How Does Consumer Bankruptcy Protection Impact Household Outcomes?

Carlos Parra*

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Abstract

Chapter 7 bankruptcy protection provides more than $100 billion in debt relief each year, yet its impact on consumers remains unclear. Using unique hand-collected data from individual bankruptcy petitions, I employ a regression discontinuity design to estimate the effect of Chapter 7 on subsequent household investment behavior and financial performance. I find that Chapter 7 protection increases the probability of the filer (i) creating a new business, (ii) obtaining secured lending, (iii) becoming a homeowner, and (iv) avoiding home foreclosure. Additional tests suggest that although Chapter 7 protects individuals in a variety of ways, the above findings arise because of debt relief.

JEL: D14, K35, G18, G11

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*The University of Texas at Austin McCombs School of Business, 2110 Speedway, Stop B6600, Austin, TX 78712 (carlos.parra@utexas.edu). Thanks to the 65 district courts that generously granted me PACER fee waivers that enabled the data collection. In addition, thanks to Tal Gross, Matthew Notowidigdo, and Jialan Wang for sharing their PACER dockets data. I am especially grateful to the following people for their invaluable help and input: Andres Almazan, Aydoğan Alti, Jonathan Cohn, Cesare Fracassi, Jay Hartzell, and Sheridan Titman. I would like to thank Jason Abrevaya, Jacelly Cespedes, Jason Duan, John Griffin, Sam Kruger, Inessa Liskovich, Zack Liu, Gonzalo Maturana, Clemens Sialm, Laura Stark, Stephen Trejo, Parth Venkat and seminar participants at the University of Texas at Austin, and 12th Olin Corporate Finance Conference. All errors are my own.

1 Introduction

The Great Recession was preceded by a substantial accumulation of household debt and followed by a collapse in household net worth. Policymakers and academics have proposed debt forgiveness plans, such as mortgage write-downs, to improve household balance sheets and thus reduce the economic distortions associated with household indebtedness (e.g., Posner and Zingales, 2009; Mian and Sufi, 2015). While it is difficult to directly assess the potential benefits of these proposals, this paper instead indirectly examines this question by evaluating an existing debt forgiveness program. In particular, this paper studies how debt relief provided by Chapter 7 bankruptcy protection, which is a program that allows households to eliminate part of their outstanding debt obligations, influences the household's subsequent real investment choices and financial performance.

The U.S. personal bankruptcy code includes two alternative provisions, Chapter 7 and Chapter 13. Chapter 7 enables debtors to eliminate most of their unsecured debt obligations, but requires them to sell their assets above exemption limits. Chapter 13 allows debtors to keep most of their assets, but their debt obligations are only partially extinguished. In general, Chapter 7 is the more attractive alternative, i.e., most debtors with a choice prefer Chapter 7. However, not all insolvent debtors can qualify for it.[1] To qualify for Chapter 7, the debtor must have an income below certain thresholds, described in more detail below. Despite the fact that each year more than $100 billion in debt relief is granted through the consumer bankruptcy system and nearly 12 percent American households have ever filed for bankruptcy (Mann et al., 2012), limited evidence regarding the subsequent effects of Chapter 7 on debtor outcomes exists.[2]

An important challenge presented in evaluating Chapter 7 is that debtors seeking debt relief tend to have unfavorable characteristics (e.g., job losses, health shocks, etc.) that affect future outcomes which cannot be accounted for in the data. These (time-varying) unobservable variables can also affect whether the debtor receives bankruptcy protection, thus the estimates could be biased. Fortunately, in a regression discontinuity (RD) design, this identification problem can

[1] In 2005, Chapter 7 bankruptcies represented 80% of all bankruptcy filings.

[2] See Appendix Figure 1 for the value of the debt relief.

be addressed by exploiting the income thresholds that limit access to Chapter 7.

My analysis is performed on a unique dataset of more than 40,000 bankruptcy cases filed between 2006 and 2009 from 65 (out of 90) district courts in 45 states. The data is hand-collected from filers' bankruptcy forms and matched with two other datasets allowing the study of debtors' post-filing outcomes.[3] This new dataset contains filer's characteristics such as income, liabilities, etc. which are exploited by the RD approach. Access to this dataset is crucial since the available public-use household survey data (e.g., Panel Survey of Income Dynamics (PSID)) contains no information on the determinants of Chapter 7 eligibility (e.g., disposable income), making it impossible to detect a discontinuity in the data.

A key aspect of my novel research design is to take advantage of income thresholds that prevent some households from filing for Chapter 7 protection, specifically, the means test, imposed by the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA). In detail, debtors with average gross incomes above the state median need to determine their disposable income and compare it against two thresholds to establish their eligibility for bankruptcy protection under Chapter 7.[4] Using these features of the bankruptcy code together with detailed data on individual filers, I employ a (fuzzy) RD design to estimate first, the causal effect of receiving Chapter 7 protection on subsequent financial performance and investment behavior and second, the marginal effect of greater debt relief on post-filing outcomes.[5]

I find that Chapter 7 protection helps debtors avoid subsequent financial distress. In particular, over the first six post-filing years, the marginal recipient of Chapter 7 protection reduces the probability of home foreclosure by 45.2 percentage points,[6] especially in the case of positive home equity at the time of filing. Chapter 7 also decreases the probability of being subject to a judgment lien (by 39.1 percentage points).[7] It also increases subsequent real investment. The

[3] Another data limitation to overcome is the lack of individual data containing ex-post outcomes, since debtors do not need to report anything after their case is closed.

[4] The disposable income is determined by deducting from the debtor's average gross monthly income certain predetermined allowances for housing costs, transport costs, and personal expenses, which are formulated periodically by the IRS.

[5] This is relative to filers who are dismissed from Chapter 7 or would have been dismissed because they do not qualify for Chapter 7 protection (and whose assets are protected by asset exemptions).

[6] 86% reduction relative to the control group filers mean. Dobbie and Song (2015) find that Chapter 13 protection reduces the probability of home foreclosure by 127% relative to their control group mean.

[7] Judgment liens are court rulings that provide a creditor the right to take possession of a debtor's real property

marginal recipient of Chapter 7 is (10.3 percentage points) more likely to create a new business, to become a first time homeowner (14.9 percentage points), and to obtain future secured lending (10.2 percentage points). