Lessons from Bankruptcy Reform in the Private Student Loan Market

Alexei Alexandrov and Dalié Jiménez*

INTRODUCTION

It is often said that "consumer protection comes at a price."[1] Providing a consumer-friendly service or increasing consumers' ability to obtain recourse for harm or an inadequate product involves costs.[2] These costs are often passed on to consumers as higher prices, lower quality, or lower product availability.[3] Laws and regulations can change the market equilibrium by either enhancing consumer protection (and raising costs and often prices) or by stripping some of the existing consumer protections (and lowering costs and often prices).

Economic theory predicts that laws that reduce consumer protection typically have three effects on consumers: (1) the direct effect of consumers losing some of their existing protections, (2) the indirect effect of consumers receiving lower prices (to the extent that the cost decrease is passed to the consumers), and (3) the demand-expansion effect of lower prices leading new consumers to enter the market.[4] The reverse is true for laws that enhance consumer protections rather than reducing them.[5]

---

[1] Omri Ben-Shahar & Oren Bar-Gill, *Regulatory Techniques in Consumer Protection: A Critique of European Consumer Contract Law*, 50 COMMON MKT. L. REV. 109, 113 (2013); Hans-Bernd Schäfer & Katrin Lantermann, *Jurisdiction and the Choice of Law in Economic Perspective*, 1 GERMAN WORKING PAPERS L. & ECON. 1, 16 (2005); *Europe's Proposed Chemicals Regulations Are Less Nasty Than Feared*, ECONOMIST (Oct. 30, 2003).

[2] *See generally* Ben-Shahar & Bar-Gill, *supra* note 1.

[3] *See, e.g.*, Richard Craswell, *Passing On the Costs of Legal Rules: Efficiency and Distribution in Buyer-Seller Relationships*, 43 STAN. L. REV. 361 (1991) (explaining the exact mechanisms behind consumer price increases after firms have to adhere to new legal rules). These costs may be partially offset by increased sales if consumers value this service or ability to obtain recourse.

[4] Note that if consumers are perfectly informed, value the future option of discharging the debt in exactly the same way, and the market prices the option exactly at that value, effect (3) would be absent (there should be neither market expansion nor contraction). However, we doubt that either of these conditions is satisfied, let alone all of them.

[5] Among the more recent laws and regulations in the consumer finance space that enhance consumer protection are the Consumer Financial Protection Bureau's rule establishing a requirement for the creditor to document and consider the consumer's ability-to-repay prior to originating a mortgage, the Credit CARD Act passed by Congress that severely limited penalty fees, repricing, and marketing to students in the credit card market, the proposed rule that

This article is about a law that reduced consumer protection: the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA).[6] It explores the effects of BAPCPA in the private student loan market.[7] Overall, our findings (with all the caveats below) suggest that bankruptcy reform failed miserably at helping students. We make two proposals for reform in light of our findings.

The level of student debt in the United States is staggering. At over $1.3 trillion—a number that has doubled since 2007—student loans make up the second largest category of outstanding household debt.[8] Only mortgage debt is higher.[9] Student debt is also pervasive: almost a quarter of consumers in the United States have some type of student loan debt.[10] Over sixteen percent of consumers with student loans are at least thirty days past due on those loans.[11]

While the majority of student loan debt was issued or is insured by the federal government, a sizable fraction (about ten percent of outstanding debt) is in the form of private student loans—that is, loans issued by financial firms without any government backing.[12] Pricing on these loans is similar to credit cards (i.e., the interest rate is variable and depends on the borrower's creditworthiness). For undergraduate students especially, these loans today typically require a co-borrower who will be legally bound to

---

would weaken mandatory arbitration clauses to allow consumers to join a class action dispute without the fear of that class litigation being blocked.

[6] This article is limited to the changes bankruptcy reform wrought on the private student loan market, but with regard to consumer bankruptcy, BAPCPA was designed writ large to strip many consumer protections. *See, e.g.*, A. Mechele Dickerson, *Regulating Bankruptcy: Public Choice, Ideology, & Beyond*, 84 WASH. U.L. REV. 1861 (2006); Robert M. Lawless et al., *Did Bankruptcy Reform Fail? An Empirical Study of Consumer Debtors*, 82 AM. BANKR. L.J. 349 (2008); Robert M. Lawless & Elizabeth Warren, *Shrinking the Safety Net: The 2005 Changes in U.S. Bankruptcy Law* (Ill. Law and Econ. Working Paper No. LE06-031, 2006), http://papers.ssrn.com/pape.tar?abstract_id=949629 [https://perma.cc/AM4Z-WDZ4]; Michelle J. White, *Abuse or Protection? Economics of Bankruptcy Reform Under BAPCPA*, 2007 U. ILL. L. REV. 275. For a discussion about a setting in which it might be socially optimal to enact laws that decrease consumer protections, see generally Christine Jolls, *Fairness, Minimum Wages, and Employee Benefits*, 77 N.Y.U. L. Rev. 47 (2002).

[7] By "private student loans" we mean student loans issued by private institutions that are not backed by the federal government. Prior to 2010, private institutions offered Stafford, PLUS, and consolidation student loans that were backed by the federal government. *See Programs: Federal Family Education Loan (FFEL) Program*, U.S. DEP'T OF EDUC., http://www2 .ed.gov/programs/ffel/index.html [https://perma.cc/P35T-63N8] (last modified Apr. 9, 2014); *see also* Section II.A *infra*.

[8] *Student Loan Debt by Age Group*, FED. RESERVE BANK OF N.Y. (Mar. 29, 2013), https:// www.newyorkfed.org/studentloandebt [https://perma.cc/5AJU-N2RL].

[9] *Id.*

[10] *FRBNY Consumer Credit Panel/Equifax*, FED. RESERVE BANK OF PHILA. (Sept. 17, 2016), https://www.philadelphiafed.org/eqfx/webstat/index.html [https://perma.cc/8GMG-XMMC].

[11] "Severe delinquency is defined as having at least one account 90+ days past due (DPD), in collections, or classified as severely derogatory. For student loans, this includes loans that are 30+ DPD, although many lenders do not begin to report past-due student loans until payments are 90+ DPD." *Id.*

[12] Calculation by the authors. CONSUMER FIN. PROT. BUREAU, PRIVATE STUDENT LOAN REPORT 1, 3 (2012) [hereinafter CFPB PSL Report] (estimating $150 billion in outstanding PSLs).

repay if the student borrower does not.[13] These loans also have few or no protections for borrowers (or co-borrowers) who are in financial distress, leading some to argue these loans "are one of the riskiest, most expensive ways to pay for college."[14]

The concept of a "fresh start" for a bankrupt is a significant one. If a debtor is eligible to seek bankruptcy protection, she will ordinarily have all of her debts extinguished (discharged) when she finishes the process. There are a handful of debts that are nondischargeable, however. In general, "nondischargeability is an extraordinary rule, often held out for extraordinary debts (such as, for example, an intentional tort-feasor's debt for a damages or restitution award to her victim)."[15] As examples: credit card debts, medical debts, tort liabilities, mortgage and auto deficiencies, and old tax debts are all automatically dischargeable in bankruptcy.

Since 1976, federal student loans have enjoyed presumptive nondischargeability in bankruptcy.[16] That is, they are nondischargeable unless the debtor files a federal lawsuit and convinces the bankruptcy court that it should discharge her loans.[17] According to all the available research, very few students are able to clear this high hurdle, making student loans effec-

---

[13] "All told, more than 90% of private loans had co-signers last year, according to the Consumer Financial Protection Bureau, up from 67% in 2008." Kelly Greene, *New Peril for Parents: Their Kids' Student Loans*, WALL ST. J. (Oct. 26, 2012), http://www.wsj.com/articles/SB10000872396390444024204578044622648516106 [https://perma.cc/8JBF-9MES]. This was not always the case. In 2005, just over sixty percent of loans had a co-borrower, and that number dipped below sixty percent in 2006 and 2007. But by 2008, the percentage of loans with co-borrowers was increasing dramatically. CFPB PSL REPORT, *supra* note 12, at 27 (Figure 13).

[14] Letter from Bankr. Coal. to the Honorable Stephen Cohen in Support of the Private Student Loan Bankr. Fairness Act of 2013 (Feb. 6, 2016), http://ticas.org/sites/default/files/pub_files/Bankruptcy_coalition_letter_to_Rep_Cohen_Jan_2013.pdf [https://perma.cc/MJ5A-PKZZ]. In some circumstances, paying with cash could turn out to be even more expensive since it does not create a debt that could potentially be discharged in bankruptcy. However, few students are able to pay today's tuition costs in cash. *See, e.g.*, U.S. CENSUS BUREAU, TABLE H-6 REGIONS BY MEDIAN AND MEAN INCOME, http://www.census.gov/data/tables/time-series/demo/income-poverty/historical-income-households.html [https://perma.cc/Y26C-DQ2B] (reporting a median household income across the US in 2015 of $56,516); COLL. BD., TUITION AND FEES AND ROOM AND BOARD OVER TIME, https://trends.collegeboard.org/college-pricing/figures-tables/tuition-fees-room-and-board-over-time [https://perma.cc/R7DX-4HHB] (reporting average tuition, fees, and room and board for an in-state student at a public four-year university at $19,548 and $43,921 for a private four-year university).

[15] John A. E. Pottow, *The Nondischargeability of Student Loans in Personal Bankruptcy Proceedings: The Search for a Theory*, 44 CANADIAN BUS. L.J. 245, 250 (2006).

[16] *See generally* Rafael I. Pardo & Michelle R. Lacey, *Undue Hardship in the Bankruptcy Courts: An Empirical Assessment of the Discharge of Educational Debt*, 74 U. CIN. L. REV. 405 (2005).

[17] It is a common misconception that student loans are impossible to discharge. Unlike other categorical exceptions to discharge—such as the one prohibiting the discharge of child support debt—student loans are dischargeable in bankruptcy after the debtor proves in a lawsuit that it would be an "undue hardship" to continue to repay their loans. Xiaoling Ang & Dalié Jiménez, *Private Student Loans and Bankruptcy: Did Four-Year Undergraduates Benefit from the Increased Collectability of Student Loans?*, *in* STUDENT LOANS AND THE DYNAMICS OF DEBT 175, 180 (Kevin Hollenbeck & Brad Hershbein eds., 2015).

tively nondischargeable.[18] In 2005, Congress lumped private and federal loans together and decided that borrowers of both should have almost no chance of discharging their educational loans, no matter who made them. Before BAPCPA, student loans issued by a private financial institution with no guarantee or backing from any government were automatically dischargeable in bankruptcy. After BAPCPA became effective, in October 2005, all private loans (no matter when issued) became presumptively and effectively nondischargeable in bankruptcy.[19]

The rationale for BAPCPA's special treatment of private student loans (PSLs) consisted of effects two and three mentioned above. That is, scholars expected that the law would lower the cost of private loans and that more students would choose to attend college due to the lower costs.[20] As one example, Judge Posner theorized that "by increasing the rights of creditors in bankruptcy . . . [bankruptcy reform] should reduce interest rates and thus make borrowers better off."[21]

Using a novel loan-level administrative dataset from the Consumer Financial Protection Bureau (CFPB) and econometric techniques, we quantify effects two (lower prices) and three (increased demand). First, we show that BAPCPA did not have a significant effect on the price of loans for the lowest credit score individuals relative to individuals with higher credit scores. In other words, students became effectively unable to discharge their loans in bankruptcy (effect one), but did not experience a compensating decrease in price (effect two). Second, we do see an increase in loan volumes, but since we do not observe a change in prices and we find that the price elasticity of demand for student loans is not significantly different from zero, we do not attribute this change in originations to a price effect (effect three). It is thus easy to argue that BAPCPA was not very helpful to students: they lost the ability to discharge their private student loans, but received no discount in return.

To quantify the change in prices after BAPCPA, we assume that the loans given to students who were unlikely to end up in bankruptcy (as measured by their credit score) were not affected by the law.[22] PSL issuers can and do price discriminate among students based on various factors, including

---

[18] *See* Jason Iuliano, *An Empirical Assessment of Student Loan Discharges and the Undue Hardship Standard*, 86 Am. Bankr. L.J. 495, 495–96 (2012); Daniel A. Austin, *Student Loan Debt in Bankruptcy: An Empirical Assessment* 1–11 (Ne. Univ. Sch. of Law Research Paper No. 188-2014, 2014), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2442312 [https://perma.cc/3G5E-9RPN].

[19] Ang & Jiménez, *supra* note 17, at 177.

[20] Pottow, *supra* note 15, at 262 ("[N]ondischargeability could be justified as an attempt to make private loans 'cheaper' for students.").

[21] Ang & Jiménez, *supra* note 17, at 183 (quoting Richard Posner, *The Bankruptcy Reform Act—Posner*, Becker-Posner Blog (Mar. 27, 2005), http://www.becker-posner-blog.com/2005/03/the-bankruptcy-reform-act—posner.html [https://perma.cc/XQ2G-5NS7]). However, note that this is not necessarily true for all borrowers *ex ante*; borrowers with prime credit scores who did not think they would be likely to file bankruptcy might prefer lower prices to the availability of a bankruptcy discharge.

[22] Here we use the credit score cutoff of 645.

credit score and school, and they have no reason to cross-subsidize *a priori* risky students (those with low credit scores) by charging *a priori* safer students (those high credit scores) higher rates.[23] For the *a priori* safer students with extremely low probabilities of ending up in bankruptcy before paying off their student loans, BAPCPA should not have had any effect: the loan issuers should have predicted that these borrowers posed almost no bankruptcy risk even before BAPCPA came into effect. Thus, we measure the effects of BAPCA by comparing the spread in rates given to risky and safe students before BAPCPA to the spread in rates after the statute was passed. We find that risky students (who economic theory would predict would have been those most likely to receive a discount after the law change) saw little to no savings from the reduction in bankruptcy protections that BAPCPA created.[24]

Although students did not experience significant changes as a result of BAPCPA, we explore the theoretical question of what would have happened if prices had decreased. To measure whether more students would choose to attend college if prices decreased, we first show that the cutoff FICO credit score of 645 (using the higher of the student's and the co-borrower's scores if there was a co-borrower)[25] was used by PSL issuers to split students into safe and risky categories, with a sizable difference in interest rates between the two groups.[26] Based on the data, we assume that students with scores just

---

[23] We find that the safe category in 2005 (the year that BAPCPA became effective) consisted of students with a credit score of over 645 or a co-borrower with such a credit score. Alternatively, we looked at a super-safe category: seniors at several dozen of institutions defined as Tier 1 or Tier 2 institutions as defined by Barron rankings in 2005—students that were virtually assured of completing the degree and getting a good job. The best schools were in Tier 1, there were four tiers of ranked schools, but the vast majority of the schools in the U.S. were unranked (effectively a giant Tier 5). As a reference point, the University of California, Berkeley was in Tier 2. The results are virtually unchanged when we use these students as a control group instead.

[24] As we discuss below, we found an effect of 0.07%. Our econometric technique and data available do not allow us to rule out an effect as large as one percent at the standard ninety-five percent confidence level. However, as also noted below, even this large of an effect would not have led to more borrowing.

[25] We term this the "maximum FICO."

[26] As we outline in the Appendix, this threshold is evident from the data. While it is not *a priori* obvious why issuers would use a threshold, as opposed to a continuous function, this type of FICO threshold is prevalent both in the mortgage and in the credit card industry. However, the FICO thresholds differ between industries: in credit cards, a FICO of 660 is usually the boundary between prime and subprime, and for mortgages it might be closer to 700, with Fannie Mae and Freddie Mac using a variety of thresholds (all with FICO scores divisible by 10). Martha Poon, *From New Deal Institutions to Capital Markets: Commercial Consumer Risk Scores and the Making of Subprime Mortgage Finance*, 34 ACCT. ORGS. & SOC'Y 654, 663 (2009) (noting that in 1995, Freddie Mac announced that "a FICO® score of 660 was the eyeball threshold for their definition of loans eligible for the prime investment. Within a month Fanny Mae swiftly followed suit adopting the identical convention in October to demarcate their prime loans."). The existence of such thresholds is likely an artifact of the past when computerized models were not ubiquitous, but in either case the analysis of the optimality of such thresholds is outside of the scope of this article. *See, e.g.*, *id.* at 668 (noting that "[t]he [Federal Reserve Board's] Commercial Bank Examination Manual and the Bank Holding Company Supervision Manual both observe that a FICO of 660 is the reported industry benchmark for the subprime lending (consumer credit and mortgages) although they are

above 645 (say, 646) and just below 645 (say, 644) are virtually the same along any unobserved dimensions.[27] Nevertheless, these two otherwise virtually identical students face markedly different interest rates. We analyze the difference in student loan take-up between these two groups (just below and just above the FICO threshold), and find that despite the markedly different interest rates, safe and risky students behave virtually identically. In other words, students are insensitive to price. Students whose maximum FICO is near the 645 threshold do not seem to react to changes in interest rate of roughly three percentage points,[28] a considerable price difference. Put another way, students behave as if they are completely inelastic to interest rate changes which means that even if BAPCPA had lowered prices, it is unlikely that more students would have chosen to take out student loans, and thus to attend college, if interest rates decreased. We discuss potential reasons for this finding below.[29]

The effects of being able to discharge a debt on future outcomes of the borrower are hard to measure empirically. The effects of *not* being able to discharge a particular kind of debt are also hard to measure.[30] However, in the broader context of filing Chapter 13 bankruptcy, two recent studies show that being able to discharge debt in bankruptcy has enormous positive effects.

One study uses Social Security Administration records matched to bankruptcy filers and shows that the ability to discharge debts leads to an increase in annual earnings of $5,600, a decrease in five-year foreclosure rates of nineteen percentage points, and a one percentage point decrease in five-year mortality rates.[31]

Using a different dataset that links over 175,000 bankruptcy filings to credit bureau records, another study estimates that a Chapter 13 bankruptcy discharge "decreases an index measuring adverse financial events such as

---

careful to indicate that the government guidance does not endorse any 'single definitive cutoff point for subprime lending.'") (citation omitted).

[27] We present evidence of this in the Appendix *infra*.

[28] We refer to interest rates in percentages in this article, for ease to the general reader.

[29] This finding is consistent with finding of significant price dispersion (and thus, likely highly inelastic demand) in other consumer financial markets such as mortgages and credit cards. *See, e.g.*, Victor Stango & Jonathan Zinman, *Borrowing High Versus Borrowing Higher: Price Dispersion and Shopping Behavior in the U.S. Credit Card Market*, 29 Rev. of Fin. Stud. 979 (2016); Alexei Alexandrov & Sergei Koulayev, No Shopping in the U.S. Mortgage Market: Direct and Strategic Effects of Providing Information (Oct. 31, 2015), http://www.ftc.gov/system/files/documents/public_events/945353/Koulayev_no_shopping_in_the_US_mortgage_market_file_2016_0.pdf.

[30] However, we can perhaps learn something from research that links student loan debt to other types of spending, like buying a home. Analogizing to this context also leads us to suspect a high cost to students. *See, e.g.*, Alvaro Mezza et al., *On the Effect of Student Loans on Access to Homeownership* 32 (FEDS Working Paper No. 2016-10, 2016), http://papers.ssrn.com/sol3/Papers.cfm?abstract_id=2732030 [https://perma.cc/XLH2-3KJC]. The data is not encouraging. *See id.* (finding "that a 10 percent increase in student loan debt causes a 1 to 2 percentage point drop in the homeownership rate for student loan borrowers . . . . ").

[31] *See* Will Dobbie & Jae Song, *Debt Relief and Debtor Outcomes: Measuring the Effects of Consumer Bankruptcy Protection* 2 (Nat'l Bureau of Econ. Research, Working Paper No. 20520, 2015).

civil judgment and repossession by 0.323 standard deviations for the marginal recipient, and significantly decreases seven of the eight individual measures of financial strain that compose the index."[32] It also estimates that bankruptcy protection increases "the marginal recipient's credit score by 17.0 points over the first five post-filing years, a 3.0 percent increase from the dismissed filer mean."[33] This research suggests that the inability to discharge private student loans could be a significant cost for students and their co-borrowers.[34]

Troublingly, this cost is one that affects a growing number of students and a large proportion of already-vulnerable individuals. A recent study estimated that nineteen percent of students at a four-year college or university who graduated with debt had some PSLs.[35] The average private loan debt load as of 2012 was $13,600 per student.[36] In the meantime, default rates "have spiked significantly since the financial crisis of 2008."[37] As of 2011, "[c]umulative defaults on private student loans exceed $8 billion, and represent over 850,000 distinct loans."[38]

Also alarming: poor and minority students are disproportionately affected by our system of student loans. Minority students are more likely to enroll in for-profit schools, borrow more than their white counterparts for the same degrees,[39] more likely to fail to graduate,[40] and more likely to default on student loans in general.[41] Research also suggests that while white

---

[32] Will Dobbie, Paul Goldsmith-Pinkham & Crystal Yang, *Consumer Bankruptcy and Financial Health* 3 (Nat'l Bureau of Econ. Research, Working Paper No. 2103, 2015), http://scholar.princeton.edu/sites/default/files/wdobbie/files/dgy_bankruptcy.pdf [https://perma.cc/46V3-V7TX].

