programs."[112] It includes data on "enrollments, program completions, graduation rates, faculty and staff, finances, institutional prices, and student financial aid."[113] PEPS includes school level data on topics including school characteristics, cohort default rates, and eligibility status.[114]

For purposes of this study, we restricted the dataset to originations for undergraduates at 4 year institutions from the first quarter of 2005 and 2006. Detailed summary statistics of key variables can be found in Table 1 (all tables and figures can be found in the appendix).

B. Empirical Strategy

The law of interest, BAPCPA, was passed by Congress on April 14, 2005 and signed into law by President Bush on April 20, 2005.[115] However, the law did not take effect until October 17, 2005. In other words, private student loans became nondischargeable for bankruptcies that were filed on or after October 17, 2005, regardless of when the loans were originated. Prior to that date, the loans were dischargeable like most other forms of unsecured debts.

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[108] CFPB Rpt.
[109] CFPB Rpt at 7. "The participating lenders included: RBS Citizens N.A., Discover Financial Services, The First Marblehead Corporation, JPMorgan Chase Bank, N.A., PNC Bank, N.A., Sallie Mae, Inc., SunTrust Banks, Inc., U.S. Bank National Association, and Wells Fargo Bank, N.A.." CFPB Rpt. at 109.
[110] Most of the PSLs in the dataset had variable interest rates that varied according to an index, such as LIBOR or the Prime Rate. The "margin" on those loans is the premium "added to the current index value to determine the total interest rate for the loan. The margin is set at the time of origination and varies based on the credit worthiness of a borrower. This variation in margin value is one way that a creditor might establish 'risk-based' pricing." CFPB Rpt. at 108.
[111] Details of this merge are described in CFPB Rpt at 93- 95.
[112] http://nces.ed.gov/ipeds/about/
[113] *Id*.
[114] http://www2.ed.gov/offices/OSFAP/PEPS/index.html
[115] Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 (BAPCPA) (Pub.L. 109–8, 119 Stat. 23, enacted April 20, 2005).

Our dataset contains loan originations grouped on a quarterly basis, which requires us to choose our "pre" and "post" law periods based on quarters. In our analysis below, we have chosen to treat Q1 as the "pre" period and Q1 2006 as the "post" period.[116] As a result of BAPCPA, lenders would begin to lend in Q2 2005 based on the expectation of what those loans will return in the future, now a future that is based on the newly originated loans being nondischargeable in bankruptcy.[117] This means that we are limited to considering the effects of BAPCPA on loans originated in the first quarter of the year before and after the law's passage. There are obvious limitations to using first quarter results: due to the academic calendar many private student loans are originated over the summer or the fall. However, since the available data begins in the first quarter of 2005 and BAPCPA was enacted in April 2005, the first quarter is the only quarter in 2005 that we can be sure is not affected by BAPCPA, and dropping quarters 2 through 4 in 2005 eliminates possible seasonal effects.

The price and terms of credit can be thought of in terms of the expected returns for the creditor conditional on repayment, the amount of the loan extended, and the credit quality of the borrower. In the lender data, these most closely correspond to margin,[118] original balance, and the maximum FICO scores among borrowers and co-borrowers on a loan.[119] As a first approach, we run OLS regressions of these characteristics, *y*, on *post,* a dummy variable for receiving a loan after the implementation of BAPCPA, and a vector of control variables, *X*, that would be including in an underwriting model, such as type of school attended, tuition and fees, credit score, year in school, and a constant, as shown in equation 1. The sample is restricted to individuals with valid FICO scores as this is the dominant measure of creditworthiness used in the dataset.

$$y_i = \beta_{post} post_i + \beta_X X_i + \varepsilon_i \quad (1)$$

Note H_2 of the theoretical model presented above implies that the coefficient on $\beta_{post} < 0$ when the outcome under consideration is the maximum credit score

[116] As a robustness check, we also run the models specified using originations prior to Q2 2005 as the pre-period and originations in and after Q2 2005 as the post-period. This is based on the expectation that lenders would not anticipate that loans originated between April and October 2005 would be included in a bankruptcy filed within that time period (and thus be dischargeable).
[117] We also intend to run the same analyses using Q4 2005 as the beginning of the "post" period and will report those results.
[118] While the lender data also contains information about the initial interest rate disclosed to the borrower, the salient measure to lenders is their returns from the loan net of their cost of funding, which is more closely described by the margin over the index, since the index is likely chosen to correspond to the index of the source of funding.
[119] Discussions with industry participants suggest that private student loans over the 2005-2011 period were underwritten based on the highest credit score among borrowers and co-borrowers.

among all borrowers and H_1 implies that at each maximum credit score, the interest rate should decrease, so $\beta_{post} = 0$.

Since the lender dataset only contains data for originated loans, one concern is that the composition of borrowers in the dataset may change in response to changes in the loan offers by creditors. In order to separately identify effects due to changes in terms for borrowers who would have received loans in the absence of BAPCPA and the effects of the change in the composition of borrowers we employ two techniques: theBlinder-Oaxaca decomposition and propensity score matching.

The Blinder-Oaxaca decomposition was initially developed in the context of wage discrimination,[120,121] where wages are only observed for individuals who are employed. In the context of this study, we consider the group that was exposed to BAPCPA, that is, borrowers who received loans after the first quarter of 2005, an analogue to the minority group in the Blinder-Oaxaca decomposition. First, we run regressions of the outcome variables on their characteristics for both samples restricted to the *pre* group, which received loans before BAPCPA, and the *post* group, which received loans after BAPCPA, as in equations 5 and 6.

$$y_i^{pre} = \beta_X^{pre} X_i^{pre} + \varepsilon_i^{pre} \tag{2}$$

$$y_i^{post} = \beta_X^{post} X_i^{post} + \varepsilon_i^{post} \tag{3}$$

An estimate of the difference in average loan terms for the groups due to the group characteristics, or endowments, is captured in the first term on the right hand side of equation 4, and an estimate of the effects of the program on the loan terms individuals who would receive loans in the absence of BAPCPA is captured by the effect due to coefficients in the second term of the right hand side of equation 4.

$$\bar{y}^{pre} - \bar{y}^{post} = \beta_X^{pre}\left(\bar{X}_i^{pre} - \bar{X}_i^{post}\right) + \left(\beta_X^{pre} - \beta_X^{post}\right)\bar{X}_i^{post} \tag{4}$$

It follows that for margins, the effect due to the program corresponds to an average of the effects characterized by H_2. These results are invariant to omitted reference groups when dummy variables as independent variables.[122]

To understand the effect of the program on individuals who received loans after BAPCPA would have received loans in the absence of BAPCPA, we estimate the

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[120] Blinder, Alan S. "Wage Discrimination: Reduced Form and Structural Estimates." *The Journal of Human Resources,* Autumn 1973, 8(4): 436-455.
[121] Oaxaca, Ronald. "Wage Differentials in Urban Labor Markets." *International Economic Review*, October 1973, 14(3): 693-709.
[122] Oaxaca, Ronald and Michael Ransom. "Identification in Detailed Wage Decompositions." *The Review of Economics and Statistics*, February 1999, 81(1): 154-157.

effects of BAPCPA on this population using nearest-neighbor propensity score matching with a single match. Since underwriting of student loans is largely based on automated underwriting over this time period, we have reason to believe that the strong ignorability assumption and conditional independence assumption in equation 5, where S is post-BAPCPA status, that the conditional on a borrower's characteristics approval is random, so propensity score methods are appropriate, as discussed in Rosenbaum and Rubin.[123] Therefore, the effect of the program on individuals in the common support of the characteristics of those observed in the post and pre periods can be estimated by equation 6, where τ is the treatment effect and p is the propensity score estimated by a probit regression, and S=1 if the individual is observed post BAPCPA and 0 otherwise.

$$y_i^{pre} \coprod S | X = x, \forall x \tag{5}$$

$$\tau = E\left[y_i^{post} | p(x), S = 1\right] - E\left[y_i^{pre} | p(x), S = 0\right] \tag{6}$$

H_2 implies that the composition of borrowers may change due to the extension of credit to individuals who would not have been offered credit prior to the policy change. Lenders' ex-ante assessment of borrower credit quality, x, may be determined by multiple factors, including credit score, school attended, and year in school. Therefore, there may be differences in the observable characteristics of borrowers between the pre and post periods.

To test H_3, the hypothesis that loan volumes increase due to BAPCPA, we collapse our dataset to the school level, and compare the log number of private student loans in the lender data sample at each school in the pre-period to the post period. We consider the three specifications above: OLS, the Blinder-Oaxaca decomposition, and propensity score matching applied to this problem. Note that in order to understand the magnitude of the effect we must exponentiate the coefficients on $post$ in the OLS specification and the analogues in the Oaxaca decomposition and the propensity score matching models. We also run a school-fixed effects model in order to consider the within school effects.

IV. Results

Table 1 (currently at the end of the paper) presents summary statistics for our sample. Consistent with H_3, the overall number of loans increased post BAPCPA. In fact, the number of PSLs originated more than tripled in the post period, although

[123] Rosenbaum, Paul and Daniel Rubin. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika*, 1983, 70(1): 41-55.

with the techniques that we are using we cannot say whether this was as a result of the law change. The average borrower FICO score decreased an average of 2.67 points in the post period. This can also be seen in Figures 1, which presents changes in the distributions of maximum FICO scores and is consistent with the prediction from H_2.

Figure 2 presents a histogram of margins for the pre and post period. A slight trend to greater margins is apparent; we discuss it further below. Nominal loan balances also increased in the post period, as can be seen in Figure 3.

A. Loan Level Analysis

We present the results below grouped by methods.

Table 2 estimates equation 1 for tuition and fees, with various combinations of controls for a borrower's year in school, school type, maximum FICO scores, linear splines for FICO scores, and school fixed-effects.[124] Once school fixed-effects are introduced, the results are stable across specifications. As predicted H_2, in the post period, lenders are lending to borrowers who have worse credit, as evidenced by the 5.3 point average decrease in FICO scores shown in column 3. Contrary to the prediction from H_1 that for a given credit quality the consumer price of borrowing will decrease due to increased collections, the margins increase by 3 basis points in column 5. Mean original balance also increased by $1,189. The composition of borrowers may have changed, as evidenced by the results for maximum FICO scores, or this could be driven by year-to-year increases in tuition and fees, so this change in original balance merits further investigation.

In order to understand how much of the changes might be attributed to the program for individuals who would have received credit in absence of BAPCPA, we turn to the Blinder-Oaxaca decomposition results in table 3. In column 2 of panel A, the 0.398 decrease in credit scores due to endowments suggests that some of the characteristics of borrowers may have changed that resulted in average lower FICO scores. This result is statistically significant at the 0.1 level, but disappears when school fixed-effects are added in column 3. This suggests that the composition of schools to which the sample creditors are lending may have changed, and merits further investigation.

Consistent with the OLS results in table 2, column 5 of panel B shows a within-school effect of a 3.5 basis point increase in margins, 1.1 basis points of which is

[124] Sample sizes may increase between specifications 2 and 3 because the school fixed effect is from the lender data sample whereas the school type is from the merge with the PEPs data and tuition and fees are imputed from the merge with IPEDS.

attributable to changes in endowments, and 2.6 basis points of which are attributable to coefficients. This suggests that for a given set of borrower characteristics, lenders are increasing *r*, as defined in the model, so, inconsistent with the prediction from H_1, lenders are increasing the price of loans in response to BAPCPA. A 3.5 basis point increase in the price of a $10,000 15-year loan can translate to an added cost to the borrower of almost $25 per year or $365 over the life of the loan.[125] This increase becomes more significant when one considers that the number of loans in the post period more than tripled.

Similarly, in panel 3, the overall change in original balance due to BAPCPA is insignificant, but changes in borrower characteristics predict a $116 increase in borrowing due to endowments.

Table 4 presents the results from the propensity score matching, where the propensity score is calculated by a probit regression of borrower characteristics on whether or not an individual appears in the post-BAPCPA observations. For each specification, the raw difference in means is reported above the difference in means for the matched pairs, labeled as the average treatment on the treated effect. For maximum FICO scores, these results can be interpreted as the type of students, based on schools attended and school year, that the lenders would have successfully extended credit to pre-BAPCPA. The result in column 3 of a 4.2 point average decrease in FICO scores is consistent with the previous results and suggests that within a given school, lenders are extending credit to individuals with slightly lower credit scores in the post period.

For margins and original balances, the results in table 4 can be interpreted as the effects of the program on the loan terms of individuals who would have taken out loans prior to BAPCPA, based on their characteristics. Consistent with the OLS and Blinder-Oaxaca result, the result in column 5 suggests a 3 basis point increasein the average margin experienced by a borrower. Consistent with the prediction for credit possibly getting cheaper at a given interest rate implicit section II.C, average original balances increase by $1,157 post BAPCPA in column 5.

Overall, these results suggest that credit expanded to some individuals who previously did not have access to private student loans prior to BAPCPA, either because of their observable credit quality through their FICO scores or the characteristics of the schools that they attended. This is consistent with H_2, and as can be seen from Figure 1 it was significant to a number of borrowers with low credit scores.

[125] Assuming the loan would have been at 8% but instead was at 8.3%.

Consistent with the previous methods presented, margins actually increase by a significant amount post-BAPCPA. This is inconsistent with the theoretical prediction of H_1 that the price of loans, as captured by the margin, should not increase since collection given bankruptcy should increase the value of defaulted loans for creditors.

B. School Level Analysis

Consistent with the predictions of H_3, when we collapse our dataset to the school level, we observe a significant increase in the volume of student loans after the implementation of BAPCPA in Table 5. Once school characteristics, including tuition and fees, graduation rates, Carnegie classification, log full time equivalent students, and the percent of the student body that is black and Hispanic are controlled for, we observe a 174.3% increase in PSL originations in the OLS specification in column 6 of panel A.[126] The corresponding Oaxaca decomposition in column 6 of panel B suggest that a 192.1% increase is due to a change in underwriting due to BAPCPA.[127] Similarly, the propensity score matching result yields a 215.2% increase in loans due to BAPCPA in column 6 of panel 3.

An OLS regression of log borrowers on BAPCPA with school fixed effects, restricted to students at schools where the creditors issued loans before the policy change, yields an estimate of a 243.0%[128] increase in loan volumes. Note that these volumes may be attenuated due to measurement error and may underestimate the effect of the policy change since we do not observe other firms that enter due to the construction of the sample.

V. Implications and Future Work

Our results suggest that the passage of BAPCPA led to an increase in the expansion of the availability of PSLs for 4-year undergraduates, but contrary to the Stiglitz-Weiss model and the rhetoric at the time BAPCPA was passed, the cost of loans actually increased for students who would have received loans before BAPCPA. The answer to the question of whether "consumers benefited" by this change is still unresolved.

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[126] This is obtained from subtracting 100% from the 274.3% marginal effect.
[127] As above, we attribute the change due to a change in underwriting standards for a given type of students to the effect due to coefficients in a Blinder-Oaxaca decomposition.
[128] This corresponds to a coefficient on post of 1.233. A back of the envelope calculation yields that, 92% of the three-fold increase in PSL origination volume in the first quarter of 2006 can be explained by the law change.

Overall, we can say that some students may have benefited from BAPCPA in that the number of loans originated post-BAPCPA approximately tripled. Note, however, that at this point we cannot say for certain that the increased number of loans to borrowers with was a result of BAPCPA, only that they are associated. What we can say with a bit more confidence—because it is based on matching—is that, overall, borrowers with lower credit scores were able to obtain PSLs as a result of BAPCPA.

We can also say that prices increased an average of 3.5 basis points for the types of students that would have obtained loans before BAPCPA as a result of the law change. This average increase is very consistent across all of our models. While it may seem like a small increase per borrower—the example given above was of a $25 increase per year for a typical loan—the impact of this increase across the loans is quite large. If we take our $25 per year increase as an average for all loans, this would mean that BAPCPA cost student borrowers an additional $382,950 per year just in the first quarter of 2006.[129] This result has tremendous public policy implications which we will explore in a later paper.

Our analysis so far suggests that this is a story about distributions; that is, that certain students may have seen an increase in the cost of their loans and others might have seen a decrease. We intend to investigate the variation in margins to see whether they are different across types of schools (e.g., higher versus lower prestige), types of borrowers (e.g., prime versus subprime), or types of loans (e.g., those marketed through the school versus those marketed directly to the consumer). Therefore our next steps will include applying techniques that take the distribution of borrower characteristics into account, including quantile regression, the DiNardo, Fortin, Lemieux decomposition,[130] and careful analysis of school characteristics that makes use of the detailed institution-level data from the IPEDS merge.

Finally, there is another avenue of further research in another paper. This paper focuses on undergraduates at 4-year institutions. Given the diversity of educational options available, such as 2-year schools, certificate programs, and post-graduate education of various kinds, another extension of this work would be to consider the effects of BAPCPA on loans in these other educational markets.

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[129] This calculation is incredibly simplified, but it was computed by multiplying the $25/year additional cost by the number of PSLs originated in Q1 2006 (15,318).

[130] DiNardo, John & Fortin, Nicole M & Lemieux, Thomas, 1996. "Labor Market Institutions and the Distribution of Wages, 1973-1992: A Semiparametric Approach," *Econometrica,* September 1996, 64(5): 1001-44.

Tables

Table 1: Summary Statistics for Loans Originated in the First Quarter of 2005 and 2006

	Before BAPCPA		After BAPCPA	
	Mean	Median	Mean	Median
Has a Co-Borrower	0.80	1	0.82	1
Maximum FICO Score	720.34	718	714.96	700
Borrower's FICO Score	651.02	662	648.65	660
Year in School	2.62	3	2.54	3
Original Balance ($)	8,614.42	6,271	10,015.30	7,650
Deferral Term (Months)	28.67	28	28.67	29
Tuition and Fees ($)	11,484.53	7,229	11,484.53	7,795
Observations		4,960		15,318

Maximum FICO score is the maximum of the borrower and all co-borrower scores.

Restricted to loans originated in the first quarter of 2005 and 2006 to undergraduates at 4 year institutions for which a borrower or co-borrower's FICO score was reported.

Table 2: OLS, First Quarter of 2005 and 2006

		(1)	(2)	(3)	(4)	(5)
Maximum FICO Score						
	Post	-5.825***	-5.890***	-5.262***		
		(0.0811)	(0.0752)	(0.679)		
	N	19,759	19,759	20,170		
	R^2	0.013	0.083	0.192		
Margin						
	Post	0.00455***	0.00455***	0.00419***	0.00364***	0.00329***
		(4.53e-05)	(4.52e-05)	(0.000220)	(0.000218)	(0.000219)
	N	19,759	19,759	20,170	20,170	20,170
	R^2	0.042	0.042	0.200	0.327	0.389
Original Balance						
	Post	1,326***	1,325***	1,268***	1,198***	1,189***
		(16.68)	(16.88)	(104.7)	(104.1)	(103.6)
	N	19,759	19,759	20,170	20,170	20,170
	R^2	0.0159	0.0161	0.181	0.186	0.187
Controls						
	Tuition and Fees	x	x			
	Year In School	x	x	X	x	x
	School Type	x	x			
	Has a Co-Borrower		x		x	x
	Maximum FICO Score				x	
	Spline of Maximum FICO Score					x
	School Fixed Effects			X	x	x

* p<0.1, ** p<0.05, *** p<0.01

Standard errors in parentheses. Each cell corresponds to a separate regression.
Restricted to four year undergraduates in the 1st quarters of 2005 and 2006.
Spline of FICO scores in 20 point intervals.
Tuition and fees calculated based on IPEDS data and student's reported state of residence.

Table 3: Oaxaca Decompositions, 1st Quarter of 2005 and 2006

	(1)	(2)	(3)	(4)	(5)
Panel A: Max FICO					
Mean Before BAPCPA	720.4***	720.4***	720.3***		
	(0.654)	(0.654)	(0.706)		
Mean After BAPCPA	715.0***	715.0***	715.0***		
	(0.388)	(0.388)	(0.402)		
Difference	5.439***	5.439***	5.377***		
	(0.761)	(0.761)	(0.812)		
Difference Due to Endowments	-0.329***	-0.398*	-0.939		
	(0.0941)	(0.219)	(1.200)		
Difference Attributable to Coefficients	5.967***	6.018***	1.058		
	(0.761)	(0.726)	(4.741)		
Difference Attributable to Interactions	-0.199*	-0.181	5.257		
	(0.113)	(0.117)	(4.840)		
Panel B: Margins					
Mean Before BAPCPA	0.0436***	0.0436***			0.0436***
	(6.40e-05)	(6.40e-05)			(6.32e-05)
Mean After BAPCPA	0.0469***	0.0469***			0.0470***
	(5.31e-05)	(5.31e-05)			(5.26e-05)
Difference	-0.00335***	-0.00335***			-0.00347***
	(8.31e-05)	(8.31e-05)			(8.22e-05)
Difference Due to Endowments	-8.05e-06	-1.41e-05			-0.00110***
	(1.12e-05)	(1.16e-05)			(4.47e-05)
Difference Attributable to Coefficients	-0.00336***	-0.00336***			-0.00256***
	(8.24e-05)	(8.24e-05)			(7.32e-05)
Difference Attributable to Interactions	2.49e-05***	2.48e-05***			0.000194***
	(7.18e-06)	(7.28e-06)			(1.96e-05)
Panel C: Original Balance					
Mean Before BAPCPA	11,171***	11,171***			11,221***
	(42.67)	(42.67)			(42.15)
Mean After BAPCPA	11,183***	11,183***			11,288***
	(37.65)	(37.65)			(37.05)
Difference	-12.11	-12.11			-66.82
	(56.90)	(56.91)			(56.12)
Difference Due to Endowments	-18.66*	-13.41			-116.2***
	(10.53)	(10.85)			(10.06)
Difference Attributable to Coefficients	-7.194	-11.60			32.94
	(56.12)	(56.07)			(56.32)
Difference Attributable to Interactions	13.75***	12.91***			16.39
	(4.836)	(4.902)			(11.01)
Controls					

Tuition and Fees	X	x			
Year In School	X	x	x	x	x
School Type	X	x			
Has a Co-Borrower		x		x	x
Maximum FICO Score				x	
Spline of Maximum FICO Score					x
School Fixed Effects			x	x	x

* p<0.1, ** p<0.05, *** p<0.01
Standard errors in parentheses.
Restricted to four year undergraduates in the 1st quarters of 2005 and 2006.
Spline of FICO scores in 20 point intervals.
Tuition and fees calculated based on IPEDS data and student's reported state of residence.
Specifications 3 and 4 were not estimated due to zero variance within school and program year.