[33] *Id.*

[34] *See generally* Katrina M. Walsemann et al., *Sick of Our Loans: Student Borrowing and the Mental Health of Young Adults in the United States*, 124 Soc. Sci. & Med. 85 (2015).

[35] Inst. for Coll. Access & Success, Student Debt and the Class of 2015: 11th Annual Report 16 (Oct. 2016), https://consumermediallc.files.wordpress.com/2016/10/classof2015.pdf [https://perma.cc/U8V4-QAQV].

[36] *Id.* at 8.

[37] CFPB PSL Report, *supra* note 12, at 8.

[38] *Id.*

[39] Sara Goldrick-Rab, Robert Kelchen & Jason Houle, *The Color of Student Debt: Implications of Federal Loan Program Reforms for Black Students and Historically Black Colleges and Universities* (Wisconsin Hope Lab, Discussion Paper, 2014).

[40] Lucia Graves, *The Gap in Graduation Rates*, U.S. News & World Rep. (May 2, 2008), http://www.usnews.com/education/articles/2008/05/02/the-gap-in-graduation-rates [https://perma.cc/QRN6-HGCD].

[41] Minority and poor students are also more likely to enroll in for-profit schools. *See* Alexia Elejalde-Ruiz, *Why Lower-Income Students Are Drawn to For-Profit Schools*, Chi. Trib. (Oct. 6, 2016), http://www.chicagotribune.com/business/ct-black-youth-for-profit-trade-schools-1009-biz-20161007-story.html [https://perma.cc/N65S-76ZP] ("[T]he number of students enrolling in for-profit schools has risen dramatically over the past 15 years. And low-income minority students are 3-1/2 times more likely to enroll in for-profit institutions than higher-income students, according to a 2015 study from the Pell Institute . . . ."). "Student loan default rates are also two to three times higher for borrowers who attend for-profit schools than those who attend private nonprofit and public four-year schools, according to a 2015 study by the nonprofit College Board." *Id.*

A number of large for-profit schools have recently shut down after regulators sued them for violations of law, including charges that they steered students into predatory loans. *See, e.g.,*

college graduates seem to enjoy an "economic cushion" from their college education, African American college graduates do not.[42] Unlike their white counterparts, "African American college graduates are equally likely to file for bankruptcy as African Americans without a college diploma."[43] Most recently, researchers at the Brookings Institution found that "[f]our years after graduation, black graduates have nearly $25,000 more student loan debt than white graduates: $52,726 on average, compared to $28,006 for the typical white graduate."[44]

Given these findings, we offer some recommendations to reform how student loans are treated in bankruptcy and to regulate private student loans. First, we join with many others in calling for an amendment to the Bankruptcy Code to treat PSLs in the same way as credit cards or other types of unsecured debt are treated. That is: PSLs should be automatically dischargeable in bankruptcy unless the bankruptcy judge finds that the bankruptcy petition has been filed in bad faith. This is, we think, the simplest and best solution to the problems we identify.

Nonetheless, we recognize that rolling back the protection PSL lenders obtained in 2005 may be a hard sell politically. A number of bills have been proposed attempting to do just that and none have gained much traction. Consequently, we propose an alternative. Given students' inelastic demand and the fact that PSL lenders are in a better position to know the true likelihood of loan repayment, the CFPB should implement an ability-to-repay rule similar to the one they have implemented in the mortgage markets. In other words, private student loan lenders would incur liability to borrowers if they originated loans without verifying a borrower's ability to repay that loan. Because this verification is a complex endeavor, we outline some of the features of PSLs that could be packaged as a "qualified PSL," a safe harbor to the ability-to-repay rule.

Part I provides some background on PSLs and rebuts some of the economic justifications for their special treatment in bankruptcy. Part II describes the data and Part III our empirical strategy. Part IV lays out our results: we find that BAPCPA failed to lower prices and also that even if it had, it is unlikely that more students would have chosen to attend college.

Danielle Douglas-Gabriel, *Government Watchdog Wins $530 Million Lawsuit Against For-Profit Corinthian Colleges. Too Bad It Will Never See a Dime*, WASH. POST (Oct. 8, 2015), https://www.washingtonpost.com/news/grade-point/wp/2015/10/28/government-watchdog-wins-530-million-lawsuit-against-for-profit-corinthian-colleges-too-bad-it-will-never-see-a-dime [https://perma.cc/P22U-8YVA]; Press Release, Consumer Fin. Prot. Bureau, CFPB Sues For-Profit College Chain ITT for Predatory Lending (Feb. 26, 2014), http://www.consumerfinance.gov/about-us/newsroom/cfpb-sues-for-profit-college-chain-itt-for-predatory-lending [https://perma.cc/FP34-T5JN].

[42] Abbye Atkinson, *Race, Educational Loans, & Bankruptcy*, 16 MICH. J. RACE & L. 1, 2 (2010).

[43] White college graduates are less likely to file for bankruptcy "relative to their proportion in the general population." *Id.*

[44] Judith Scott-Clayton & Jing Li, *Black-White Disparity in Student Loan Debt More Than Triples After Graduation*, 2 EVIDENCE SPEAKS REP. 1, 2 (2016), https://www.brookings.edu/research/black-white-disparity-in-student-loan-debt-more-than-triples-after-graduation [https://perma.cc/H6BU-7WSP].

Part V discusses our results and proposes two major recommendations: PSLs should be automatically dischargeable in bankruptcy, but in the alternative, we adapt a tool from the mortgage markets and recommend that the CFPB enact ability-to-repay requirements for PSL issuers. Part VI concludes. Throughout this article, we have attempted to balance the need to give enough technical information about our analysis for those interested in evaluating it with the need to make it readable to the lay reader.[45]

I. Background

A. Private Student Loans (PSLs): A Primer

We begin with a definition: as the name implies, these loans are issued by private institutions for educational purposes.[46] PSLs are distinct from other types of educational loans issued by private institutions. Table 1 illustrates the main differences.[47]

TABLE 1: COMPARISON OF STUDENT LOAN TYPES, BY ISSUER FOR LOANS ISSUED BETWEEN 2000–JULY 1, 2006

	Direct Loan Program	Federal Family Education Loan Program (FFELP)	Private Student Loans (PSL)
Lender	Department of Education	Private entities	Private entities
Guarantor	Federal government	Federal government	Private entities (sometimes nonprofit)
Risk-pricing	No risk-pricing; same interest rate across products	No risk-pricing; same interest rate across products	Lender risk-prices loan and charges premium (margin) at origination
Co-borrowers[48]	None allowed	None allowed	Between 80–90% of loans require co-borrower

[45] The Appendix, for example, is intended for an audience familiar with statistics or econometrics. Although some parts of the main article contain technical language, we have strived to translate the technical aspects for the lay reader. We thank our editors in helping us do this. Any failures are entirely ours.

[46] Issuers of PSLs are private institutions, which includes both for-profit and not-for-profit lenders.

[47] Because loan programs have changed slightly throughout the years, we limit our discussion to those issued between 2000–06. One example of the changes that are not relevant to our analysis is that beginning on July 1, 2006, FFELP and Direct Loans had fixed interest rates that were set every year. *Interest Rate and Fees*, U.S. DEP'T OF EDUC., https://studentaid.ed.gov/sa/types/loans/interest-rates [https://perma.cc/CA5D-9NMJ].

[48] While FFELP and Direct Loans are made to one person alone, it is not always the student. FFELP and Direct PLUS loans could be taken out by a student's parents to assist in

Interest Rates	Set by Congress; varied by loan status (in school, deferred, in repayment)	Set by Congress; varied by loan status (in school, deferred, in repayment)	Set by lender for each loan; variable rate fixed to an index
Bankruptcy Treatment[49]	Presumptively nondischargeable since 1998	Presumptively nondischargeable since 1998	Presumptively nondischargeable since 2005
Programs for Borrowers in Trouble	Set by Congress; various forbearance programs	Set by Congress; various forbearance programs	Set by lender on ad-hoc basis (few or none contractually required)
Forgiveness Programs	Set by Congress: includes death forgiveness, public interest forgiveness, other programs	Set by Congress: includes death forgiveness, public interest forgiveness, other programs	Set by lender on ad-hoc basis (few or none contractually required)

From 1965 until 2010, private institutions could originate federally-guaranteed student loans under the Federal Family Education Loan Program (FFELP).[50] These loans were primarily issued with private capital, but the federal government served as a full guarantor.[51] In 1992, Congress authorized the Department of Education to issue and administer the Direct Loan Program.[52] At that time, and until the program ended in 2010, FFELP loans were practically identical to the loans made directly by the Department of Education under the Direct Loan program. In particular:

(1) the loans were not risk-priced (the interest rates were the same across all borrowers for a particular type of loan);
(2) almost all the loans had fixed interest rates (meaning the lender and ultimately the government took the risk of interest rate volatility);
(3) the loans were made to only one borrower (no co-borrowers); and
(4) there were (and are) a number of loan forbearance and forgiveness programs available to borrowers.[53]

In contrast, PSLs are almost exclusively variable rate loans tied to an index such as the London Interbank Offered Rate (LIBOR)[54] or the 3-month

financing their education. *PLUS Loans*, U.S. Dep't of Educ., https://studentaid.ed.gov/sa/types/loans/plus [https://perma.cc/26N6-YZMC].

[49] For a history of how and when various kinds of student loans became presumptively nondischargeable, see generally Pardo & Lacey, *supra* note 16.

[50] Congress ended FFELP on July 10, 2010. Health Care and Education Reconciliation Act of 2010, Pub. L. 111–152, 124 Stat. 1029 and note.

[51] David M. Herszenhorn & Tamar Lewin, *Student Loan Overhaul Approved by Congress*, N.Y. Times (Mar. 25, 2010), http://www.nytimes.com/2010/03/26/us/politics/26loans.html [https://perma.cc/5PWN-GTA3] (reporting on the end of the guaranteed loan program).

[52] *Id.*

[53] FFELP borrowers can consolidate their loans into the Direct Loan Program to obtain public service loan forgiveness. *See Public Service Loan Forgiveness*, U.S. Dep't of Educ., https://studentaid.ed.gov/sa/repay-loans/forgiveness-cancellation/public-service [https://perma.cc/9V4V-JXDK].

[54] "LIBOR (or ICE LIBOR) is the world's most widely-used benchmark for short-term interest rates. It serves as the primary indicator for the average rate at which banks that con-

Treasury Bill Index.[55] PSL interest rates can also be considerably higher than FFELP or Direct Loan interest rates. As an example, Stafford loan interest rates were 4.17% in the 2004–2005 academic year and 6.10% in the 2005–2006 academic year, whereas PSLs offered in that time period had initial rates of as much as 19% for the riskiest borrowers.[56]

PSL interest rates vary because they are risk-priced at origination.[57] This is in direct divergence from federal loans that have a statutorily set interest rate that is offered to all students who take the loan.[58] PSL lenders price the loan primarily using the borrower and co-borrower FICO credit scores.[59] Students with lower credit scores (sometimes called "subprime" borrowers) are almost always required to borrow with a co-borrower. The co-borrower is liable for the loan in the same way as the student. When students borrow with a co-borrower, lenders typically price the loan according to the highest credit score between the borrower and co-borrower (what we call the "maximum FICO").[60] Upwards of ninety percent of PSLs made to undergraduates in 2011 were made with a co-borrower.[61]

The final major difference is the treatment of the loans in bankruptcy. Whereas federal student loans have been presumptively nondischargeable in bankruptcy (in some fashion) since 1976,[62] PSLs received that treatment relatively recently. Before 2005, PSLs were treated similarly to credit cards, car loan deficiencies, and medical bills: they were automatically dischargeable in bankruptcy. It was only in 2005, with the sweeping bankruptcy reform

---

tribute to the determination of LIBOR may obtain short-term loans in the London interbank market." *What is "LIBOR*," INVESTOPEDIA, http://www.investopedia.com/terms/l/libor.asp [https://perma.cc/TE72-YNQS].

[55] "An index based on the auctions of U.S. Treasury bills . . . commonly used in determining mortgage rates for mortgages with an unfixed component and as a performance benchmark for investors in the capital markets as it represents a rate of return that investors would be able to get from almost any bank, with minimal effort." *Definition of "Treasury Index*," INVESTOPEDIA, http://www.investopedia.com/terms/t/treasuryindex.asp [https://perma.cc/3MZN-LBVD].

[56] *See* CFPB PSL REPORT, *supra* note 12.

[57] Ang & Jiménez, *supra* note 17, at 176; *see also* Jonathan D. Glater, *The Unsupportable Cost of Variable Pricing of Student Loans*, 70 WASH. & LEE L. REV. 2137 (2013) (critiquing a proposal to vary federal loan pricing based on risk).

[58] Ang & Jiménez, *supra* note 17, at 176; Glater, *supra* note 57.

[59] Credit scores order consumers by their level of credit risk and their construction "usually takes advantage of accepted statistical methods (such as logistic regression or probit models), which attach probability estimates to something happening, such as paying a bill on time." Meta S. Brown, *Credit Scores: Every Day Predictive Analysis*, FORBES (Aug. 31, 2015), http://www.forbes.com/sites/metabrown/2015/08/31/credit-scores-everyday-predictive-analytics/#138ae1d767e6. The credit scores that we observe in our sample are built from these, typically, continuous measures, and are rounded to the nearest integer.

[60] *See* CFPB PSL REPORT, *supra* note 12; s*ee also* Ang & Jiménez, *supra* note 17; Susan M. Dynarski, *The RNC Wants to Make Student Loans Competitive Again. They Never Were*, BROOKINGS (July 21, 2016), https://www.brookings.edu/research/the-rnc-wants-to-make-student-loans-competitive-again-they-never-were [https://perma.cc/756A-T4DZ].

[61] CFPB PSL REPORT, *supra* note 12, at 27. For an argument that borrowing with a co-borrower who is more creditworthy than the student arguably takes these loans out of the "student loan" category, see Dynarski, *supra* note 60.

[62] Pardo & Lacey, *supra* note 16.

bill, that Congress made all outstanding PSLs practically impossible to discharge.[63]

The presumption of nondischargeability means that a debtor must file an adversarial proceeding within the bankruptcy case (in effect, a federal lawsuit) and prove that having to repay the loan after the bankruptcy would "impose an undue hardship" on her and her dependents.[64] "Undue hardship" is not defined in the Bankruptcy Code and the Supreme Court has not spoken on the issue.[65] Over time, courts have adopted one of two standards to analyze whether a borrower has met her burden: a three-part test developed by the Second Circuit in 1987 or a "totality of the circumstances" approach which looks to the three-part test as some of the circumstances the judge should examine.[66]

Despite the apparent uniformity, however, scholars have found that the same test is applied quite differently. According to Professors Pardo and Lacey, legal outcomes of the cases they examined are "best explained by differing judicial perceptions of how the same standard applies to similarly situated debtors."[67] Instead, as another commentator has noted: "Judges define the standard differently, [sic] they impose different conceptual tests on debtors, and when undue hardship is found, relief is often dependent upon judicial philosophy rather than the merits of the case."[68] The only national empirical examination of this issue found that less than 0.1% of borrowers with outstanding student loans attempted to discharge them in bankruptcy.[69] The law thus has the practical effect of making student loans nondischargeable.

Since the BAPCPA applied retroactively to PSLs that were originated before the law took effect but had not yet been fully repaid, the law also created a windfall for holders of outstanding PSLs originated before

---

[63] For a discussion of this change, see Ang & Jiménez, *supra* note 17, at 176.

[64] 11 U.S.C. § 523(a)(8)(B) (2012); Fed. R. Bankr. P. 7001.

[65] The Court did speak on an aspect of undue hardship in 2009. It held, 9-0, that a bankruptcy court was required to determine whether a debtor suffered from undue hardship before canceling their student loans. *See* United Student Aid Funds, Inc. v. Espinosa, 559 U.S. 260, 276 (2010). Just last term the Supreme Court declined to hear a case on this exact issue. Tetzlaff v. Educ. Credit Mgmt. Corp., 794 F.3d 756 (7th Cir. 2015), *cert. denied*, 136 S. Ct. 803 (2016) (mem.).

[66] The *Brunner* test requires "a three-part showing: (1) that the debtor cannot maintain, based on current income and expenses, a 'minimal' standard of living for herself and her dependents if forced to repay the loans; (2) that additional circumstances exist indicating that this state of affairs is likely to persist for a significant portion of the repayment period of the student loans; and (3) that the debtor has made good faith efforts to repay the loans." Brunner v. New York State Higher Educ. Servs. Corp., 831 F.2d 395, 396 (2d Cir. 1987) (citation omitted).

The totality test uses similar prongs but affords more judicial discretion. *See* C. Tyler Flores, Book Note, *Unprecedented Uncertainty: The Corinthian Colleges Debacle, the Department of Education's Response, and the Bankruptcy Practitioner's Dilemma*, 39 Am. J. Trial Advoc. 651, 675 (2016).

[67] Pardo & Lacey, *supra* note 16, at 406.

[68] Aaron N. Taylor, *Undo Undue Hardship: An Objective Approach to Discharging Federal Student Loans in Bankruptcy*, 38 J. Leg. 185, 188 (2012).

[69] *See* Iuliano, *supra* note 18, at 505.

BAPCPA—and a corresponding loss to the borrowers who suddenly lost the option of discharging these loans. Those loans, originated at a time when PSLs were easily (and automatically) dischargeable in bankruptcy, presumably included within their price a larger risk premium to compensate lenders for the free availability of the bankruptcy discharge. Pre-BAPCPA, borrowers presumably had no choice but to pay for this premium.[70] Nevertheless, after bankruptcy reform became effective, all PSLs, no matter when originated, became equally difficult to discharge in bankruptcy.

Recent analysis of the best and largest dataset available on student loans indicates that the probability of a student defaulting on a loan varies drastically across the types of institutions that the student is attending, even after taking into account various other characteristics such as race and family income.[71] For 2005 graduates (the year when BAPCPA was enacted), the five-year default rate ranged from thirty-six percent at for-profit schools to six percent at selective four-year institutions.[72] The rates were higher for two-year schools than for four-year schools.[73] Other data also show differences in outcomes by major.[74] For example, ten years after graduation, engineering majors owe a significantly smaller share of their debts than do other majors, while social science and humanities majors owe a larger share.[75] Default rates (percentage of borrowers in default) are lowest for business majors, and health majors default on the lowest fraction of their debts (percentage of dollars lent in default).[76]

This leads us to a point of clarification: when discussing our findings, we often assume that the only students materially affected by BAPCPA are students who are *ex ante* more likely to default (for example, students with subprime credit scores).[77] This is in contrast to students who are *ex ante* unlikely to default (for example, prime students at flagship institutions) since, by definition, lenders have less reason to think that these students would file for bankruptcy. These differences across schools and majors, including the fact that the fraction of students at selective four-year institutions

---

[70] A consumer cannot waive the ability to obtain a bankruptcy discharge by contract. Economic theory suggests that in a competitive market with constant marginal cost the incidence falls on the consumers. *See, e.g.*, E. Glen Weyl & Michal Fabinger, *Pass-Through as an Economic Tool: Principles of Incidence under Imperfect Competition*, 121 J. POL. ECON. 528 (2013). We do not have any evidence to suggest considerable economies of scale that would make marginal cost nonconstant.

[71] *See generally* Adam Looney & Constantine Yannelis, *A Crisis in Student Loans? How Changes in the Characteristics of Borrowers and the Institutions They Attended Contributed to Rising Loan Defaults*, BROOKINGS PAPERS ON ECON. ACTIVITY (2015), https://www.brookings.edu/wp-content/uploads/2016/07/ConferenceDraft_LooneyYannelis_StudentLoanDefaults.pdf [https://perma.cc/C3B3-GSLQ].

[72] *Id.*

[73] *Id.*

[74] *See* Lance Lochner & Alexander Monge-Naranjo, *Student Loans and Repayment: Theory, Evidence and Policy* 36–38 (Nat'l Bureau of Econ. Research, Working Paper No. 20849, 2015), http://www.nber.org/papers/w20849 [https://perma.cc/UN8N-6847].

[75] *Id.*

[76] *Id.*

[77] *Id.*

who default is low both in absolute and in relative terms, suggests that this assumption is valid. Even if BAPCPA made lending to the lower-risk students (such as the ones attending selective schools) even safer, that change was comparatively small relative to the change for the riskier students, such as the ones attending for-profit schools. Further supporting this intuition is the fact that being in default on student loans does not automatically imply that a bankruptcy would be filed. Hence, BAPCPA made it safer to lend to students at selective four-year institutions only through the effect on a fraction of the six percent of those students that end up defaulting.

B.   *Rebutting Economic Justifications for Special Treatment of PSLs in Bankruptcy*

In this section, we begin to rebut some of the frequently-heard justifications for the special treatment afforded to PSLs in bankruptcy after 2005.

One of the more common refrains of *laissez-faire* economists and law and economics scholars is that a perfectly competitive market will ensure an efficient outcome.[78] In the case of PSLs post-BAPCPA, the argument would proceed as follows: if having dischargeable student loans would benefit consumers more than it would harm lenders, lenders would offer contracts that ensure effectively dischargeable loans, BAPCPA notwithstanding.[79] However, lenders do not offer such loans, and thus it must be the case that *non-dischargeable* loans benefit consumers since consumers get all the benefits of market competition, whether it is through lower prices or through more efficient contract terms. In short, if dischargeable (and more expensive) loans were efficient, the market would offer them, despite the bankruptcy laws. This particular argument, as any argument that perfect competition results in an efficient outcome, has many assumptions built in, assumptions that do not seem to be satisfied in this particular case.[80] In the next few

---

[78] This is the first fundamental theorem of welfare economics, derived by economists like Kenneth Arrow and Gerard Debreu in the 1950s. For a more modern treatment, see Mas-colell, Whinston & Green, Microeconomic Theory (1995). Since then several economists attempted to effectively extend the setting where this theorem applies. *See, e.g.*, Benjamin Klein & Keith B. Leffler, *The Role of Market Forces in Assuring Contractual Performance*, 89 J. Pol. Econ. 615 (1981) (arguing that reputation incentives in a competitive market might be sufficient to assure contractual performance without the need for regulation or contracts).

[79] The contract could have a provision specifying that if the consumer obtains a discharge in a bankruptcy proceeding, the lender will not enforce this loan. Such language would not affect the bankruptcy proceedings themselves: the loan is still non-dischargeable. Nonetheless the lender has contractually obligated itself to effectively forgive the loan after the borrower gets a bankruptcy discharge. Attempting to collect the loan post-bankruptcy would of course be allowed, since bankruptcy did not discharge the loan. However, the lender who chose to do this would likely run afoul of consumer laws enforced by the CFPB. In particular, the CFPB would likely consider it an unfair act or practice to continue to collect and debt collectors might be subject to lawsuits under the Fair Debt Collection Practices Act. Although a novel issue, the lender might also be subject to contract damages.

[80] According to a prominent education economist, "[t]here has never been a large-scale, competitive, private market for student loans in the U.S. Further, economic theory predicts

paragraphs, we outline the argument and the main assumptions in detail, as well as the reasons that we do not believe that the main assumptions of the argument are satisfied in this instance.

For the sake of the next few paragraphs, suppose that consumers are perfectly informed, rational, and forward-looking. Also suppose that, in addition to choosing the product's price (or quantity), lenders also choose additional attributes of the loan. One attribute could be, for example, whether the loan is dischargeable in bankruptcy. If the lender chooses dischargeable loans, it can also choose how much of the loan is dischargeable and in which circumstances. In general, this attribute could be anything that consumers value, for example quality of the product. Regardless of the nature of the attribute, Professor Spence illustrated that firms do not have the right incentives to reach an efficient outcome, even in a perfectly competitive market.[81] A profit-maximizing firm caters to the marginal consumer (the one indifferent between taking out a loan with this firm, as opposed to a loan with another firm or no loan at all) as opposed to the average consumer (a consumer who is likely to take out a loan regardless of marginal changes in pricing or in quality). Nevertheless, for the purposes of a social welfare-maximizing outcome, the firm should have been catering to its average consumer. This type of catering to the marginal consumer, who matters for profit, as opposed to the average consumer, who matters for efficiency and social welfare, is present regardless of whether firms are in a perfectly competitive market.[82]

Similar issues arise if there is asymmetric information (lenders do not know consumers' riskiness) and consumers can signal the fact that they are low-risk by agreeing to particularly onerous contract terms. The model is that of lower-risk and higher-risk consumers, with lenders being unable to differentiate between the two. However, given a contract with particularly onerous terms in case of default, a lower-risk consumer will agree to the contract since the consumer knows that she is unlikely to incur the onerous

---

there will never be a large-scale, competitive, private market for student loans. Milton Friedman pointed this out in 1955." Dynarski, *supra* note 55.

[81] *See* A. Michael Spence, *The Economics of Internal Organization: An Introduction*, 6 BELL J. ECON. 163, 163–72 (1975) (discussing importance of firm incentives to reach efficient outcomes); *see also* Eytan Sheshinski, *Direct Versus Indirect Remedies for Externalities,* 84 J. POL. ECON. 797, 797–808 (1976) (discussing tax policies designed to obtain improved competitive allocation in the presence of consumption externalities). Spence won the 2001 Nobel Prize in Economics.

[82] This paragraph does not apply in several knife-edge cases. Most notably, it does not apply in a perfectly competitive market where each firm has only one decision variable. For example, if each firm chooses only quantity produced, the products are homogeneous, the market is perfectly competitive, with perfectly informed consumers, then the argument in this paragraph does not apply and instead the first fundamental welfare theorem mentioned above applies: the market outcome is efficient.

However, relaxing any of these conditions results in a market inefficiency described in the paragraph. Note that this market inefficiency is relative to a hypothetical first-best world. In the real world, where the government is not omnipotent, omniscient, and frictionless, the inefficient market outcome has to be compared with the inefficient government intervention outcome. *See* RONALD COASE, ESSAYS ON ECONOMICS AND ECONOMISTS (1994).

default costs. On the other hand, a higher-risk consumer will not agree to the same terms since the likelihood of the onerous default costs is higher. This leads to a separation between lower-risk consumers (who pay lower prices) and higher-risk consumers. A perfectly competitive market results in too much signaling: lower-risk consumers want to signal that they are low risk to separate themselves from higher-risk consumers, but this signaling is excessive from the efficiency perspective as lower-risk consumers end up taking riskier terms than necessary simply to signal that they are in fact lower risk.[83] For example, in the context of bankruptcy, low-risk consumers might agree to take a loan that is nondischargeable simply to show the lender that they are low-risk consumers, while all loans being dischargeable could be a more efficient outcome.[84]

For similar reasons, requiring an opt-in—consumers having to opt into loans that are nondischargeable (and receiving a price cut)—might also not result in an efficient outcome. All the lower-risk consumers will opt into a nondischargeable loan, effectively agreeing to the onerous contract terms discussed above, with all the same issues arising. In other words, regardless of the starting point—an opt-in or a menu of choices as in the previous paragraph —the market outcome is inefficient. The fact that consumers possess private information that can affect lenders' profits is, in a sense, a Coasian transaction cost that prevents an optimal outcome.[85]

Finally, for the last several paragraphs we assumed that consumers are perfectly informed, rational, and forward-looking: assumptions that can be immediately rejected by interacting with a typical consumer obtaining their first student loan (a seventeen or an eighteen-year-old who just graduated from high school). In addition to voluminous evidence of consumers' behavioral biases in general,[86] there are also numerous studies showing students are significantly affected by various nudges in presentation of the disclosure form, often in contrast to much smaller effects of lower interest rates.[87] Un-

---

[83] *See, e.g.*, Leah Shepard, *Seeking Solutions to Financial History Discrimination*, 46 Conn. L. Rev. 993 (2014).

[84] *See* Samuel A. Rea Jr., *Arm-Breaking, Consumer Credit and Personal Bankruptcy*, 22 Econ. Inquiry 188, 188–208 (1984) (discussing complex contracts with secured credit transactions attempting to provide efficient repayment).

[85] *See* Ronald H. Coase, *The Problem of Social Cost*, 3 J. Law & Econ. 1, 1–44 (1960) (discussing the economic problem of externalities). Coase postulated that, in the absence of transaction costs, market participants will be able to negotiate their way to an efficient outcome. For example, if a factory produces too much pollution that makes people living around the factory develop health issues, people living around the factory will simply pay the factory owner to adopt greener technology. However, transaction costs might negate that: for example, some people will be unaware of the true extent of the issue, and others will want to free-ride on their neighbors. If enough of my neighbors pay for the greener technology, then I do not need to.

[86] *See, e.g.*, Daniel Kanehman, Thinking, Fast and Slow (2011).

[87] *See, e.g.*, Richard H. Thaler & Cass R. Sunstein, Nudge: Improving Decisions About Health, Wellness, and Happiness (2008). For more recent applications to student loan choices, see Maximilian Schmeiser et al., *Does Salient Financial Information Affect Academic Performance and Borrowing Behavior Among College Students?*, 75 Fin. & Econ. Discussion Series 1–38 (2015); Benjamin L. Castleman & Lindsay C. Page, *Freshman Year Financial Aid Nudges: An Experiment to Increase FAFSA Renewal and College Persistence*

surprisingly, consumer behavioral biases frequently result in competitive markets not leading to efficient outcomes: firms cater to consumers' biases as opposed to consumers' true long-term well-being.[88]

II. Data

Our data includes origination records of all private student loans originated or purchased by the nine largest private student lenders from 2005 through 2011.[89] These data were voluntarily submitted to the CFPB by the participating lenders for the purposes of a 2012 report to Congress on Private Student Loans.[90] We refer to these data as the CFPB PSL Loan Level Data Set.[91]

These data are at the loan level and include the information that private student loan lenders may use in underwriting such as borrower and co-borrower credit scores, school and program attended, year in school, and amount borrowed.[92] In addition, the data include information about the terms of the loan including the deferment term, the repayment period, and pricing information. Almost all of the PSLs in the sample are variable rate loans indexed to prime, LIBOR, T-Bills, or another index. The data includes the original interest rate, the index the interest rate is tied to, and the "margin"

1–32 (EdPolicyWorks, Working Paper No. 29, 2014); Xialing Ang & Alexei Alexandrov, Choice Architecture Versus Price: Comparing the Effects of Changes in the U.S. Student Loan Market (2016) (unpublished manuscript) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2504060; Christa Gibbs, Essays on Financial Aid and Loan Aversion (May 26, 2016) (unpublished Ph.D. dissertation, University of Wisconsin—Madison), http://gradworks.umi.com/10/12/10124982.html [https://perma.cc/4M6G-EAXX].

[88] *See, e.g.*, Oren Bar-Gill, Seduction by Contract: Law, Economics, and Psychology in Consumer Markets (2012); Alexei Alexandrov, *Competing for Consumers with Self-Control Problems*, 25 J. Econ. Mgmt. & Strategy 179, 179–94 (2015); Sefano Dellavigna & Ulrike Malendier, *Paying Not to Go to the Gym*, 96 Am. Econ. Rev. 694, 694–712 (2006); Michael D. Grubb, *Overconfident Consumers in the Marketplace*, 29 J. Econ. Persp. 9, 9–35 (2015); Paul Heidues & Botond Köszegi, *Exploiting Naivete About Self-Control in the Credit Market*, 100 Am. Econ. Rev. 2279, 2279–2303 (2010); *see also* Kathy Chu, *Credit Cards Go After College Students*, USA Today (Apr. 4, 2008), http://usatoday30.usatoday.com/money/perfi/college/2008-03-30-credit-cards-college_N.htm [https://perma.cc/TV2K-QN9V]; Thomas Jackson, *The Logic and Limits of Bankruptcy Law* (Harvard Law Sch. Program in Law & Econ., Discussion Paper No. 16, 1985), http://www.law.harvard.edu/programs/olin_center/papers/pdf/Jackson_16.pdf [https://perma.cc/V4WE-3XG9].

[89] "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. The information was provided under a non-disclosure agreement and is protected under various federal laws as proprietary and confidential business information." CFPB PSL Report, *supra* note 12, at 109.

[90] *Id.*

[91] We only use data from 2005 to 2007. Unfortunately, both for the country and for our purposes, the great recession happened right after that, thus any comparisons of pre-2007 data with post-2007 data in the same regression is at best suspect.

[92] The actual information and algorithms used by lenders to make financing decisions are closely guarded proprietary secrets. However, while it is possible that some lenders in the sample used information we do not have here to make lending decisions, we do not believe that information would have been used for pricing decisions.

for a particular loan. The margin is the risk-based premium the lender charges over this cost of funds. The data were standardized across lenders. In order to preserve the confidentiality of the participating lenders' business practices, the loans were anonymized so that loans to the same borrower can be linked within lender but cannot be linked across lenders.

We augment the data by merging the PSL Loan Level Data Set to two Department of Education administrative datasets: the Integrated Postsecondary Student Aid Study (IPEDS) and the Postsecondary Education Participants System (PEPS). IPEDS is an annual census of schools that participate in Title IV federal student aid programs and includes information on enrollments, graduation rates, and institution financial condition. PEPS rolls up data from federal student aid programs at the institution and program level.

Given the timing of the introduction of BAPCPA and the start of the CFPB PSL Loan Level Dataset, illustrated in Figure II-1, we restrict attention to the first quarter of each year.[93] This allows us to net out any seasonal patterns in borrowing that may affect our analysis. We also restrict the sample to four-year undergraduates at private non-profit or public institutions.

FIGURE II-1: TIMELINE OF POLICY CHANGE[94]
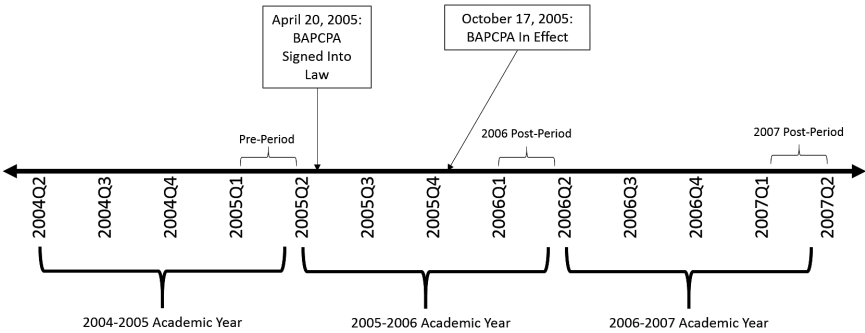
Descriptive statistics for select variable in each quarter included in the analysis dataset are presented in Table 2. Over time, average original interest rates increase from 7.1% to 8.6% to 10.4%, due to a combination of rising

---

[93] BAPCPA was not a new law. In 2000, both the Senate and the House passed a bankruptcy reform bill that was substantially similar to the one that eventually became BAPCPA. With regard to the presumptive nondischargeability of PSLs, it was exactly the same. President Bill Clinton vetoed that bill, but after President Bush was elected, a veto was no longer an obstacle. Well before March 2005, many newspapers reported that BAPCPA was imminent. Nevertheless, lenders would not have changed their policies before April 20, 2005 for two major reasons. First, because the timing of when the law would be signed and become effective was not known. And second, because regulators would have likely frowned upon a bank who decided to change their lending policies to give higher-risk borrowers more loans (or give them a discount in loans) before the loans themselves actually became nondischargeable. For further discussion, see Ang & Jiménez, *supra* note 17, at 195–96.

[94] This graphic was also used in Ang & Jiménez, *supra* note 17. It is used here with permission.

index rates as well as increasing margins. The characteristics of borrowers are relatively stable over time: mean graduation rate is roughly fifty-two to fifty-three percent for all three quarters, average tuition and fees are approximately $12,000 per year,[95] and about a third of borrowers attend a private institution. It appears that the average credit characteristics of borrowers are also relatively stable: approximately eighty percent of borrowers have a co-borrower, and the maximum FICO among co-borrowers (maximum FICO) is between 710 and 720, while the average student borrower's FICO score is roughly 650.

TABLE 2: DESCRIPTIVE STATISTICS BY QUARTER (AVERAGES)

	(1) 2005Q1	(2) 2006Q1	(3) 2007Q1
Original Rate	7.147%	8.620%	10.359%
Original Balance	$10,780	$11,220	$11,515
Origination Fee	7.286%	7.074%	6.748%
Margin	4.369%	4.652%	5.047%
Has a Co-Borrower	78.7%	80.5%	79.8%
Maximum FICO Score	720	718	710
Borrower FICO Score	654	651	643
Tuition and Fees	$11,548	$11,849	$12,154
Private School	35.2%	31.7%	30.2%
Graduation Rate	52.83%	53.05%	52.43%
Observations	17,054	57,183	82,167

Notes:
Restricted to four-year undergraduates at public and private not-for profit schools in the first quarters of 2005, 2006, and 2007.
Source:
CFPB PSL Loan Level Dataset, IPEDS, and PEPS.

These averages tell a story of increasingly more expensive loans as well as decreased borrower credit quality. The average starting rate of the loans (original rate) increased over 1.5% between 2005–06 and 2006–07. Recall that the original rate is made up of the index (e.g., LIBOR or three-month treasury bill) plus the margin. Margins increased also over time, although not as much as did the original rate. At the same time as interest rates were increasing, so were the number of loans being issued. Between 2005 and 2006, the number of loans more than tripled. In separate work, we attribute some of the increase from Q1 2005 to Q1 2006 to bankruptcy reform.[96] The further increase in 2007 is also consistent with the increasing volumes seen in the securitization of mortgages, auto, credit card, and equipment asset-

---

[95] We exclude room and board from our calculation to abstract from the on-campus versus commuting or off-campus decision.
[96] Ang & Jiménez, *supra* note 17.

backed securities seen during this time.[97] An increased appetite for private student loan asset-backed securities (PSLABS) might also explain the decreasing borrower credit quality between 2005 and 2007.[98]

III. EMPIRICAL STRATEGY

This part describes our empirical approach. We begin by describing our assumptions and justifications for each. We then describe the two techniques we use in our analysis, the regression discontinuity design (RD) and the difference-in-differences (DD) strategy. These econometric techniques allow us to make causal inferences about the effect of BAPCPA on the PSL market but only if the assumptions are plausible.

A. Assumptions

Since our data is limited to loans that were originated, we do not observe loans that were offered to consumers but not accepted. We make two plausible assumptions throughout our analysis:

(1) Consumers are not manipulating their credit scores around the 645 FICO score threshold[99] and

(2) Loan terms are based on observable characteristics that appear in the data.

The first assumption implies that demand for loans and application rates are the same for potential borrowers on either side of the threshold. This assumption is equivalent to saying that individuals on either side of the threshold are also similar on factors that we do not observe in the data: for example, metrics of ability such as students' high school grades or test scores. We tested whether the consumers on different sides of the threshold differ on the dimensions that we can observe, and it does not appear that they do. Of course this is different from being able to say with certainty that there is no unobservable characteristic on which 644 and 646 consumers differ dramatically, but even in that case this unobservable characteristic is

---

[97] *See Statistics*, SEC. INDUS. & FIN. MKTS. ASSOC. (SIFMA) (June 3, 2014), http://www.sifma.org/research/statistics.aspx [https://perma.cc/A42F-XJYL].

[98] *See* CFPB PSL REPORT, *supra* note 12, at 18 ("A large portion of student loan volume during the boom was funded by asset-backed securities ('ABS'). In this respect, the private student loan market resembled the subprime mortgage market. During the boom, high investor demand for student loan ABS ('SLABS') allowed SLABS 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. Generally speaking, the buyer assumed all of the risk that the borrower would fail to repay the loan after such a transaction. Therefore, a PSL lender had an incentive to increase loan volumes made for such a sale, with less incentive to assure the creditworthiness of those loans. This dynamic provided the means and the incentive for PSL lenders and SLABS issuers to originate and securitize greater and greater amounts of PSLs between 2005 and 2007 . . . .").

[99] In other words, the density of credit scores for private student loan applicants and their co-borrowers is smooth through the threshold.

not observed by either us or the lenders, making it unlikely that this is the reason for the price differential. This first assumption is crucial but eminently plausible for the following reasons.