Table 4: Propensity Score Matching, 1st Quarter of 2005 and 2006

	(1)	(2)	(3)	(4)	(5)
Maximum FICO Score					
Unmatched	-5.439	-5.439	-5.189		
	(0.777)***	(0.777)***	(0.784)***		
Average Treatment on the Treated	-4.971	-3.458	-4.225		
	(1.585)***	(1.402)***	(1.376)***		
Margin					
Unmatched	0.004	0.004	0.004	0.004	0.004
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Average Treatment on the Treated	0.003	0.004	0.004	0.004	0.003
	(0.001)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Original Balance					
Unmatched	1371.186	1371.1853	1352.15	1352.147	1352.147
	(125.497)***	(125.497)***	(127.054)***	(127.054)***	(127.054)***
Average Treatment on the Treated	1272.251	1120.066	1425.717	1303.748	1157.226
	(240.406)***	(213.857)***	(214.299)***	(168.905)***	(170.738)***
Number of Observations					
Untreated	4828	4828	4838	4838	4838
Treated	14931	14931	13634	13634	13634
Controls					
Tuition and Fees	X	x			
Year In School	X	x	x	x	x
School Type	X	x			
Has a Co-Borrower		x		x	x
Maximum FICO Score				x	
Spline of Maximum FICO Score					x
School Fixed Effects			x	x	x

* p<0.1, ** p<0.05, *** p<0.01
Standard errors in parentheses.
Restricted to four year undergraduates in the 1st quarters of 2005 and 2006.
Spline of FICO scores in 20 point intervals.
Propensity scores calculated using probit regression. Nearest neighbor matching with replacement.
Tuition and fees calculated based on IPEDS data and student's reported state of residence.

Table 5: Private Student Loan Volumes at the School Level, 1st Quarter of 2005 and 2006

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: OLS						
Post	0.546***	0.472***	0.472***	0.820***	1.008***	1.009***
	(0.169)	(0.174)	(0.174)	(0.108)	(0.0829)	(0.0811)
Marginal Effect	*1.726*	*1.603*	*1.603*	*2.270*	*2.740*	*2.743*
Panel B: Oaxaca Decomposition						
Difference	0.541***	0.436**	0.590***	0.744***	0.590***	0.590***
	(0.178)	(0.182)	(0.165)	(0.222)	(0.183)	(0.180)
Marginal Effect	*1.718*	*1.547*	*1.804*	*2.104*	*1.804*	*1.804*
Difference Due to Endowments	-0.00419	0.00179	-0.135	-0.0761	-0.292**	-0.289**
	(0.0484)	(0.0489)	(0.113)	(0.180)	(0.138)	(0.136)
Marginal Effect	*0.996*	*1.002*	*0.835*	*0.927*	*0.747*	*0.749*
Difference Due to Coefficients	0.546***	0.492***	0.873***	0.974***	1.069***	1.072***
	(0.170)	(0.184)	(0.103)	(0.154)	(0.0777)	(0.0748)
Marginal Effect	*1.726*	*1.636*	*2.394*	*2.649*	*2.912*	*2.921*
Difference Due to Interactions	0.000748	-0.0581	-0.148*	-0.153	-0.187**	-0.193**
	(0.00896)	(0.0857)	(0.0825)	(0.144)	(0.0757)	(0.0769)
Marginal Effect	*0.999*	*0.944*	*0.862*	*0.858*	*0.829*	*0.824*
Panel C: Propensity Score Matching						
Average Treatment on the Treated	0.993***	1.016***	1.146***	1.141***	1.148***	1.148***
	(0.0408)	(0.0412)	(0.0413)	(0.0410)	(0.0412)	(0.0413)
Marginal Effect	*2.699*	*2.762*	*3.146*	*3.130*	*3.152*	*3.152*
Controls						
Tuition and Fees	X	X	X	X	X	X
Graduation Rate		X	X	X	X	X
Carnegie Classification			X	X	X	X
ln(Full Time Equivalent Students)				X	X	X
HBCU, HSI					X	
Percent Black, Percent Hispanic						X

*p<0.1, **p<0.05, ***p<0.01
Standard errors in parentheses.
Restricted to four year undergraduates in the 1st quarters of 2005 and 2006.
Based on observations at the school level from lender data, IPEDs, and PEPS.
Marginal effects calculated by exponentiating estimated coefficients.
Outcome is natural log of PSL borrowers in the lender data.