First, FICO scores are generated solely from the information in a consumer's credit report, and consumers have little control over the information on their credit report. The information in a credit report is reported by entities the consumer has a financial relationship with. Most typically, these are lenders who issue credit cards, mortgage, auto, or personal loans. It may also include landlords, utility companies, or medical service providers.[100] The only way to "opt out" of having information in a credit report is to avoid a financial relationship with someone. There is also no way to "opt in" to reporting to a traditional credit bureau. There is no law requiring anyone to report information to a credit bureau.[101]

Second, consumers also have no control over when information in a credit report is actually transmitted to a credit bureau. Credit scores are recalculated whenever a lender requests a score, so that even the consumer herself could not know exactly what information would be in her credit report when the lender requests a score.[102] The effect of all of this is to make it near-impossible to successfully manipulate a credit score at just the right time for a particular credit application, particularly within a few credit score points of 645 as we are talking about here.

Finally, in order to manipulate her credit score, a consumer would first have to know her score. But few consumers ever obtain their credit reports or know their credit score.[103] Moreover, there is no single credit score that every lender uses. FICO, which sells ninety percent of the credit scores sold in the market, offers over forty-nine different kinds of FICO scores to lenders and others.[104] A consumer has no visibility into which kind of FICO score a lender uses to make a decision about her loan. Even if the consumer somehow knew the exact type of score, it is unlikely that she could purchase this same score type herself.[105] Thus, while the preceding paragraphs suggest

---

[100] Rich Smith, *CFPB Report: The Credit Report Game Is Rigged—And Not In Your Favor*, MOTLEY FOOL (Mar. 26, 2014), http://www.fool.com/investing/general/2014/05/26/cfpb-reports-the-credit-report-game-is-rigged-and.aspx [https://perma.cc/3HGN-R5Y5].

[101] Robert B. Avery et. al., *An Overview of Consumer Data and Credit Reporting*, 89 FED. RES. BULL. 47, 49 (2003)

[102] The only sort of "control" a consumer has with regard to their credit report is that she can dispute erroneous information she finds in that report.

[103] In fact, only one in five consumers obtain their free credit report annually. *See* CONSUMER FIN. PROT. BUREAU, KEY DIMENSIONS AND PROCESSES IN THE U.S. CREDIT REPORTING SYSTEM: A REVIEW OF HOW THE NATION'S LARGEST CREDIT BUREAUS MANAGE CONSUMER DATA 27 (2012) (noting that very few consumers visit www.annualcreditreport.com to obtain the free credit report that federal law mandates that everyone be entitled to every twelve months); CONSUMER FIN. PROT. BUREAU, CONSUMER VOICES ON CREDIT REPORTS AND SCORES 9 (2015) (noting consumer confusion over credit reports and scores).

[104] *See* CONSUMER FIN. PROT. BUREAU, ANALYSIS OF DIFFERENCES BETWEEN CONSUMER- AND CREDITOR-PURCHASED CREDIT SCORES 20 (2012).

[105] *See id.* at 8 (finding that credit scores used by lenders can differ from the educational scores that a consumer can purchase and noting that the different credit scores can sometimes differ significantly).

that a consumer might find it difficult to manipulate her credit score, it is not clear how many consumers even know that they should consider doing it, even if it were possible.[106]

The second assumption—that loan terms are based on observable characteristics in the data—is corroborated by qualitative questions that were submitted to the participating lenders as part of the data request for the CFPB Loan Level Private Student Loan Data. These questions related to their current loan terms and conditions, underwriting criteria, and default management policies.[107]

The pricing and availability of credit for a given individual is determined by automated underwriting models. These models are formulas for the loan terms a customer receives, and are based on the customer's observable characteristics at a particular point in time. The inputs into these formulas can include information such as school attended, program enrolled in, whether there is a co-borrower on the loan, and the applicant's credit score.[108] This type of underwriting technology is pervasive in consumer credit markets: some of the best-known examples are Desktop Underwriter and Loan Prospector, which are automated decision-making tools for mortgage lending that were introduced in 1995 by Fannie Mae and Freddie Mac.[109] It thus seems likely that lenders relied only on the student-level data available in our dataset when deciding what interest rate to charge.

B.   The Regression Discontinuity (RD) Design

Our empirical strategy takes advantage of the fact that lenders' pricing policies separate borrowers into groups and offer different prices to each. The simplest of these groupings involves picking a particular cutoff credit score that determines the "prime" borrowers (those with the higher credit score and lower risk of default) and "subprime" (lower credit scores and higher risk of default). Because borrowers do not have precise control over the credit scores, we are able to use a quasi-experimental design to study the effects of BAPCPA. Specifically, we use a regression discontinuity (RD) design to estimate the effect of BAPCPA on students' decisions to borrow and creditors' decisions to lend. In other words, we use RD to estimate effect

---

[106] Even if consumers wanted to and could somehow overcome all of the difficulties discussed earlier to manipulate their score, they have less of an incentive to do so if they are interested in obtaining any other types of credit products. That is because threshold credit scores can differ between consumer products. For example, Fannie Mae sets a minimum representative credit score of 620 for the fixed rate mortgages it purchases and a minimum representative credit score of 640 for adjustable rate loans. *See* Fannie Mae, Selling Guide: Fannie Mae Single Family 486 (2015).

[107] CFPB PSL Report, *supra* note 12, at 7.

[108] We will use FICO score and credit score interchangeably in the discussion.

[109] *See* Michael La Cour-Little, *The Evolving Role of Technology in Mortgage Finance*, 11 J. Housing Res. 173 (2000).

three from the Introduction: whether students are induced by lower interest rates to take out more loans.[110]

Lenders typically divide borrowers into categories based on being at or above a threshold credit score. Applicants for a particular product are then given offers that may vary a great deal depending on whether they end up below or above that threshold. Assuming that consumers do not have precise control over their credit scores, as explained above, consumers just above or below a threshold credit score should be similar. However, the consumer just above the threshold would be offered a different product from the consumer just below the threshold. This is an ideal opportunity to implement an RD design. This technique makes use of this hair-trigger difference in product offerings by credit score to estimate the effects of being offered one product over the other (or no product at all).[111]

We compare similarly situated students on different sides of the 645 threshold. The only observable difference is that students just under the threshold received a loan offer with an interest rate that is three percent higher. Finding a significant difference in loan take-up rates between these two groups of students would imply that students are price elastic, meaning that students make their decisions, at least in part, based on the interest rate of the loan. In contrast, finding no difference in the rates at which students take up loans would suggest that students are price inelastic, meaning that they are driven primarily by factors other than the interest rate they are charged. Either finding sheds light on effect three mentioned in the Introduction: if the lenders were to pass through some of the savings to the students in terms of lower interest rates, would more students enter the market? To preview our results, we do not find a statistically significant difference in take-up rates between these two groups of students, implying that even if lenders passed savings from stricter bankruptcy rules to borrowers, the result would be little or no increase in borrowing—effect three from the Introduction is effectively absent in this setting.

We compare borrowers who are close to, but above, the 645 FICO threshold with borrowers who are close to, but below, the threshold. Note that this method does not shed light on the behavior of borrowers far from the threshold. For example, while we can confidently say that a borrower with a 644 FICO is very much like a borrower with a 646 FICO, we cannot

---

[110] For a discussion on the regression discontinuity design, see Miguel de Figuereido, *Throw Away the Key or Throw Away the Jail? The Effect of Punishment on Recidivism and Cost*, 47 Ariz. St. L. Rev. 1017, 1044 (2016).

[111] Our data are limited to loans that are originated, so we unfortunately neither observe individuals who applied for loans and were denied nor individuals who were offered loans but decided not to take them. However, we believe that while firms may differentiate their product offerings across a credit score threshold, it is unlikely that the population of consumers would have preferences that differ so starkly on either side of a particular credit score. Consequently, we assume that we have the full range of products over which consumers are making decisions, although we may not have the proportions in which they were offered to the population. We also introduce density regression discontinuity, which is discussed in more detail in Section B and Appendix A.

compare a borrower with a 500 FICO to a borrower with an 800 FICO. Thus, our estimates should be interpreted in light of this limitation—estimates that economists refer to as local average treatment effects.

It is easy to see that 644 is sufficiently close to 646, while 500 is too far from 800, but the more intermediate cases are not obvious. Economists have developed various approaches to estimate just how far away from the threshold we can move and still include observations without fearing that they are too far away from the threshold. In our analysis, we use one of the latest such techniques,[112] a data-driven approach.[113] This approach allows us to compare outcomes within a reasonable distance of the 645 threshold. The method uses the underlying data to determine how far away one can move from the threshold and still be able to use observations in our analysis (this distance is called the "bandwidth").[114] By way of illustration, when we report a bandwidth of 5, this means that our analysis is only applicable to those loans issued to students with within five credit score points from the 645 threshold. In other words, students with maximum FICO scores of 640–44 and 645–49.

C.   *The Difference-in-Differences (DD)* Strategy

Borrowers with lower FICO scores are by definition at higher risk of defaulting on their debts. But after BAPCPA, a default on a student loan debt does not have the same effect as a default on other types of debts. The student loan debt is more collectible since the borrower is (practically) unable to discharge it in bankruptcy. Thus, post BAPCPA, the difference in pricing between higher- and lower-risk borrowers should have narrowed. To investigate whether this happened, we take the difference between the difference at the discontinuity in 2006 Q1 and the difference at the discontinuity in 2005 Q1. We refer to this as the difference-in-differences (DD) strategy. This analysis allows us to estimate the magnitude (or presence) of effect two from the Introduction: whether the lenders pass through savings in terms of interest rates, and if so, how much.

---

[112] Previously, researchers used a global polynomial approach which fits a model on each side of the threshold and compares the estimated values for each model evaluated at the discontinuity. *See* David Card & Lara D. Shore-Sheppard, *Using Discontinuous Eligibility Rules to Identify the Effects of the Federal Medicaid Expansions on Low-Income Children*, 86 Rev. Econ. & Stat. 752, 752–66 (2004).

[113] Calonico, Cattaneo, and Titiunik's approach is based on the concept of minimizing mean-squared errors. While previous literature suggested choosing the optimal bandwidth based on minimizing the mean squared error of the estimator, CCT also adjusts the bandwidth choice to account for the small sample bias and, accordingly, bandwidths that are "too large" if derived simply by minimizing mean squared error. *See generally* Sebastian Calonico et al., *Robust Nonparametric Confidence Intervals for Regression-Discontinuity Designs*, 82 Econometrica 2295 (2014).

[114] Note that since the comparison is restricted to a bandwidth that is smaller than the full range of FICO scores in the population our sample sizes used to estimate the effects of the lenders' policies at the threshold will be smaller than the size of the underlying sample.

We cannot stop there, however. It is possible that any shrinking of the gap we observe is as a result of a separate trend. This is because in the DD strategy just described we are only comparing a period immediately before BAPCPA to a period after BAPCPA. To rule out whether a pre-existing trend, separate from the enactment of BAPCPA, might be responsible for the narrowing of the differences, we compare our DD estimate between 2005 Q1 and 2006 Q1 to a DD estimate for a period where there was no change in law related to PSLs, 2006 Q1 to 2007 Q1. The idea here is that if BAPCPA caused the narrowing in the difference between the interest rates offered to high-risk students to the interest rates offered to low-risk students, we should not see a narrowing the following year. We call this estimate our difference-in-difference-in-differences (DDD) estimate.[115] This is essentially the subtraction of the DD estimate from the period around BAPCPA from the DD estimate from the period one year after BAPCPA.

In other words, we analyze whether the difference in interest rates between risky and safe students shrunk as a result of BAPCPA. If the difference remained constant, then despite risky students not being able to discharge loans in bankruptcy, the lenders are still charging them the same risk premium as before, suggesting no pass through of savings by the lenders to the students. In contrast, a shrinking gap would suggest that the lenders passed through some of the savings to the students in terms of lower interest rates. This analysis allows us to estimate the magnitude (or presence) of effect two from the Introduction: whether the lenders pass through savings in terms of interest rates, and if so, how much.

---

[115] As described in the text, we first estimate the regression discontinuity (RD)—the difference between FICO 644 and FICO 646 consumers—results for each year: 2005, 2006, and 2007. Then, we compare results across years: 2005 vs. 2006 and 2006 vs. 2007—so-called differences-in-differences (DD). In particular, the 2005 vs. 2006 DD shows how the change was different in a non-BAPCPA year. Finally, to see whether we are simply picking up a trend (as it turns out that we are), we compare the 2005 vs. 2006 DD with 2006 vs. 2007 DD—differences in differences-in-differences (DDD).

We assume that the 2005 Q1, 2006 Q1, and 2007 Q1 samples are independent, so we can calculate the DD and DDD standard errors by treating each quarter's RD estimate as an estimate from an independent random variable so the variance of the sum is the sum of the variances. RICHARD LARSEN & MORRIS MARX, AN INTRODUCTION TO MATHEMATICAL STATISTICS AND ITS APPLICATIONS 223 (3rd ed., 2001). The standard error is computed as the square root of the sum of the squares of the RD estimated standard errors for each RD included in the computation of the DD or DDD. The difference between two random variables is the sum of the first random variable and the random variable that is the negative of the second random variable. Note that when 2006 Q1 enters into the DDD twice it also enters into the standard error calculation.

Regarding the assumption of independence, we realize that there may be some individuals who appear in multiple samples as they are borrowing for multiple terms. Although we can observe multiple loans within lender we cannot observe loans across lenders, and we see few borrower-lender pairs across multiple calendar years. Consequently, our standard errors may be underestimated, which may overstate the precision of the estimates. This is only relevant to the extent that borrowers' maximum FICO scores are within the relevant bandwidths for all years that the borrower appears in the sample, which may be mitigated by FICO scores changing over time.

As a preview of our results, we find that the gap indeed shrunk some-what. However, we also find that the gap kept on shrinking two years after BAPCPA as well, suggesting that the diminishing risk premium is a part of a trend not caused by BAPCPA. After we control for the trend, we do not find statistically significant evidence that BAPCPA decreased the risk premium of risky student borrowers, suggesting that effect two from the Introduction is effectively absent in this setting as well: despite borrowers losing their ability to discharge private student loans in bankruptcy, there was no associated drop in interest rates. Unfortunately, our ability to control for a trend that might have been ongoing before 2005 is limited by the data because the available data does not begin until the first quarter of 2005. This is why we employ the DDD approach described above to control for the trend. That is to say, we assume that without BAPCPA there was a permanent trend: the same trend as we can observe when comparing 2006 to. 2007. Thus, we ask whether the difference between 2005 and 2006 is sufficiently different from the underlying (2006 versus 2007) trend.[116]

IV. RESULTS

As mentioned earlier, we find a discontinuity in interest rates that students pay at the 645 FICO score: students whose maximum FICO score is just below 645 have to borrow at a considerably higher interest rate (close to three percentage points higher) than students whose maximum FICO score is just above 645. We document this discontinuity in the Appendix and also discuss in detail why it is highly unlikely that students are able to manipulate their, or their co-borrowers', credit scores.[117]

Given this discontinuity, we can employ the RD economic technique since students with a FICO score of just below 645 (such as 644) are likely to be very similar to students with FICO scores of just above 645 (such as 646), with the only major difference being that the first group faces much higher interest rates.[118]

Recall that we are interested in learning about whether BAPCPA caused consumers to enjoy lower prices (what we called "effect two" in the Introduction). We are also interested in whether new borrowers would decide to enter the market as a result of lower prices (what we called "effect three").

In Part IV.A we use the DD setup (discussed in Part III.C) to analyze whether interest rates indeed decreased due to BAPCPA. We postulate, based

---

[116] For this method to be reasonable, we assume that any trend that was occurring between 2005 and 2006 would have continued through 2007.

[117] In brief, we use econometric techniques to show that lenders are using a FICO score cutoff at 645 in deciding who is a subprime (high risk) and a prime (low risk) borrower.

[118] The same analysis applies if we are talking about students who apply with a co-borrower. As the lenders in the sample told the CFPB, at this time the underwriting used the "maximum FICO" score as between a borrower and their co-borrower. But the same reasons that it would be difficult (if not impossible) for a borrower to manipulate her credit score around the threshold apply to a co-borrower, as detailed in the Appendix.

on literature discussed above, that some students are likely to be much safer borrowers from the loan issuers' perspective. For these safer, prime, borrowers BAPCPA should not have changed interest rates significantly—these borrowers are unlikely to end up in bankruptcy, and thus BAPCPA is largely irrelevant from the loan issuers' perspective as applied to the prime borrowers. To make sure that we do not attribute the impact of other changes in the economy and education markets at the time to BAPCPA, we analyze the difference between the interest rates paid by subprime and prime borrowers, and how that difference changed from before to after BAPCPA. We find that in 2006 (first year post-BAPCPA) relative to 2005 (last year pre-BAPCPA), the difference between subprime and prime borrowers shrunk by 0.91 percentage points. However, we find that in 2007 relative to 2006, the difference between subprime and prime shrunk again by 0.84 percentage points.[119] Thus, the 2005 to 2006 difference seems to be part of a trend.

Our de-trended estimate of BAPCPA impact is thus the difference between 2005 to 2006 and 2006 to 2007: 0.07 percentage points. Unfortunately, we do not have data before 2005 to be able to make a more precise finding. Thus, the estimate that we find most persuasive (the de-trended estimate) is that the issuers' cost decrease passed through to consumers (effect two from the Introduction) is 0.07 percentage points—both statistically and economically indistinguishable from zero.

Despite its promise then, it appears that BAPCPA did not lower prices. But what if it had? In Part IV.B, we measure whether students take out more loans at lower interest rates. In other words, would BAPCPA's promised (though undelivered) cost savings have enticed more students to take out loans? One might expect so, but our data suggests instead that students around the FICO threshold are not price sensitive. Using the RD design described in Part III.B, we find no statistically significant difference in borrowing rates between students whose maximum credit score is just above 645 and students whose maximum credit score is just below 645, despite a considerable difference in interest rates faced by the two groups.

Our finding suggests that, at least for the students with subprime co-borrowers and in the range of a three percentage point interest rate changes, a lower interest rate does not result in more students taking out loans.[120] This means that even if BAPCPA had lowered interest rates for students with subprime co-borrowers, even by as much as three percentage points, this interest rate decrease would not have resulted in additional students entering the market due to their inelastic demand. In other words, effect three from the Introduction is absent for BAPCPA.

---

[119] In 2005, borrowers whose maximum FICO score was just above the 645 threshold paid 1.76% lower in the margin of their loan than borrowers whose maximum FICO was just below the threshold. In 2006, the difference between those borrowers was 0.92%. In other words, the difference in price around the threshold decreased by almost half.

[120] This result was significant at the one percent level. See Table 3, Part IV.A *infra* and accompanying discussion.

Of course even if the effect is much higher—and given our standard errors we cannot rule out an effect as high as one percentage point—findings in Part IV.B. still suggest that lower prices did not lead new consumers to enter the market.

A.   BAPCPA Did Not Lower Prices

In this section, we analyze the change in interest rate margins between safe and risky borrowers before and after BAPCPA. As discussed above, the effects of bankruptcy nondischargeability on default rates and loss-given-default should theoretically be larger for riskier borrowers, so we should expect the price differential between riskier borrowers with lower FICO scores and less risky borrowers with higher FICO scores to narrow after the implementation of BAPCPA. Contrary to expectation, we do not find evidence of such narrowing that can be attributed to BAPCPA.

TABLE 3: DIFFERENCE-IN-DIFFERENCES AND DIFFERENCE-IN-DIFFERENCE-
IN-DIFFERENCES REGRESSION DISCONTINUITY[121]

	(1) All Students Margin (%)	(2) Private Margin (%)	(3) Public Margin (%)	(4) Extensive Ph.D. Granting Institutions Margin (%)
(1) 2005 RD (Pre-BAPCPA)	-2.67***	-2.75***	-2.38***	-3.17***
	(0.15)	(0. 20)	(0.19)	(0.65)
(2) 2006 RD (Post-BAPCPA)	-1.76***	-1.76***	-1.78***	-1.77***
	(0.30)	(0.39)	(0.17)	(0.33)
(3) 2007 RD (Post-BAPCPA)	-0.92***	-0.99***	-1.23***	-0.82***
	(0.12)	(0.17)	(0.12)	(0.10)
(4) 2006 vs. 2005 DD (2006 RD less 2005 RD)	0.91***	0.99**	0.60***	1.40*
	-0.34	(0.44)	(0.25)	(0.73)
(5) 2007 vs. 2006 DD (2007 RD less 2006 RD)	0.84***	0.77*	0.55***	0.95***
	(0.32)	(0.43)	(0.21)	(0.34)
(6) DDD (2007 vs. 2006 DD less 2006 vs. 2005 DD)	0.07	0.22	0.05	0.45
	(0.47)	(0.61)	(0.33)	(0.81)
Discontinuity Credit Score	645	645	645	645
N 2005 Below 645	39	27	56	32
N 2005 Above 645	144	340	346	94
N 2006 Below 645	170	80	135	167
N 2006 Above 645	355	207	217	370
N 2007 Below 645	355	207	217	370
N 2007 Above 645	1032	502	483	2747

Numbers in parentheses denote standard errors.
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Restricted to four year undergraduates at public and private not-for profit schools in the first quarters of 2005, 2006, and 2007.
Source: CFPB Loan Level Private Student Loan Dataset and IPEDS.

The first six rows of Table 3 present point estimates from each of the specifications for 2005 Q1, 2006 Q1, and 2007 Q1 respectively. The patterns in the following years are broadly consistent with what we observe in 2005 Q1: there is a statistically significant decrease in the interest rate charged as one moves past the 645 FICO score threshold.[122]

---

[121] Regression discontinuity calculated using Calonico, Cattaneo, and Titiunik robust regression discontinuity; DD and DDD standard errors assumes independence between quarters. *See generally* Calonico et al., *supra* note 113.

[122] In addition, with the exception of a result at the ten percent level of significance for 2006 Q1 in column 8, there is no significant difference in the amount borrowed. This is consistent with borrowers not adjusting their demand for loans along the intensive margin (amount borrowed conditional on having loans) as a result of BAPCPA. Table 3 presents results for both margins, to reflect effects on price per dollar borrowed, as well as the original balance of the loans, to reflect the extent to which borrowers who qualified for loans may have been restricted in their amount borrowed. Unfortunately, the standard error on balances is economi-

The first three rows of Table 3 represent the difference in margin or original balance between higher and lower risk borrowers in 2005, 2006, and 2007, respectively. Here, we are looking for discontinuities in the price borrowers are offered for loans (margin). We see from the columns that there is a statistically significant discontinuity in price (margin) for each group at the 645 FICO score threshold. This discontinuity is consistently around three percent for all of the groups considered in 2005 Q1. In other words, the data strongly suggests that a student with a 644 FICO score faced an interest rate roughly three percent higher than a virtually identical student with a 645 FICO score. We show this discontinuity graphically using bar graphs in Figure IV-1.[123]

FIGURE IV-1: GRAPHICAL REPRESENTATION OF TABLE 3 FOR ALL STUDENTS
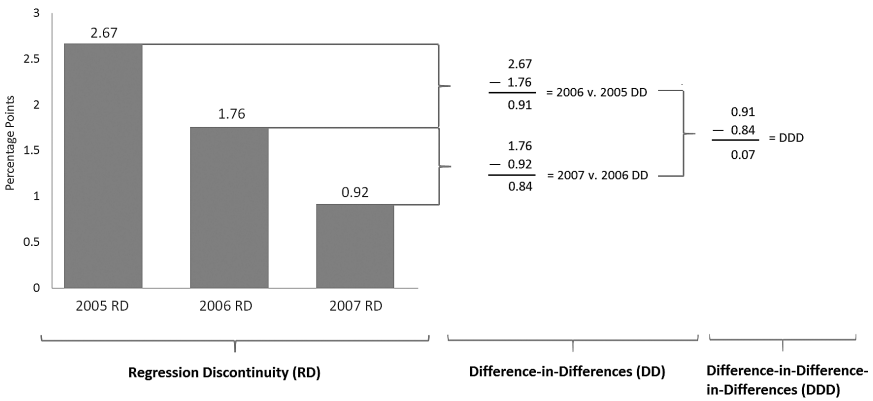
To begin to test whether this difference between the rates that 644 and 646 FICO students face can be attributed to BAPCPA, we first compare the difference in price between the period before BAPCPA (2005Q1) to the period after (2006Q1). In row four (2006 versus 2005 DD), we show how the gap between subprime and prime interest rates narrowed between 2005 and 2006. The gap for all students (column 1) was at 2.67 percentage points in 2005 (row 1, 2005 Pre-BAPCPA), and then it narrowed to 1.76 percentage points in 2006 (row 2, 2006 Post-BAPCPA).

---

cally significant and often larger than the coefficients, thus it is hard to interpret results of these regressions on amount borrowed.

[123] Note that if BAPCPA were to have an effect, we would expect a drop-off from 2005 to 2006, with virtually no change from 2006 to 2007. If anything, the percentage (as opposed to percentage point) change is considerably higher from 2006 to 2007, in comparison to 2005 to 2006.

The amount by which the gap narrowed, 2.67-1.76=0.91 percentage points, is what we have called the DD presented in row 4 of Table 3.[124] This amount represents the change in the gap between prime and subprime interest rates around BAPCPA.

In other words, for all students, the difference in the interest rate paid by the subprime group and the interest rate paid by prime borrowers decreased by 0.91 percentage points around the time of BAPCPA. The difference is statistically significant at the one percent level.

The coefficients are of similar magnitudes for subgroups: prime borrowers in private schools pay 0.99 percentage points less than subprime, while in public schools the number is 0.60 percentage points, and 1.4 percentage points in highly competitive schools.[125]

If there would be no underlying trend in the difference in rates charged to prime and subprime consumers, then we would attribute the 2006 versus 2005 DD estimate to BAPCPA, and would stop the analysis by stating that we found a 0.91 percentage point improvement in the relative interest rates (row 4). However, this 0.91 percentage point decrease in rate difference could simply be a part of another trend, caused by other events.

As discussed in Section III.C, *supra*, to see whether this change in differentials is part of an overall trend or attributable to BAPCPA, we compare the 2005 to 2006 differential (row 4) to the 2006 to 2007 differential (row 5).[126] In row 6, we see that the average effect is no longer significant once we subtract off the 0.84 percentage point change between 2006 and 2007. We estimate a difference-in-difference-in-differences (DDD) for the whole undergraduate population, the results of which are presented in row 6 and shown in Figure IV-1 for the entire population. The effects on margin are also not statistically significant for the subgroups we consider, including individuals at private schools, public schools, and extensive Ph.D. granting institutions.

This suggests that the year-over-year change after BAPCPA was implemented is attributable to a trend and not necessarily to the introduction of bankruptcy nondischargeability.[127] In other words, our analysis suggests that

---

[124] This is in the spirit of a DD estimate between prime and subprime maximum FICO score groups. *See* Marianne Bertrand et al., *How Much Should We Trust Differences-in-Differences Estimates?*, 119 Q.J. Econ. 249 (2004).

[125] The result for highly competitive schools is puzzling relative to the other categories. The prime "discount" is inconsistent with a model in which lenders factor expected future earnings into the price of the loan. The different performance between prime and subprime borrowers should not matter much if the main source of repayment is assumed to be future earnings and not a co-borrower's ability to manage current income as signaled by credit score, unless one believes that a subprime student attending an Ivy League institution majoring in economics or engineering is somehow still a major risk.

[126] A trend could occur independently of BAPCPA due to a variety of factors, including changes in tuition and fees, demographics, the returns to education, or labor market prospects of borrowers.

[127] Although the amount borrowed per loan did not change significantly, more students decided to borrow in each subsequent year, as shown in Table 1. Given the lack of price sensitivity of borrowers at the 645 FICO threshold, it is possible that the increase in loan volume was driven by a change in the supply of loans.

making PSLs effectively nondischargeable had no effect on the price of loans. This is arguably better than what one of us found in previous work, where the finding was that BAPCPA caused an *increase* of 0.3 percentage points on PSL margins for the average loan.[128]

B.   *Students Are Not Sensitive to Price*

Although lenders experienced a decrease in expected losses after BAPCPA made PSLs presumptively nondischargeable, our empirical findings demonstrate that none of those savings seem to have been passed on to students. Nonetheless, in this part, we endeavor to find out whether students might have reacted in the way Congress expected if BAPCPA had lowered prices.

We consider the effect of the price of student loans, measured by the loan's margin, on demand for PSLs. The ratio of the percentage change in loans demanded to the percentage change in the price of the loans is the elasticity of demand for PSLs.[129] If some consumers decline loans because they think the price is too high, we should see a fall-off in loan originations above the 645 maximum FICO score threshold, since virtually identical borrowers pay is a 2.67% difference in price at that point, as illustrated in Table 3. We would expect to see this manifested in a gap in the density of credit scores. In other words, we would expect more borrowers on the high side of the threshold (the prime side) where prices are lower.

Table 4 presents the results from the implementation of the density discontinuity estimation described above.

---

[128] Ang & Jiménez, *supra* note 17, at 23.
[129] N. Gregory Mankiw, Principles of Microeconomics 90 (3d ed. 2004).

TABLE 4: RESPONSE TO PRICE: DENSITY AMONG BORROWERS WITH CO-BORROWERS, 2005Q1[130]

	(1) All Undergraduates	(2) Private Schools	(3) Public Schools	(4) Extensive Ph.D. Granting Institutions
Difference (%)	-0.11	-0.07	-0.04	-0.01
	(0.07)	(0.09)	(0.08)	(0.04)
Density Below 645 (%)	0.39	0.38	0.38	0.25
Density Above 645 (%)	0.29	0.30	0.34	0.24

Notes:
Numbers in parentheses denote standard errors.
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Restricted to four-year undergraduates at public and private not-for profit schools in the first quarters of 2005, 2006, and 2007.
Source:
CFPB PSL Loan Level Dataset, IPEDS, and PEPS.

This analysis focuses on the price elasticity of demand for student loans based on the change in the density of borrowers with co-borrowers. We restrict our data to students with co-borrowers to consider the elasticity of demand because to the extent they cannot find a co-borrower, solo borrowers who have credit scores below 645 may have trouble accessing credit.[131]

Across all four sample restrictions—all undergraduates, undergraduates at private schools, undergraduates at public schools, and undergraduates at extensive Ph.D. granting institutions—we do not observe significant differences in density between those just above and just below the 645 threshold. Our confidence intervals are large, and thus our results are not precise. However, note that all four points estimates are negative—whereas if students were price-sensitive we would expect positive results. This further bolsters our claim that subprime students around the threshold do not react to changes in price.

---

[130] Regression discontinuity calculated using Calonico, Cattaneo, and Titiunik robust regression discontinuity. *See* Calonico et al., *supra* note 113. Bandwidth and number of observations selected using CCT; kernel for local polynomial estimators is triangular. Bandwidths for regression are, respectively, 4, 6, 6, and 6. Bandwidths for bias correction are, respectively, 8, 10, 10, and 10. The number of observations below the 645 threshold are 29, 24, 25, and 28, respectively. Observations at or above 645 threshold are 46, 38, 40, and 34, respectively. Note that the number of observations above and below the 645 threshold correspond to the number of observations in the optimal bandwidth in the seventh row, and not to the much larger number of observations in the data.

[131] Since we do not observe solo borrowers with scores below 645, solo borrowers with scores just above 645 may not have comparable borrowers on the other side of the threshold. This is of particular concern because borrowers without co-borrowers may be less likely to have other financial support such as parents who are willing to co-sign or pay for a portion of the student's educational expenses out-of-pocket.

For example, let us focus on the first column. The first row says that the density is 0.11 *lower* just above 645: fewer students taking loans when interest rates are lower. The standard error of 0.07 implies that we cannot rule out that in fact the density is 0.03 *higher* just above 645.[132] Given the density of 0.39 just below 645, 0.03 change is a 0.03/0.39, or roughly an eight percent response to the interest rate decrease. But the interest rate decrease is from about nine percent to about six percent—a 1.5 times decrease. Note that this is an upper bound on price elasticity (with ninety-five percent confidence). In short, we cannot reject the null hypothesis that student loan borrowers are not price sensitive.

V.   DISCUSSION AND POLICY RECOMMENDATIONS

This article has two main empirical findings. First, we find that bankruptcy reform did not result in low credit-score students at four-year undergraduate institutions paying less for PSLs, despite the fact that these loans were now presumptively nondischargeable. Second, we find no evidence that college students are sensitive to price, so that even if lenders had passed on the savings from BAPCPA in the form of lower prices, it likely would not have caused an increase in the number of students who took up loans. Both of these findings are troubling from the point of view of consumer protection. The second finding poses a problem for regulators. If students are not sensitive to large (around three percent) price differences, regulation that aims to use price as a way to change the behavior of students has little chance of working. Similarly, lenders might not have much of an incentive to compete on prices.

We make a number of recommendations to address these issues. First, we argue that Congress should stop the special treatment of private student loans and make them immediately dischargeable in bankruptcy. Our second recommendation is a realistic "backup" of sorts. It would not be necessary if Congress were to reverse the special treatment of PSLs in bankruptcy. In that case, we recommend a policy from the mortgage markets and suggest that the CFPB should require issuers of private student loans to consider a borrower's ability-to-repay the loan before they can issue one. We suggest a number of ways in which lenders could satisfy the ability-to-repay requirement, including by implementing an income-based-repayment program.

We could argue for this type of a change simply from the fairness perspective: borrowers lost a right in 2005, and they did not seem to get much in return. However, we believe that an economic welfare argument might be also persuasive. There are two parts to the economic argument.

First, as we noted above, the right to discharge loans is very valuable to the borrower.[133] However, our results suggest that the lack of this right is not very valuable to the lenders, since they do not compete any of the expected

---

[132] -0.11+1.95*0.07.

[133] *See, e.g.*, Dobbie & Song, *supra* note 31.

cost decrease away. Thus, perhaps due to consumers not realizing how valuable the ability to discharge their student loans is when they decide to borrow, we have a market failure of consumers losing a very valuable right that might not cost lenders that much (as evidenced by lenders not competing any potential gains away).[134]

Second, lenders have much better information regarding a student's future prospects. This is because they are much better positioned to be able to weigh the likely consequences of the student's choice of school and major. Making a student loan dischargeable in bankruptcy would incentivize lenders to act on this information, on behalf of consumers. Today, it is the rare seventeen-year-old who could get a credit card with a thirty thousand dollar limit. However, a typical undergraduate graduates with more than that in student loan debt today.[135] Sometimes, the student is highly unlikely to default even with this loan amount—say, a loan to an engineering major at a flagship state school—and thus any lender will make this loan regardless of whether the loan is dischargeable in bankruptcy. But other times the student has a significant likelihood of defaulting—say, a loan to an accounting major at Corinthian Colleges (or any other major there for that matter)—and thus whether the loan is dischargeable might make a difference in whether this loan is made and whether this student is loaded with debt for the next few decades of their life.[136]

A.   Reforming Bankruptcy Reform

Many have lamented the 2005 bankruptcy changes that added PSLs to the list of presumptively nondischargeable loans.[137] In previous work, one of us found that BAPCPA, a law that reduced consumer protections for students, and increased the average cost of PSLs: the average loan interest rate

---

[134] Importantly, our finding that students around the FICO credit score cutoff are not sensitive to price does not mean no cross-price elasticity. In other words, if *all* prices increase by three percentage points, nobody might react. On the other hand, if *one* lender charges a one percentage point lower interest rate, everyone might switch to that lender (say, when I go to the supermarket, I buy milk regardless of the price, but I always get the cheapest milk available).

[135] Christine DiGangi, *The Class of 2016 Will Graduate With an Average of $37,172 in Debt*, Fox Bus. (May 16, 2016), http://www.foxbusiness.com/features/2016/05/06/class-2016-will-graduate-with-average-37172-in-debt.html [https://perma.cc/V53S-3MZ7].

[136] While the stereotypical press story is an New York University (NYU) arts or humanities major with a $100,000+ debt working as a barista at a coffee store after graduation, this type of a college debt is a considerable outlier in the data. In addition to being outliers, given the socioeconomic profile of families of students at schools like NYU versus that of families with students at schools like Corinthian Colleges, we are more concerned about the latter.

[137] *See, e.g.*, Daniel Austin, *The Indentured Generation: Bankruptcy and Student Loan Debt*, 53 Santa Clara L. Rev. 329 (2013); Jennifer L. Frattini, *Note & Comment: The Dischargability of Student Loans: An Undue Burden?*, 17 Bankr. Dev. J. 537 (2001); B.J. Huey, *Comment: Undue Hardship or Undue Burden: Has the Time Finally Arrived for Congress to Discharge Section 523(a)(8) of the Bankruptcy Code?*, 34 Tex. Tech L. Rev. 89 (2002); Note, *Ending Student Loan Exceptionalism: The Case for Risk-Based Pricing and Dischargeability*, 126 Harv. L. Rev. 587 (2012); Pottow, *supra* note 15.

increased 0.3% as a result of the law.[138] In this article, we find that BAPCPA did not narrow the gap in price between risky and safe borrowers. In other words, BAPCPA did not help those students who were most likely to benefit from a law making student loans effectively nondischargeable.[139] This finding leads us to join the chorus of scholars, economists, and policymakers calling for the repeal of PSLs' special treatment in bankruptcy.[140]

One prominent economist has noted that making PSLs effectively nondischargeable "[was] a blatant giveaway to lenders, who (on the front end) are allowed to screen borrowers for creditworthiness and (on the back end) benefit from the special protections intended for [federal] student loans, which have no such screening."[141] BAPCPA was certainly a giveaway with regards to PSLs originated before it was enacted, since those borrowers were both screened for creditworthiness but also obtained their loans when they presumably included an additional cost because they were dischargeable in bankruptcy. The giveaway might have ended there if students had received some of the benefit of the law change in lower prices. But, as we have shown here, we see no evidence that the law indeed lowered interest rates. Calls for reform typically encounter the objection that students will strategically default and file bankruptcy *en masse* if the law were reversed. But those arguments overlook a few basic facts about bankruptcy law and PSLs.

First, all manner of private debts are currently dischargeable: credit cards, car loans, mortgage loans, medical debts, utility debts, and more.[142] And yet, many consumers who could benefit from bankruptcy by discharging these types of debts fail to seek bankruptcy protection.[143] While we do not have data on the percentage of student loan borrowers who filed bankruptcy before BAPCPA to discharge their private student loans, after

---

[138] *See* Ang & Jiménez, *supra* note 17, at 179.

[139] *See* Michael Simkovic, *The Effect of BAPCPA on Credit Card Industry Profits and Prices*, 83 Am. Bankr. L.J. 1, 22 (2009) ("The data is unambiguous: BAPCPA benefited credit card companies and hurt their customers. While bankruptcy protection became increasingly unavailable, credit card companies increased prices by five percent to seventeen percent. This contributed to a twenty-five percent increase in credit card industry annual profits from 2005 to 2007.").

[140] *See, e.g.*, Austin, *supra* note 137, at 400–15; Brendan Baker, *Deeper Debt, Denial of Discharge: The Harsh Treatment of Student Loan Debt in Bankruptcy, Recent Developments, and Proposed Reforms*, 14 U. Pa. J. Bus. L. 1213, 1215 (2012); Dynarski, *supra* note 60; Rafael Pardo & Michelle R. Lacey, *The Real Student Loan Scandal: Undue Hardship Discharge Litigation*, 83 Am. Bankr. L.J. 179, 182 (2009); Michael Stratford, *New Push on Bankruptcy Protections*, Inside Higher Ed (Oct. 2, 2015), https://www.insidehighered.com/news/2015/10/02/obama-administration-backs-easier-bankruptcy-path-private-student-loans [https://perma.cc/25NY-3JWL]; Letter from Am. Ass'n of Collegiate Registrars & Admissions Officers et al., to Steve Cohen, Ranking Member, Subcomm. on Regulatory Reform, Commercial and Antitrust Law, U.S. House of Representatives (Feb. 6, 2013), http://ticas.org/sites/default/files/pub_files/Bankruptcy_coalition_letter_to_Rep_Cohen_Jan_2013.pdf) [https://perma.cc/T68P-E3EV].

[141] Dynarski, *supra* note 60.

[142] Bob Lawless, *2016 Bankruptcy Forecast—Let's say 780,000*, Credit Slips (Jan. 13, 2016, 3:07 PM), http://www.creditslips.org/creditslips/2016/01/2016-bankruptcy-forecast-lets-say-780000.html [https://perma.cc/AWY9-QNV5].

[143] *See, e.g.*, Michelle J. White, *Why Don't More Households File for Bankruptcy?*, 14 J.L. Econ. & Org. 205, 206 (1998).