Figure 1: Maximum FICO Scores Among Borrowers and Co-Borrowers, First Quarter 2005 and 2006

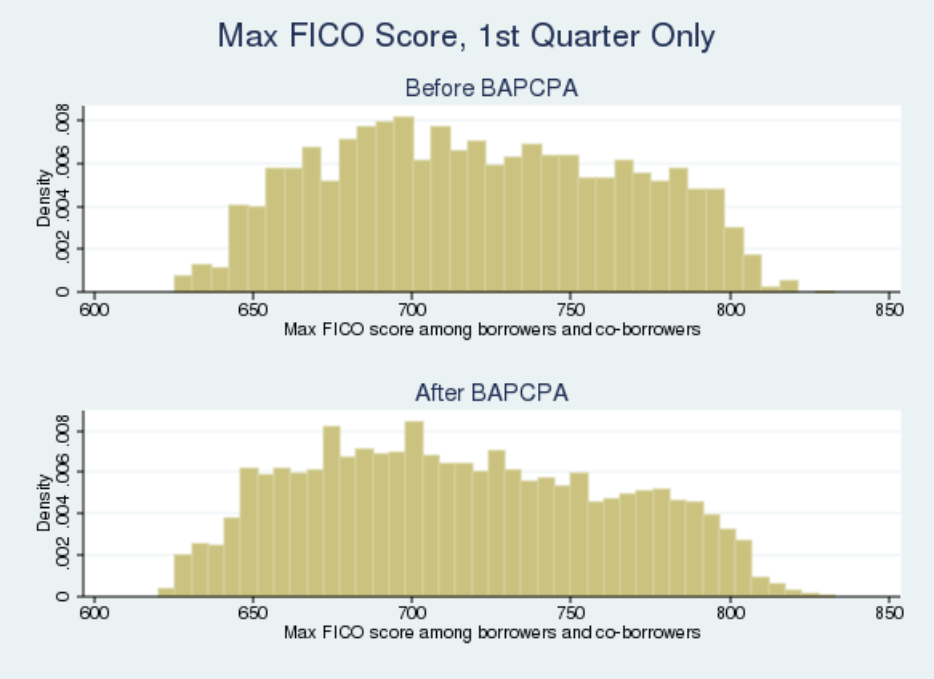


Figure 2: Margins, First Quarter 2005 and 2006

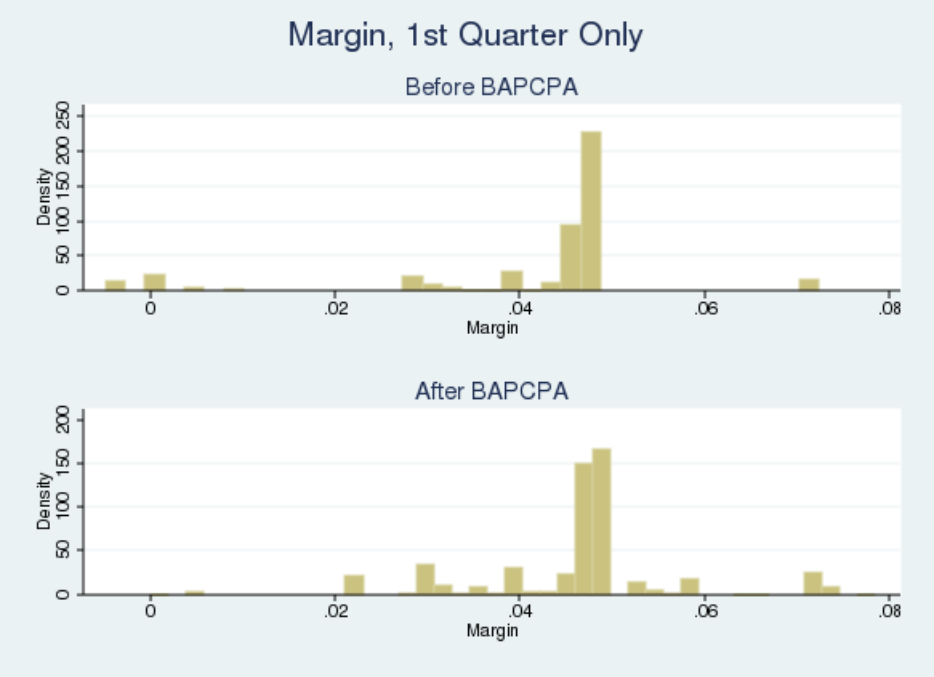
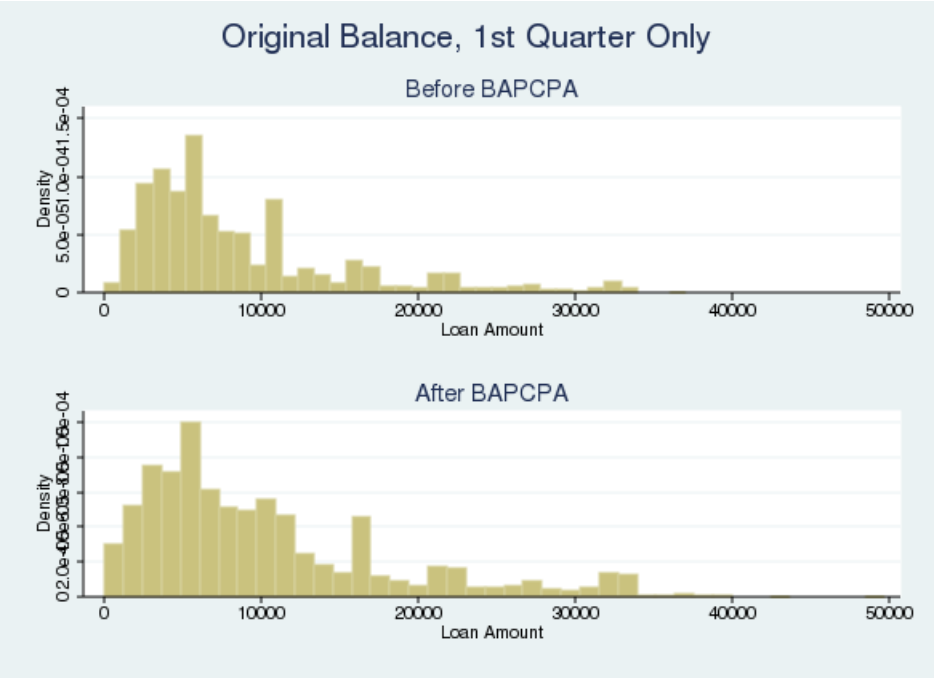


Figure 3: Nominal Original Balances, First Quarter 2005 and 2006



Appendix

This appendix contains the relevant theorems, notation, and equations from Stiglitz and Weiss's 1981 paper that are referenced in this article. For ease of discussion, we retain Stiglitz and Weiss's numbering.

Each project, indexed by θ, is assumed to have a probability distribution of gross return R. The distribution of returns is denoted $F(R,\theta)$ and the density of returns is denoted $f(R,\theta)$. Higher values of θ correspond to higher levels of risk in the sense of mean-preserving spreads, i.e. for $\theta_1 > \theta_2$

$$\int_0^\infty Rf(R,\theta_1)dR = \int_0^\infty Rf(R,\theta_2)dR$$

then for $y \geq 0$,

$$\int_0^y Rf(R,\theta_1)dR \geq \int_0^y Rf(R,\theta_2)dR$$

An individual for borrows amount B at interest rate $\hat{r}$ repays his loan if $R > B(1+\hat{r})$. Note that this is a simplification from the Stiglitz-Weiss model as there is no term for collateral since student loans are unsecured. The return to the creditor, or bank, is denoted $\rho(R,\hat{r}\,) = \min\ \big(R, B(1+\hat{r})\big)$. Upper bars denote means.

Theorem 1: For a given interest rate $\hat{r}$, there is a critical value $\hat{\theta}$ such that a firm borrows from the bank if and only if $\theta > \hat{\theta}$.

Theorem 3: The expected return on a loan to a bank is a decreasing function of the riskiness of the loan to the bank.

Theorem 5: Whenever $\rho(\hat{r})$ has an interior mode, there exists supply functions of funds such that competitive equilibrium entails credit rationing.

Corollary 1: As the supply of funds increases, the excess demand for funds decreases, but the interest rate charged remains unchanged, so long as there is any credit rationing.

Equation 5: (Zero-profit condition)

$$\Pi\big(\hat{r},\hat{\theta}\big) = \int_0^\infty \max[R-(\hat{r}+1)B;0]dF\big(R,\hat{\theta}\big) = 0$$