BAPCPA, we know that very few student borrowers have filed. The CFPB found that less than 1.3% of outstanding loans issued between 1999–2011 were in a bankruptcy status at any point between 2005–11.[144]

Even if the bankruptcy laws were changed, and PSLs became presumptively dischargeable, it does not necessarily follow that all borrowers would receive a discharge. Bankruptcy judges and trustees (as well as creditors' attorneys) could still scrutinize bankruptcy petitions and can seek to prevent the discharge of a particular loan (or category of loans) for fraud or for abuse. This provision would cover the prototypical example of the newly minted lawyer or doctor who seeks to discharge their student loans soon after graduation. Judges could find that this would be an abuse of the Bankruptcy Code and either not permit a discharge of a particular loan,[145] or of any other debts—a far more severe punishment than the inability to discharge PSLs alone.[146]

As Professor Pottow has noted, "[t]he concern must be more than just a fear of opportunism *per se*."[147] Pottow explores six possible theories to explain the special treatment of student loans. The first two center around fraud.[148] 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.[149] The fourth focuses on a potential desire by the public to shame debtors who do not repay their student debt.[150] The first four theories apply much more broadly than student loan debt, and because we still allow discharge for most of these debts, one must search elsewhere to find a justification for student loans specifically. The fifth theory, protecting the public fisc, does not apply with regard to PSLs.[151] Only the sixth and final theory provides a plausible theoretical explanation for the expansion of nondischargeability to PSLs. This last theory, which Pottow terms "the cost of private capital," is compatible with what the congressional record tells us about the expressed reasons for the special protection to PSLs. This theory

---

[144] *See* CFPB PSL REPORT, *supra* note 12, at 72. Table 18, denoting the percent of outstanding loans that were in bankruptcy status as of the close of the year is reproduced below:

2005	2006	2007	2008	2009	2010	2011
0.8%	0.4%	0.4%	0.5%	1.0%	1.2%	1.3%

[145] *See* 11 U.S.C.A. § 523(a)(2)(A) (2012) (denying discharge for a debt incurred by fraud).

[146] *See* 11 U.S.C. § 707(b)(1) (2012) (allowing a court to deny a discharge in a bankruptcy case if "it finds that the granting of relief would be an abuse of the provisions of this Chapter").

[147] Pottow, *supra* note 15, at 254.

[148] The first theory relies on an assumption that the student loan debtor seeking a bankruptcy discharge is presumptively fraudulent. The second theory 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. *See id.* at 251–55.

[149] *See id.* at 256–59.

[150] *See id.* at 259–61.

[151] *See id.* at 275–76.

argues that nondischargeability can be justified "as an attempt to make private loans 'cheaper' for students."[152]

And herein lies the problem. As this article has shown, we found no evidence that granting PSL lenders special protections in bankruptcy lead to lower prices for even those borrowers whom we might expect would be most likely to enjoy them: those with higher risk credit scores. Add to this the knowledge that we have regarding the employment and health benefits of discharging debts in bankruptcy,[153] and there remain few credible (non-rent-seeking) arguments for the continued inability to discharge PSLs in bankruptcy.

The reality is, however, that there has never been evidence of widespread bankruptcy fraud with regards to student loans.[154] And there is no reason to predict that there would widespread fraud if the law were changed today.[155] PSLs should be returned to automatic dischargeability.[156]

B.   An Ability-to-Repay Rule in the Private Student Loan Market

Rolling back the special treatment PSLs currently enjoy in bankruptcy is our top policy recommendation for improving this market. We believe doing so would impose a greater level of discipline on lenders: to only lend to borrowers who can be expected to repay. Recognizing that while eminently reasonable, a roll-back of the existing protections that PSL lenders enjoy in bankruptcy has a low likelihood of getting through our political process at the moment, we propose an alternative grounded in an existing rule issued by the CFPB and the CFPB's already-existing authority.

Borrowers who took on higher mortgages than they could afford have been cited by many as a cause of the financial crisis. Congress's response was to establish the CFPB and to mandate that it write an Ability-to-Repay (ATR) rule for certain mortgages.[157] The rule requires lenders to consider and verify a borrower's ability-to-repay by requiring that they "make a reasona-

---

[152] *See id.* at 262.

[153] *See* discussion in the Introduction, *supra*.

[154] *See* Pottow, *supra* note 15, at 255 ("The General Accounting Office study, for example, found only seven attorneys and five doctors of the 411 employed debtors.").

[155] *But see* Christopher Mayer et al., *Mortgage Modification and Strategic Behavior: Evidence from a Legal Settlement with Countrywide*, 104 Am. Econ. Rev. 2830 (2014) (finding evidence of strategic default among homeowners once a mortgage modification program was announced, but not finding evidence of increased bankruptcy filings, which involve a great deal more than defaulting on one debt (a mortgage)).

[156] Some might argue that only PSLs originated after a new such law should be eligible for a discharge. We disagree. There is no legal barrier to making all outstanding PSLs automatically dischargeable as of the enactment of the law. The "Contracts Clause," let it be remembered, only applies against the states. *See* U.S. Const. art. I, §10, cl. 1. In any event, when Congress enacted BAPCPA it modified the contracts of millions of student loan borrowers who had taken out PSLs thinking that they would be dischargeable in bankruptcy. Suddenly they were not, and the students had no recourse. A law undoing this provision of BAPCPA should encompass all outstanding PSLs.

[157] *See* Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, §§1411–12, 124 Stat. 1376, 1871 (2010).

ble, good-faith determination before or when you consummate a mortgage loan that the consumer has a reasonable ability-to-repay the loan, considering such factors as the consumer's income or assets and employment status."[158] As an enforcement mechanism, the rule establishes a private cause of action when the lender had not verified the borrower's ability-to-repay: for example, when a lender forecloses on a borrower in default, then the borrower can sue the lender for failing to verify the borrower's ability-to-repay when the loan was originated.[159] If successful, the borrower can recover damages equal to all the interest and fees charged, as well as statutory damages under the Truth In Lending Act (currently $4,000).[160] The rule is designed to incentivize the lenders to ensure that the borrower will indeed be able to pay back the loan. The ATR is considered especially helpful since borrowers often misunderstand the terms of their mortgages and simply do not have the same data as the lender to be able to tell what their chances of repaying the loan actually are.[161]

　Much in this logic seems applicable directly to private student lenders. These lenders may be in a much better position to gauge a student's future ability-to-repay than the student is, based on the school and on the major, since they observe the repayment profiles of many earlier borrowers.[162] Additionally, it is likely that many students do not understand the terms of their

---

[158] According to the CFPB's guidance to regulated entities:

The ATR/QM rule requires that you make a reasonable, good-faith determination before or when you consummate a mortgage loan that the consumer has a reasonable ability-to-repay the loan, considering such factors as the consumer's income or assets and employment status (if relied on) against: [1] The mortgage loan payment; [2] Ongoing expenses related to the mortgage loan or the property that secures it, such as property taxes and insurance you require the consumer to buy; [3] Payments on simultaneous loans that are secured by the same property; [4] Other debt obligations, alimony, and child-support payments. The rule also requires you to consider and verify the consumer's credit history.

CONSUMER FIN. PROT. BUREAU, ABILITY-TO-REPAY AND QUALIFIED MORTGAGE RULE: SMALL ENTITY COMPLIANCE GUIDE 11 (2014), http://files.consumerfinance.gov/f/201401_cfpb_atr-qm_small-entity-compliance-guide.pdf [https://perma.cc/AA2G-UB4W].

[159] See Ability-to-Repay and Qualified Mortgage Standards Under the Truth in Lending Act (Regulation Z), 78 Fed. Reg. 6408, 6416 (Jan. 30, 2013) (to be codified at. 12 C.F.R pt. 1026); see also Truth In Lending Act (TILA), 15 U.S.C. § 1601 (2012). Although the mortgage industry immediately braced itself for a flood of lawsuits, we are not aware that any have yet been filed. See Jonathan Green, Preparing for Litigation Under the Ability to Repay Rule, NAT'L MORTG. NEWS (Feb. 24, 2014), http://www.nationalmortgagenews.com/blogs/lens/pre-paring-for-litigation-under-the-ability-to-repay-rule-1041172-1.html [https://perma.cc/9JNG-KL75].

[160] 15 U.S.C. § 1640 (2012).

[161] "The Bureau believes that these criteria will protect consumers by ensuring that creditors use a set of underwriting requirements that generally safeguard affordability." Ability-to-Repay/Qualified Mortgage Rule: Hearing on 12 C.F.R. pt. 1026 Before the H. Comm. on Fin. Servs., 113th Cong. 1 (2013) (Statements of Peter Carroll, Assistant Director for Mortgage Markets, and Kelly Thompson, Assistant Director for Regulations, CFPB); see also Brian Bucks & Karen Pence, Do Borrowers Know Their Mortgage Terms?, 64 J. URBAN ECON. 218 (2008).

[162] But see Alan B. Krueger & William G. Bowen, Policy Watch: Income-Contingent College Loans, 7 J. ECON. PERSP. 193, 195–96 (1993).

loans as well as they should.[163] In contrast to mortgage borrowing, where one house in foreclosure would drive all the neighborhood's houses down in price, a default by a student loan borrower is unlikely to cause harm to unrelated parties.[164] However, there might still be spillover to the borrower's family, either because a family member is a co-borrower or through downstream impacts on the borrower's future family. And while student loans, at least for now, are typically much smaller than mortgages, monthly payments are typically quite high relative to a new graduate's income. In addition, the students taking out these loans might also be considerably less ready to deal with these decisions, especially for students who just graduated from high school.

Our policy proposal is thus straightforward: subject private student loan lenders to ability-to-repay requirements. Like a mortgage loan, the ability to repay a student loan depends not only on the student/homeowner's future income. It is also affected by the value of the asset the loan is financing. In the mortgage case, the asset is the home. In the student's case, the asset is the student's increased human capital. We discuss the pros, the cons, and the details of implementation of this proposal in the following paragraphs.

For undergraduate students without a co-borrower, verifying ability to repay would involve something different than verifying income or credit history. It is likely that they would have none. Instead, a loan to a first-year student might involve verifying the school's ability to successfully graduate (perhaps not lending to schools with the lowest graduation rates). In subsequent years of study it could, for example, require that the lender verify that the student is making adequate progress towards graduation by taking and passing classes that count towards their degree. Understandably, setting an ability-to-repay policy that applies across all possible student loans is a tall order, insofar as there are a variety of factors that may affect an individual's earnings beyond his academics. Consequently, well-defined regulator guidelines or safe harbors would be essential for an ability-to-repay policy to be tractable.

As in the mortgage market, lenders cannot predict student loan defaults perfectly. If a borrower has sufficient income, but the borrower's employer files bankruptcy unexpectedly, with the borrower hard-pressed to find another job, then that lender should not be liable under this rule. Similarly, if a student takes out a loan to attend a school with a high graduation rate and low cohort default rate, selects a major that typically results in sufficient income after graduation at that particular school, and makes adequate progress towards his degree, and the student is simply unlucky for whatever reason, the lender should not face any ability-to-repay liability. However, in

---

[163] Some lenders have an incentive to make loan terms difficult to understand, or in the most egregious cases, outright misrepresent the loan terms. *See, e.g.*, Bridgepoint Educ., Inc., Fed. Bankr. L. Rep. (CCH) ¶ 154–550 (Consumer Fin. Prot. Bureau Sept. 12, 2016) (finding that Bridgestone Education staff misrepresented the monthly payment students would have to make on private loans).

[164] This statement is based on the assumption that most of the spillover effect from a foreclosure is a drop in house values of nearby houses.

cases where the failure is not just theoretically possible, but instead is frequent, and when even upon graduating it is unlikely that the borrower will earn much money based on the school's former students' (including those that do not complete their course of study) labor market performance, the lender should be liable for making this loan.

All of this verification could become quite burdensome. For this same reason, the mortgage ATR rule includes a rule on "qualified mortgages" (QMs), which are presumptively compliant. The CFPB decided that QM loans would enjoy a safe harbor from the ATR rule. A mortgage is "qualified" if, for example, the lender considered and verified the "consumer's income or assets, current debt obligations, and child support payments;" "determine[d] that the consumer's total monthly debt-to-income ratio is no more than 43 percent," and underwrote the loan "based on a fully amortizing schedule using the maximum interest rate permitted during the first five years after the first periodic payment."[165] In addition, these loans "may not have negative-amortization, interest-only, or balloon-payment features or terms that exceed thirty years. They also may not have points and fees that exceed the specified limits."[166]

The general idea of a QM is that loans with those characteristics are considered safe, which is why lenders have a safe harbor from the ATR rule if they use them. Part of the reason these loans are considered safe is because there is some verification of the borrower's income and assets.[167] But they are also considered safe because they are not allowed to have some of the worst features of the subprime loans that were originated during the boom—features like negative amortization, interest-only periods, balloon payments, and the like.[168] Translating this to the PSL context, there are a few features that would make PSLs safer and could be part of an ability-to-repay safe harbor.

The first is that PSL lenders should be required to certify the loan with the student's school.[169] This would ensure that students are not borrowing

---

[165] CONSUMER FIN. PROT. BUREAU, *supra* note 158, at 39.

[166] *See id.* at 36.

[167] *See* Wei Jiang et al., *Liar's Loan? Effects of Origination Channel and Information Falsification Mortgage Delinquency*, 96 REV. ECON. & STAT. 1–18 (2014) (stated-income loans, also known as "liar's loans" were credited with causing some of the issues in the financial crisis, for example); *see also Liar Loan*, INVESTOPEDIA, http://www.investopedia.com/terms/l/liar_loan.asp [https://perma.cc/JDH3-PM88].

[168] These features delay borrowers' acquisition of equity in their houses, making foreclosure more likely. These features are also not easy to understand, and thus might make home ownership seem cheaper than it actually is, with the borrower realizing the true cost only several years after acquiring the loan.

[169] *See, e.g.*, Letter from Student Loan Coal. to Dir. Richard Cordray, Consumer Fin. Prot. Bureau (June 17, 2013), http://ticas.org/sites/default/files/pub_files/6_17_13_Cordray_Letter .pdf [https://perma.cc/48CK-VJB9] (urging the CFPB to Require School Certification for Private Education Loans); Ctr. for Am. Progress and Campus Progress, Comment Letter on an Initiative to Promote Student Loan Affordability 7 (Apr. 8, 2013), https:// cdn.americanprogress.org/wp-content/uploads/2013/04/Student_loan_affordability_CAP.pdf [https://perma.cc/65EC-USAY]; CoPIRG FOUND., PRIVATE LOANS, PUBLIC COMPLAINTS: THE CFPB'S CONSUMER COMPLAINT DATABASE GETS REAL RESULTS FOR STUDENT BORROWERS 30

more than their cost of attendance. It would also give the school a chance to counsel students about PSLs and if they have not maxed out their federal loans, perhaps to encourage them to do so. Some PSL lenders are seeking school certification at the moment, but it is not legally required. As an analog to the mortgage market, the borrower is typically unable to include their next vacation in the first-lien mortgage.[170]

Second, similar to the points and fees restrictions on QMs, the CFPB could also set a restriction on qualified PSLs origination fees and require that qualified PSLs not to have repayment fees.[171] Third, a qualified PSL could be required to be made only to students attending educational institutions that had a minimum graduation rate or federal student loan repayment rate. Fourth, qualified PSLs should be completely discharged by the lender in the event of a debtor's death or disability.

But perhaps the single most important feature the CFPB could require of a qualified PSL would be one that addressed what happens to borrowers who have difficulty repaying. We can imagine one of two scenarios. One scenario would involve a new form of *ipso facto* clause:[172] the rule could require qualified PSLs to contain a contractual provision where the lender promises not to collect from the consumer once a bankruptcy court had entered a bankruptcy discharge. Note that this does not require Congressional action. Instead it can be accomplished solely by contract.[173] Note also, however, that because this "discharge" of the loan would not be through bankruptcy, it could create a tax liability for the consumer.[174] Ultimately,

---

(2013), http://www.copirgfoundation.org/sites/pirg/files/reports/Private%20Loans,%20Public %20Complaints%20vCO102413.pdf [https://perma.cc/7FVW-AYMK].

[170] A discussion of a Home Equity Line of Credit (HELOC) analog in student lending could be fascinating, but is outside of scope of this article.

[171] PSL origination fees in 2006 Q1 averaged just over seven percent, meaning that if a student needed $10,000 to attend school, she actually would borrow $10,700, with the extra money going to the lender. *See supra* Table 1.

[172] In bankruptcy, these clauses generally state "that if the party in question experiences bankruptcy . . . then depending on the contract, either the other party may terminate the contract or the contract will terminate automatically." Kenneth A. Adams et al., *Termination-on-Bankruptcy Provisions: Some Proposed Language*, Am. Bar Ass'n Bus. L. Today (June 2014), http://www.americanbar.org/publications/blt/2014/06/07_adams.html [https://perma.cc/2LD8-MYB8].

[173] However, because the terms of the contract would be prescribed by regulatory action, the CFPB would still need to develop a record regarding the usefulness of doing this. That record is arguably in progress, as the agency has been prolific in this area with enforcement actions, reports, and a complaint database tracking student loan borrowers' issues with their servicers/lenders, among other things. *See generally* CFPB PSL Report, *supra* note 12; Consumer Fin. Prot. Bureau, Midyear Update on Student Loan Complaints (Aug. 2016), https://s3.amazonaws.com/files.consumerfinance.gov/f/documents/201608_cfpb_StudentLoanOmbudsmanMidYearReport.pdf [https://perma.cc/79DR-8JFW]; *CFPB Takes Action Against Wells Fargo for Illegal Student Loan Servicing Practices: Wells Fargo to Pay $3.6 Million Penalty to the Bureau*, Consumer Fin. Prot. Bureau (Aug. 22, 2016), http://www.consumerfinance.gov/about-us/newsroom/cfpb-takes-action-against-wells-fargo-illegal-student-loan-servicing-practices/ [https://perma.cc/UX4V-7BZG].

[174] *See* Martin J. McMahon, Jr. & Daniel L. Simmons, *A Field Guide to Cancelation of Debt Income*, 63 Tax Law. 415, 418 (2010).

however, this is unlikely since the consumer would almost certainly be insolvent, which would absolve them of paying taxes on the forgiven debt.[175]

The second scenario we suggest would allow students to join an income-based-repayment (IBR) program immediately upon repayment. An IBR program would necessarily extend the repayment period of the loan, but students could always opt out by paying more per month if desired. As one scholar has noted, "[w]e have a repayment crisis because student loans are due when borrowers have the least capacity to pay. . . . It often takes years for college graduates to settle into a steady, high-paying job that reflects the value of their education."[176] An IBR program would fix this issue.

Federal student loans allow for IBR programs. However, these programs suffer from a number of problems.[177] Fortunately, a number of scholars have analyzed these deficiencies and proposed many workable solutions.[178] For our purposes, a qualified PSL IBR should be as automatic and automated as possible—automatic in that it would be the default for a qualified loan, and automated in that PSL borrowers would not need to do anything to keep it going.[179] We do not here propose a specific percentage of the student's income at which the IBR would be capped. Instead, we hypothesize that this could be a place where the market might produce some competition. Different lenders could agree to different future percentages of income and that might be a way in which they could differentiate themselves to students.

A likely argument against this proposal (and one made against the current ATR rule in the mortgage context) is that its restrictions will cause lenders to cease making PSLs. In the mortgage context, one of the industry arguments was that lenders will not make mortgages that are not Qualified Mortgages. Similarly, the argument in student lending could be that lenders will not make loans for students attending riskier colleges and choosing riskier majors. That argument did not materialize in the mortgage market: jumbo loans with features like interest-only amortization and with forty-year terms

---

[175] *See id.* at 417.

[176] *See* Michael Stratford, *Income-Based Loans Made Simple*, Inside Higher Ed (Oct. 22, 2013), https://www.insidehighered.com/news/2013/10/22/new-report-calls-income-based-repayment-system-operates-payroll-taxes [https://perma.cc/5QQZ-5MFL]; *see also* Megan Slack, *Income Based Repayment: Everything You Need to Know*, White House (June 7, 2012, 10:59 AM), https://www.whitehouse.gov/blog/2012/06/07/income-based-repayment-everything-you-need-know [https://perma.cc/4WFZ-KQUG].

[177] For critiques of the federal income-based-repayment plans, see Susan M. Dynarski & J. Scott-Clayton, *The Cost of Complexity in Federal Student Aid: Lessons from Optimal Tax Theory and Behavioral Economics*, 59 Nat'l Tax J. 319 (2006); Frank Pasquale, *Democratizing Higher Education: Defending and Extending Income-Based Repayment Programs*, 28 Loy. Consumer L. Rev. 1 (2015).

[178] *See, e.g.*, Dynarski & Scott-Clayton, *supra* note 177; Pasquale, *supra* note 177.

[179] In order for the lender to calculate the correct payment amount, PSL borrowers could allow the Internal Revenue Service to share income information on a yearly basis with the PSL lender or servicer, who would then set the appropriate level of repayment. *See* Dynarski & Scott-Clayton, *supra* note 177, at 320.

are one of the fast-growing products currently, most likely being non-Quali-fied Mortgage loans.[180]

Second, in the school context, this does not mean that only loans to students of elite schools would qualify. A loan to a state school student, especially majoring in something like engineering and economics, might be even safer as the amount to repay is much lower. This is even more true for community college students. The dimension where the requirement might bite is expensive private schools that do not have the same quality as more selective private schools, especially so for majors that have a lower expected income, for example, arts. But making these students borrowers much more attuned to dangers of such an investment would be a benefit, not a cost, of such a requirement. And if students are unable to get a loan at particularly expensive private schools that graduate students that are highly unlikely to repay the loans (or simply do not graduate students), and this causes these students to choose cheaper or more practical alternatives instead, this might also be a benefit instead of a cost. So far, this does not seem to have happened in the mortgage market, so we may reasonably assume the same effect for PSLs.

It is also important to note that the PSL market has shrunk before, to no apparent great effect.[181] PSL issuance shrank dramatically in late 2007, "as developments in the asset-backed securities market . . . negatively impacted investor demand for [Student Loan Asset-Backed Securities]."[182] This occurred after BAPCPA was enacted. The volume of PSLs has never recovered to pre-recession levels.[183]

Another argument is that, even if PSLs continue to be made, the lenders will increase interest rates to account for the additional costs. However, as we argue in this article, interest rates did not appear to decrease when the student loans switched from dischargeable to nondischargeable. Thus, it is hard to see how making *only some* of the student loans dischargeable again would lead to higher interest rates. Again, this is similar to the outcome in the mortgage market, where there is no evidence that lenders charge higher interest rates for loans that are not QMs.

---

[180] *See* Neil Bhutta & Daniel Ringo, *Effects of the Ability to Repay and Qualified Mortgage Rules on the Mortgage Market*, Bd. of Governors of the Fed. Reserve Sys.: FEDS Notes (Dec. 29, 2015) https://www.federalreserve.gov/econresdata/notes/feds-notes/2015/effects-of-the-ability-to-repay-and-qualified-mortgage-rules-on-the-mortgage-market-20151229.html [https://perma.cc/74R7-SLBZ]; Alexei Alexandrov, *Making Firms Liable for Consumers' Mistaken Beliefs: Theoretical Model and Empirical Applications to the U.S. Mortgage and Credit Card Markets* (Consumer Fin. Prot. Bureau, Paper No. 2599424, 2015), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2599424 [https://perma.cc/X235-MSQH]; *see also* Robyn A. Friedman, *Borrowers Who Make Less Money Are Now Getting Jumbo Home Loans*, Wall St. J. (Oct. 18, 2016, 10:57 AM), http://www.wsj.com/articles/borrowers-who-make-less-money-are-now-getting-jumbo-home-loans-1476802631 [https://perma.cc/3KPS-V8RZ].

[181] CFPB PSL Report, *supra* note 12, at 24–25.

[182] *Id.* at 18.

[183] *See* College Board, Trends in Student Aid (2013), http://trends.collegeboard.org/sites/default/files/student-aid-2013-full-report.pdf [https://perma.cc/F2Q5-94Q2].

Finally, there might be an argument that all this information collection is simply costly. However, the lenders will already have much of this information at their disposal: they could analyze the historic performance of loans based on schools and majors of students. Thus, it is highly unlikely that the administrative costs are going to be anywhere close to prohibitive.

In June of 2016, the CFPB released a Notice of Proposed Rulemaking regarding the payday market.[184] The notice proposes a rule that would require payday lenders to verify a consumer's ability-to-repay certain short term loans unless that loan falls under one of the safe harbors. While we do not here take a stance on whether this regime makes sense in the payday market,[185] the CFPB's willingness to expand the concept of ability-to-repay beyond the mortgage market is encouraging. The payday proposed rulemaking is partially premised on the CFPB deeming payday loans that are not subject to the ability-to-repay verification are unfair or abusive acts or practices, part of the larger CFPB-authority to ban unfair, abusive, or deceptive acts or practices (UDAAP).[186] Unfortunately, the proposed rule gives lenders the ability to design their own measurements of a borrower's ability-to-repay. As one of us has commented elsewhere, this threatens to make the rule a "paper tiger."[187]

An ART requirement in the PSL market is a second-best solution to the problem of nondischargeability of student loans. The ideal solution is to roll back the special protection PSL lenders obtained in 2005.

CONCLUSION

In the United States, students are bombarded by messages that the key to obtaining a well-paying job is through a college degree. While these messages may be true for many students, in focusing on the "average" gains from a college degree, they obscure some hard truths. For example, these messages do not generally reveal that certain majors and schools (or combinations) offer more reliable paths to said well-paying jobs.[188] They also tend

---

[184] Payday, Vehicle Title, and Certain High-Cost Installment Loans, 81 Fed. Reg. 141 (proposed July 22, 2016), http://files.consumerfinance.gov/f/documents/Rulemaking_Payday_Vehicle_Title_Certain_High-Cost_Installment_Loans.pdf [https://perma.cc/PD74-L3UN] (proposing to "identify it as an abusive and unfair practice for a lender to make a covered longer-term loan without reasonably determining that the consumer will have the ability-to-repay the loan").

[185] *But see* Adam J. Levitin et al., Consumer Fin. Prot. Bureau, Comment Letter on Proposed Rule on Payday, Vehicle Title, and Certain High-Cost Installment Loans (Sept. 5, 2016), https://www.regulations.gov/document?D=CFPB-2016-0025-88018 [https://perma.cc/NF9U-4G3B] (arguing that the ability-to-repay requirement should be extended to all types of short-term loans).

[186] *See* Payday, Vehicle Title, and Certain High-Cost Installment Loans, *supra* note 184 (describing statutory authority to issue rule).

[187] *See* Levitin et al., *supra* note 185.

[188] Not all majors yield the same expected returns. For a controversial proposal to make student loan repayments contingent on majors, see Michael Simkovic, *Risk-Based Student Loans*, 70 WASH. & LEE L. REV. 527 (2013). For a thoughtful response, see Jonathan D.

to ignore the fact that the income boost of a college degree is not the same for everyone: it is only half as big for low-income students as compared to students from higher income families.[189] Graduation rates are also heavily correlated with the student's family background—students from low-income families have significantly lower graduation rates than students from higher-income families,[190] and minority students have worse graduation rates than non-minorities.[191] Students themselves rarely have sufficient information and well-formed expectations of the future,[192] with study after study showing that students' borrowing decisions are influenced by factors that should not matter.[193] And lenders, including the federal government, keep lending. These patterns should be familiar to us from the financial crisis. We do not think that student loans are in some kind of a bubble, the deflation of which might result in another crisis.[194] However, as numerous studies and popular press articles suggest, the debt incurred while many of these borrowers are teenagers could influence the timing of later decisions in life, such as a career

---

Glater, *The Unsupportable Cost of Variable Pricing of Student Loans*, 70 WASH. & LEE L. REV. 2137 (2013).

[189] *See* Timothy J. Bartik & Brad Hershbein, *Degrees of Poverty: Family Income Background and the College Earnings Premium*, EMP. RES. NEWSL. (UpJohn Inst. for Emp't Research, Kalamazoo, M.I.), July 2016, at 3. This is particularly unfortunate since it is precisely these students who are most likely to need student loans in order to attend college.

[190] *See, e.g.*, Martha J. Bailey & Susan M. Dynarski, *Gains and Gaps: Changing Inequality in U.S. College Entry and Completion* 25–30 (Nat'l Bureau Econ. Research, Working Paper No. 17633, 2011), http://www.nber.org/papers/w17633 [https://perma.cc/RT2C-QVYZ] (finding that "rates of college completion increased by only four percentage points for low-income cohorts born around 1980 relative to cohorts born in the early 1960s, but by eighteen percentage points for corresponding cohorts who grew up in high-income families").

[191] *See, e.g.*, Kevin Carey, *Graduation Rate Watch: Making Minority Student Success a Priority*, EDUC. SECTOR REP. (Apr. 23, 2008), http://www.issuelab.org/resource/graduation_rate_watch_making_minority_student_success_a_priority [https://perma.cc/KV9S-4W9R].

[192] *See* Brian A. Jacob & Tamara Wilder, *Educational Expenses and Attainment* 14–20 (Nat'l Bureau of Econ. Research, Working Paper No. 15683, 2010), http://www.nber.org/papers/w15683 [https://perma.cc/CH3N-YRRR].

[193] *See, e.g.*, Eric P. Bettinger et al., *The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment*, 127 Q.J. ECON. 1205 (2012); Benjamin L. Castleman & Lindsay C. Page, *Summer Nudging: Can Personalized Text Messages and Peer Mentor Outreach Increase College Going Among Low-Income High School Graduates?*, 115 J. ECON. BEHAV. & ORG. 144 (2015); Xiaoling Ang & Alexei Alexandrov, *Choice Architecture Versus Price: Comparing the Effects of Changes in the U.S. Student Loan Market* (Consumer Fin. Prot. Bureau, Paper No. 2504660, 2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2504660 [https://perma.cc/ZQ2C-DAWD]; Maximilian D. Schmeiser et al., *Does Salient Financial Information Affect Academic Performance and Borrowing Behavior Among College Students?* 1–36, (Bd. of Governors of the Fed. Reserve Sys. Fin. and Econ. Discussion Series, Paper No. 2015-075, 2015), http://dx.doi.org/10.17016/FEDS.2015.075 [https://perma.cc/2LVG-QBGD].

[194] While current student debt is quickly approaching the subprime mortgage debt levels from 2006 and 2007, over ninety percent of student debt is currently underwritten by the United States through the Department of Education. *See* Adam Levitin, *Is there a Student Loan Crisis?*, CREDITSLIPS (June 23, 2015, 2:16 PM), http://www.creditslips.org/creditslips/2015/06/is-there-a-student-loan-debt-crisis.html [https://perma.cc/DC38-FY2Q].

choice,[195] house purchase,[196] or moving out of their parents' house.[197] This may have significant long-term effects for the economy as a whole.[198]

Student loan debt is special because unlike mortgage, credit card, and medical debts, to name a few, it is very difficult to get rid of in bankruptcy. This has been so for federal loans since 1976. In 2005, Congress reformed the bankruptcy laws and added PSLs to the list of presumptively nondischargeable debts. This change created a windfall for lenders since it applied to any loan that was unpaid as of the law's enactment, even if the loan originated before the law was passed and was made on the presumption that it *would* be dischargeable.[199]

In this article, we have used statistical techniques to analyze some of the outcomes of this legal change. Based on our analysis of a loan-level dataset, we found no statistically significant effects of either (a) lenders passing through the expected savings of the law change to students through lower interest rates or (b) that students would have reacted to lower prices by taking out more private loans even if lenders had passed any of the savings to consumers. Our findings (with the caveats described in the text) suggest that losing the ability to discharge loans in bankruptcy was a net loss for students, even after taking into account market response by the lenders.

Our findings lead us to recommend two policy changes. First and foremost, we argue that Congress should roll back the special protections it has granted to private educational loans: students should be able to automatically discharge their private student loan debt in bankruptcy as easily as they discharge their credit card debt. Recognizing that it does not currently seem politically feasible to do this, we detail an alternative proposal: an ability-to-repay rule for private student loans. Borrowing from the Dodd-Frank Act and subsequent CFPB mortgage regulations, we suggest that a lender should incur liability if it did not verify the student's potential to repay the loan by comparing the loan amount with the student's choice of school and major's expected graduation rates and earnings post-graduation (if student even graduates). In the text we expand on our suggestion by, for example, dis-

---

[195] *See, e.g.*, Erica Field, *Educational Debt Burden and Career Choice: Evidence from a Financial Aid Experiment at NYU Law School*, 1 Am. Econ. J.: Applied Econ. 1 (2009); David M. Linsenmeier et al., *Financial Aid Packages and College Enrollment Decisions: An Econometric Case Study*, 88 Rev. Econ. & Stat. 126–45 (2006); Jesse Rothstein & Cecilia Elena Rouse, *Constrained After College: Student Loans and Early-Career Occupational Choices*, 95 J. Pub. Econ. 149 (2011).

[196] *See, e.g.*, Mezza et al., *supra* note 30.

[197] *See, e.g.*, David Dayen, *When Millenials Can't Move Out of Their Parents' Basements the Entire Economy Suffers*, New Republic (Feb. 21, 2014), https://newrepublic.com/article/116707/student-debt-crisis-slowing-household-formation-millenials [https://perma.cc/94BM-NBLB].

[198] Josh Mitchell, *Soaring Student Debt Prompts Calls for Relief*, Wall St. J. (Sept. 13, 2016), http://www.wsj.com/articles/soaring-student-debt-prompts-calls-for-relief-1473759003 [https://perma.cc/3TDE-BEVS].

[199] BAPCPA merely added PSLs to the list of presumptively nondischargeable loans. That list has never specified when the loans were originated. Instead, the list of nondischargeable loans only becomes relevant when a consumer files for bankruptcy. *See* 11 U.S.C. 523(a)(8) (2012); Ang & Jiménez, *supra* note 17, at 177.

cussing possible safe harbors for the ease of administrability: high graduation rates at the school that student chose, high salaries after graduating with a given major from this particular school, and an income-based repayment plan (that forces the lender to have a stake in the student's eventual post-college outcome). While we do not make exact prescriptions for a safe harbor, we do encourage the CFPB to use its supervisory authority to obtain data that would help craft a tailored policy.

Technical Appendix

A. *Documenting the Discontinuity at 645 FICO Score*

We document that there is a discontinuity at a maximum FICO of 645: students whose maximum FICO score is just below 645 have to borrow at a considerably higher interest rate (close to three percentage points) than students whose maximum FICO score is just above 645. This corroborates the information received from lenders that underwriting in the sample period was based on the maximum FICO score of borrower and co-borrower. We show that there are significant effects on both the presence of a co-borrower and interest rate at origination. We show in our placebo test[200] that, in contrast, borrower FICO (instead of maximum FICO) does not exhibit a similar change in interest rate at origination at a 645 FICO score.

Appendix Figure 1 exemplifies the classic RD setup. It shows that at four-year public schools in the first quarter of 2005, one hundred percent of loans with maximum FICO below 645 have a co-borrower whereas only fifty-five percent of borrowers with a score just above 645 have a co-borrower. This stark difference indicates that lenders imposed a co-borrower requirement for borrowers with low credit scores.

Appendix Figure 1: Proportion of Borrowers with Co-Borrowers by FICO Score, 2005 Q1, Public

RD Plot, 2005 Q1

Source: PSL Loan Level Data

---
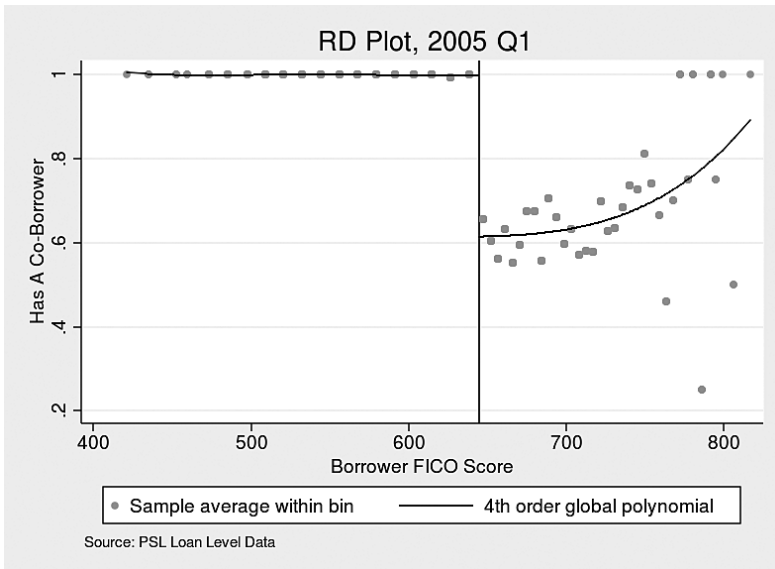
[200] A placebo test is a falsification exercise that implements the same empirical tests as the main analysis where an effect would not be expected to be detected. In this case, we performed the tests at maximum FICO scores other than 645.

Appendix Table 1 formalizes both of these findings. The structure of this table is similar to the other tables in which we present estimates for RD. The first row represents the difference in the proportion of loans with a co-borrower just below a maximum FICO of 645 and at or above a maximum FICO of 645. The numbers in parenthesis just below the first row are the standard errors.

APPENDIX TABLE 1: PROPORTION OF BORROWERS WITH A CO-BORROWER, 2005 Q1, BASED ON BORROWER CREDIT SCORE[201]

	(1) All Undergraduates	(2) Private Schools	(3) Public Schools
Difference	-0.51***	-0.54***	-0.45***
	(0.09)	(0.06)	(0.12)
Has a Co-Borrower Below 645	1.00	1.00	1.00
Has a Co-Borrower Above 645	0.49	0.46	0.55
Observations Below 645[202]	39	27	25
Observations At or Above 645	144	573	94
Bandwidth for Regression	6.89	67.62	6.59
Bandwidth for Bias Correction	10.17	101.99	10.20

Notes:
Numbers in parentheses denote standard errors.
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Restricted to four-year undergraduates at public and private not-for profit schools in the first quarters of 2005, 2006, and 2007.
Source:
CFPB PSL Loan Level Dataset, IPEDS, and PEPS.

A negative number in the first row indicates that the proportion of borrowers with a credit score decreased when the student's credit score is just above 645. This can be seen in Figure A-1 and it is precisely as we would expect when lenders use a threshold to divide borrowers into risky/less risky categories. The difference in prevalence of co-borrowers across the threshold differs by type of school. The first row of Appendix Table 1 shows the estimated difference between co-borrower rates among sub-prime/prime borrowers: In columns 2 and 3 of row 1, we estimate that difference to be fifty-four percent at private schools versus forty-five percent at public schools (in column 3). Given that one hundred percent of borrowers whose maximum FICO was below 645 had a co-borrower, this corresponds to borrowers in

---

[201] Regression discontinuity calculated using robust regression discontinuity. *See* Calonico et al., *supra* note 113. Bandwidth and number of observations selected using CCT; kernel for local polynomial estimators is triangular.

[202] Note that the number of observations above and below the 645 threshold correspond to the number of observations in the optimal bandwidth in the eighth row and not to the much larger number of observations in the data.

private institutions having a co-borrower forty-six percent of the time and those in public institutions having a co-borrower fifty-five percent of the time, as per row 4.[203]

It is also important to note that the observable characteristics of the borrowers in the sample vary smoothly across the 645 maximum FICO threshold, which indicates that the borrowers just above and just below the threshold are comparable—at least as far as we can tell—and there is unlikely to be manipulation of FICO scores around the threshold. This assumption is further bolstered by there being no significant change in tuition and fees at the schools attended by borrowers and no significant change in graduation rates. The following tables and figures show supporting evidence.

APPENDIX TABLE 2: TUITION AND FEES AT MAXIMUM FICO 645[204]

	(1) All Undergraduates	(2) Private Schools	(3) Public Schools	(4) With Co-Borrowers	(5) Extensive Ph.D. Granting Institutions
Difference ($)	-4,518	814	-246	-5,013	1,030
	(3,728)	(2,247)	(1,498)	(4,521)	(2,366)
Tuition and Fees Below 645 ($)	15,541	17,482	5,495	16,030	10,200
Tuition and Fees Above 645 ($)	11,022	18,296	5,249	11,017	10,965
N Below 645	35	17	25	29	2,335
N At or Above 645	119	64	106	46	4,386
Bandwidth for Regression	5.45	8.84	7.40	4.87	35.78
Bandwidth for Bias Correction	9.71	13.69	10.43	9.14	60.35

Notes:
Numbers in parentheses denote standard errors.
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Restricted to four-year undergraduates at public and private not-for profit schools in the first quarters of 2005, 2006, and 2007.
**Source:**
CFPB PSL Loan Level Dataset, IPEDS, and PEPS.

---

[203] These differences were calculated using the CCT robust regression discontinuity method, Calonico et al., *supra* note 113, implemented using the authors' algorithm for Stata. Note that there are two optimal bandwidths calculated: one for the regression that is specific to the calculation of the estimate, and one for the bias correction, which is necessary for correctly calculating the standard errors.

[204] Regression discontinuity calculated using robust regression discontinuity. *See* Calonico et al., *supra* note 113. Bandwidth and number of observations selected using CCT; kernel for local polynomial estimators is triangular.

APPENDIX FIGURE 2: TUITION AND FEES BY IN-STATE STATUS,
UNDERGRADUATES AT FOUR YEAR OR HIGHER INSTITUTIONS

RD Plot, 2005Q1

Source: PSL Loan Level Data
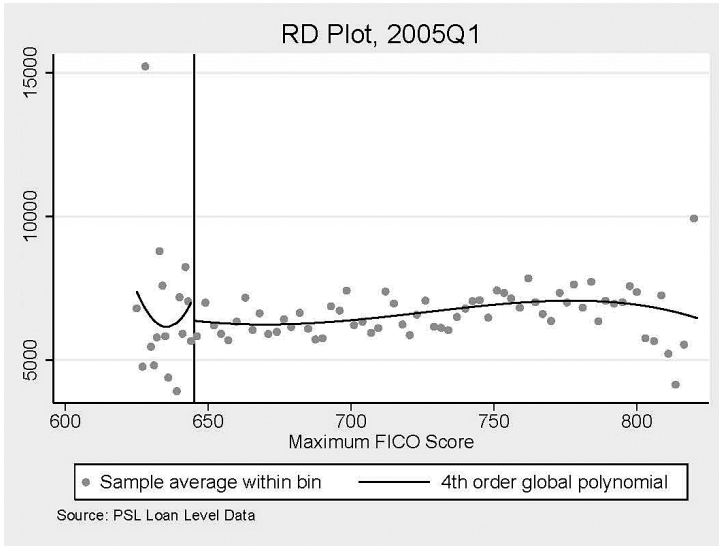
APPENDIX TABLE 3: GRADUATION RATES AT MAXIMUM FICO 645

	(1) All Undergraduates	(2) Private Schools	(3) Public Schools	(4) With Co-Borrowers	(5) Extensive Ph.D. Granting Institutions
Difference	1.18	-16.21	11.72	-2.55	5.65
	(7.23)	(13.73)	(11.86)	(8.64)	(5.52)
Graduation Rate Below 645	48.0547	67.9612	36.1915	47.29	63.87
Graduation Rate Above 645	49.2381	51.7544	47.9072	44.75	59.62
N Below 645	39	12	24	38	760
N At or Above 645	162	41	105	63	1542
Bandwidth for Regression	49.18	5.37	7.33	6.24	40.80
Bandwidth for Bias Correction	47.72	10.22	12.72	9.89	69.06

Notes:
Numbers in parentheses denote standard errors.
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Restricted to four-year undergraduates at public and private not-for profit schools in the first quarters of 2005, 2006, and 2007.
Regression discontinuity calculated using Calonico, Cattaneo, and Titiunik (2014) robust regression discontinuity.
Bandwidth and number of observations selected using CCT; kernel for local polynomial estimators is triangular.
Source:
CFPB PSL Loan Level Dataset, IPEDS, and PEPS.

APPENDIX FIGURE 3: GRADUATION RATES, UNDERGRADUATES AT PUBLIC
FOUR YEAR OR HIGHER INSTITUTIONS
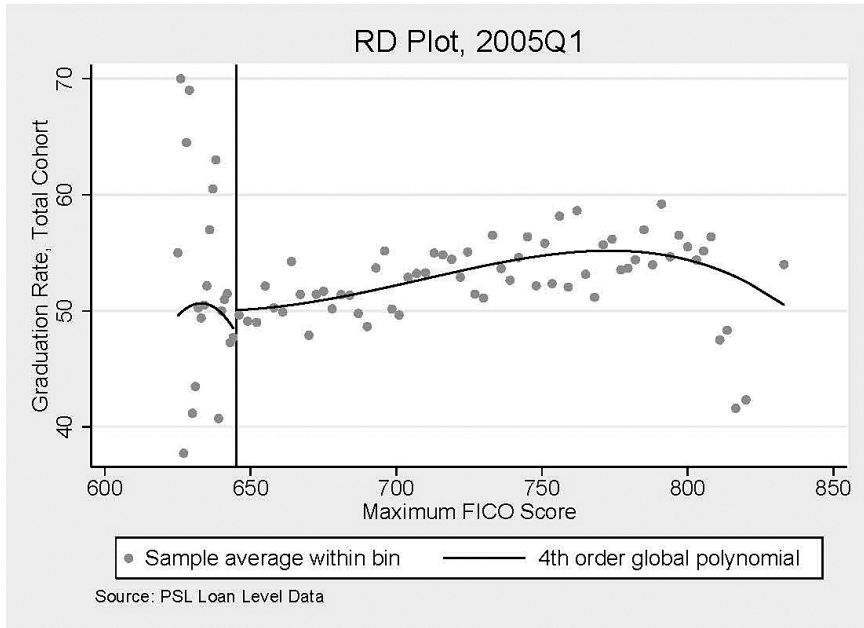
The difference in underwriting across the 645 threshold is also evident in pricing. Since practically all of the PSLs in the sample are variable rate loans indexed to prime, LIBOR, T-Bills, or another index, we use margin above the index as our measure of price.[205]

Appendix Figure 4, below, plots the average margin for a specific maximum FICO score versus the maximum FICO score among all co-borrowers for undergraduates at public four-year or higher institutions.

---

[205] Since these are variable rate loans, the interest charged on them can be thought of as index plus margin, where the index is a public interest rate indicator (such as LIBOR) and the margin is the premium that the lender charges above that indicator. As noted earlier, we refer to interest rates in percentages in this article. The same applies to margins since they are relative to interest rates.

APPENDIX FIGURE 4: MARGIN VS. MAXIMUM FICO SCORE, 2005Q1,
UNDERGRADUATES AT PUBLIC FOUR YEAR OR HIGHER
INSTITUTIONS[206]
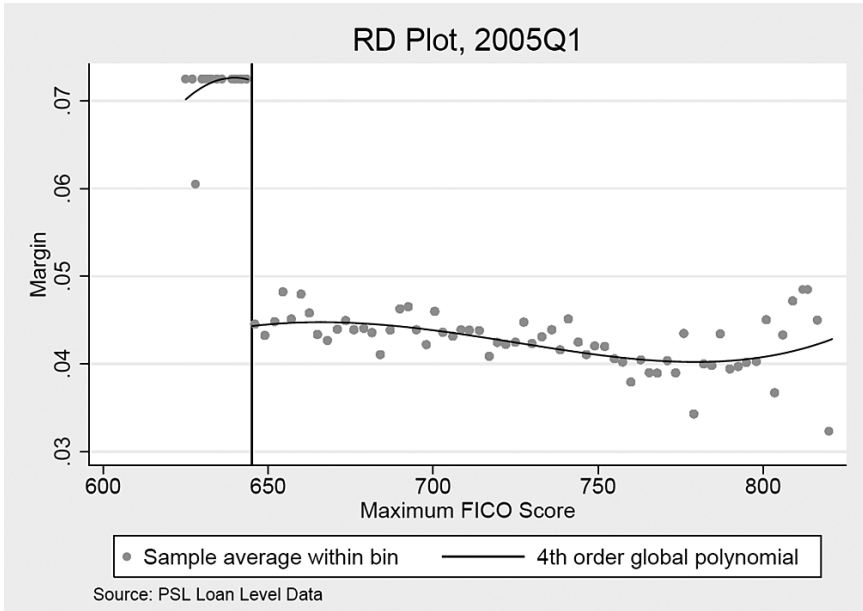
There is a sharp discontinuity in price at a FICO score of 645: the average margin is 7.25% left of the threshold and it is 4.58% right of the threshold, and pricing appears flat for a given side of the 645 FICO score. These estimates are presented in Appendix Table 4.

---

[206] The fitted line is a fourth degree polynomial in FICO score.

APPENDIX TABLE 4: PRICE DIFFERENCES AT A MAXIMUM FICO SCORE OF
645 MEASURED IN MARGIN, 2005[207]

	(1) All Undergrads	(2) Private Schools	(3) Public Schools	(4) With Co-Borrowers	(5) Extensive Ph.D.-Granting Institutions
Difference (%)	-2.67***	-2.75***	-2.65***	-2.42***	-3.17***
	(0.15)	(0.20)	(0.22)	(0.17)	(0.65)
Margin Below 645 (%)	4.58	7.25	7.25	7.25	7.80
Margin At or Above 645 (%)	7.25	4.50	4.60	4.83	4.63
Observations Below 645[208]	39	27	25	83	32
Observations At or Above 645	144	340	94	512	94
Bandwidth for Regression	6.16	43.28	6.23	36.43	4.22
Bandwidth for Bias Correction	9.83	64.95	9.84	61.45	7.25

Notes:
Numbers in parentheses denote standard errors.
* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level.
Restricted to four-year undergraduates at public and private not-for profit schools in the first quarters of 2005, 2006, and 2007.
Source:
CFPB PSL Loan Level Dataset, IPEDS, and PEPS.

The estimates of the price differential are similar across different sub-groups: for all undergraduates, interest rates are on average 2.67% lower for loans with a maximum FICO at or above 645, which corresponds to a 2.75% differential in margins for private school loans in column 2 and 2.65% differential in margins for public school loans.

We present separate estimates for public and private schools since tuition and fees tend to be higher at private schools. One might expect the difference in price between prime and subprime borrowers to be smaller for borrowers at more academically competitive schools since the earnings risk for their student is lower. In fact, when we restrict attention to students at schools with a Carnegie classification[209] of extensive Ph.D.-granting institu-

---

[207] Regression discontinuity calculated using Calonico, Cattaneo, and Titiunik, *supra* note 130, robust regression discontinuity. Bandwidth and number of observations selected using CCT; kernel for local polynomial estimators is triangular.

[208] Note that the number of observations above and below the 645 threshold correspond to the number of observations in the optimal bandwidth in the seventh row, and not to the much larger number of observations in the data.

[209] *See* CARNEGIE CLASSIFICATIONS OF INST. OF HIGHER EDUC., http://carnegieclassifications.iu.edu [https://perma.cc/9HMH-EX99]. The Carnegie Classification is a commonly accepted standard of academic characteristics and rigor for U.S. academic institutions that is used in data released by the Department of Education. We focus on extensive Ph.D.-granting institutions because flagship public schools tend to be extensive Ph.D.-granting institutions and there are few public analogues to elite private liberal arts colleges. "Ph.D.-granting institution" is considered the most rigorous designation for universities.

tion[210] we estimate the differential to be 3.17% (about eighteen percent higher than the average for all students), as shown in column 5. However, the differences between these margins are not statistically significant.

To corroborate that underwriting is based on maximum FICO score, we repeat the exercise of plotting the relationship between the average interest rate and the *borrower's* FICO score.[211] As shown in Appendix Figure 5, we do not observe a similar discontinuity (compare to Appendix Figure 4). This corroborates the assertion that underwriting is based on maximum FICO.

APPENDIX FIGURE 5: MARGIN VS. BORROWER FICO SCORE, 2005Q1, UNDERGRADUATES AT PUBLIC FOUR YEAR OR HIGHER INSTITUTIONS (PLACEBO TEST)[212]
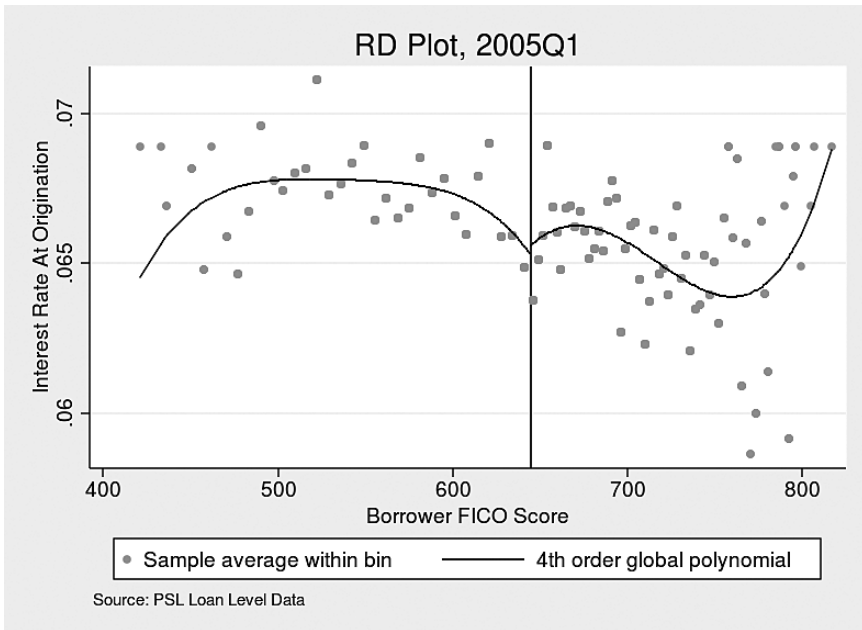
B.   Density Discontinuity

Testing for the gap in density is mechanically similar to the procedure in a McCrary test for whether there is strategic movement to one side of a

---

[210] *See id.* This corresponds to Carnegie classification 15; schools in this category include Princeton, Rutgers New Brunswick, Brandeis, University of Rochester, and University of Illinois.

[211] That is, even if the borrower has a co-borrower whose credit score is higher than his or her own, we use only the borrower's score.

[212] Includes all borrowers, regardless of whether they have co-borrowers.

policy cutoff (manipulation of a running variable) in the RD design.[213] The McCrary Test looks for evidence consistent with manipulation of the running variable—in this case maximum FICO score—in a RD design. If the running variable is manipulated, then the assumption that individuals on either side of the threshold are similar is violated since the people who wanted to and could change the value of their score would sort to the "better" side of the threshold. The intuition behind the test can be thought of as making histograms with finer and finer bin width, with the threshold being the start point of one of the bins, and comparing the height of the bins just above or just below the threshold. If they differ in height, then the running variable may have been manipulated. The difference between the standard use of the McCrary test and this application is in the inference: we assume that our running variable, the credit score, is continuous in the population of interest and cannot be manipulated, so the estimated gap in density captures the difference in take-up rates of student loans.
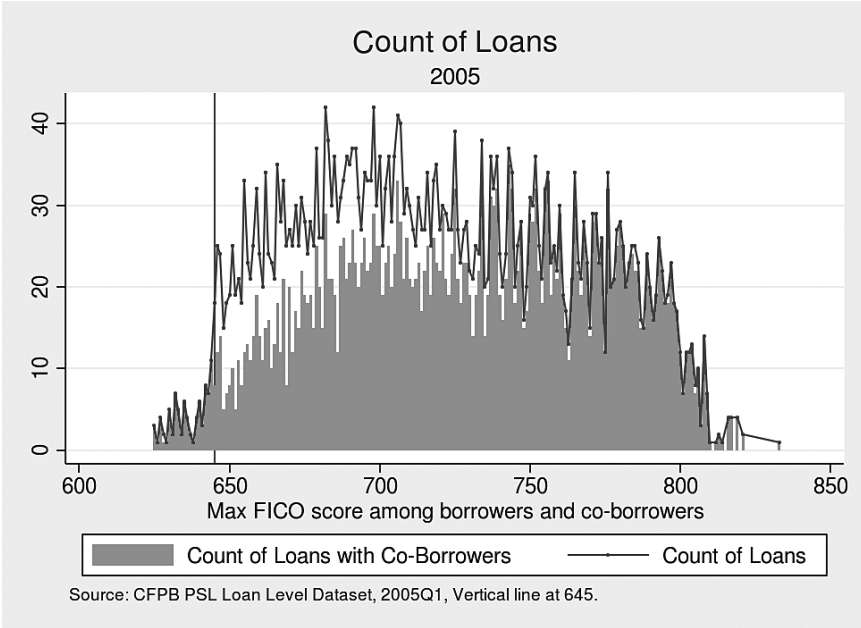
This sets the stage for an RD design in the terms and conditions of loans. For example, the price elasticity of demand for PSLs can be estimated by exploiting the discontinuity in margin at a FICO score of 645. One challenge is that we only observe originated loans. A standard RD setup would focus on the take-up rate of loans, but we do not have information about applicants who did not accept the loans they were offered or who were denied loans. If we assume that demand for loans is smooth through the 645 FICO score threshold and applicants on either side of the threshold are eligible to receive loans, then we can recover the effect of the price on loan take-up through its effect on the density of FICO scores among originated loans. For a visual example, see Appendix Figure 1.

As discussed in the main text, solo borrowers with FICO scores below 645 are virtually non-existent, so we focus this analysis on loans with co-borrowers. Loans with co-borrowers can fall into two categories: loans that would have been applied for with a co-borrower anyway and those that were applied for with a co-borrower only after a solo application was denied. For the group that would have a co-borrower anyway FICO scores should be smooth through 645. Although solo borrowers who were previously denied should be more likely to have scores below 645, the co-borrowers that they tap for their co-borrowed application should also be smooth through 645. Since pricing is discretely determined by the maximum credit score, the pricing for those with co-borrower scores below the threshold will receive the same price regardless of whether their score or their co-borrower's score is used. Therefore, the running variable—the FICO score used in underwriting—is smooth through 645.

---

[213] Justin McCrary, *Manipulation of the Running Variable in the Regression Discontinuity Design: A Density Test*, 142 J. ECONOMETRICS 698, 701 (2008).

APPENDIX FIGURE 6: DENSITY OF LOANS ORIGINATED, 2005Q1

Count of Loans
2005

Source: CFPB PSL Loan Level Dataset, 2005Q1, Vertical line at 645.

Count of Loans with Co-Borrowers — Count of Loans

Max FICO score among borrowers and co-borrowers

## C.	*Formalizing the Regression Discontinuity Strategy*

To formalize the RD strategy used in this paper, let $\varphi_c(x, p)$ be the take-up rate of co-borrowed loans with maximum FICO scores of x and price p. Let θ be the FICO score threshold at which the price changes from p_0 to p_1 and let $f_c(x)$ be the population density of FICO scores of individuals eligible to apply for PSLs with willing co-borrowers. The price elasticity of demand can be calculated by:

$$\epsilon_D = \frac{\lim_{x \downarrow \theta} \varphi_c(x, p_1) - \lim_{x \uparrow \theta} \varphi_c(x, p_0)}{\frac{p_0 - p_1}{p_1}}.$$

We don't observe φ_c though, and instead observe the density relative to originated loans for a fixed price schedule:

$$g(x) = \frac{f_c(x)\varphi_c(x, p)}{\int_a^b f_c(t)\varphi_c(t)dt},$$

where $[a, b]$ is the support of the distribution of scores.

Note that:

$$\lim_{x\downarrow\theta} g(x) - \lim_{x\uparrow\theta} g(x) = \lim_{x\downarrow\theta} \frac{f_c(x)\varphi_c(x,p_1)}{\int_a^b f_c(t)\varphi_c(t)dt} - \lim_{x\uparrow\theta} \frac{f_c(x)\varphi_c(x,p_0)}{\int_a^b f_c(t)\varphi_c(t)dt}$$

$$= \frac{f_c(x)}{\int_a^b f_c(t)\varphi_c(t)dt} \left[\lim_{x\downarrow\theta} \varphi_c(x,p_1) - \lim_{x\uparrow\theta} \varphi_c(x,p_0)\right]$$

$$= \frac{f_c(x)}{\int_a^b f_c(t)\varphi_c(t)dt} \times \frac{p_1}{p_0 - p_1} \times \epsilon_D,$$

so we can estimate the elasticity of demand up to a constant multiple.

The analysis described above is restricted to co-borrowed loans. Some solo borrowers who do not qualify for loans on their own may not be able to find a willing co-borrower and may therefore be credit constrained. If this is happening, then there should be solo borrowers just above the 645 FICO score threshold but not just below it. Assuming that solo borrower demand just above and just below the threshold is similar we can measure the extent of the credit constraint by considering how many solo borrowers are "missing" just below the 645 FICO threshold. Let be the population density of solo borrowers and let be the takeup rate of solo borrowers. Assume that solo borrowers are only permitted to borrow if their credit score is greater than or equal to . Then the probability density function of all observed loans is represented by $h(x)$:

$$h(x) = \begin{cases} \dfrac{f_c(x)\varphi_c(x,p)}{\int_a^\theta f_c(t)\varphi_c(t,p)dt + \int_\theta^b [f_c(t)\varphi_c(t,p) + f_s(t)\varphi_s(t,p)]\, dt} & x < \theta \\[4ex] \dfrac{f_c(x)\varphi_c(x,p)}{\int_a^\theta f_c(t)\varphi_c(t,p)dt + \int_\theta^b [f_c(t)\varphi_c(t,p) + f_s(t)\varphi_s(t,p)]\, dt} & x \geq \theta \end{cases}.$$

If $\varphi_s, f_s, \varphi_c$, and f_c are continuous, then $\lim_{x\to\theta} + h(x) - \lim_{x\to\text{gki\_q}} - h(x) > 0$ implies that solo borrowers are credit constrained.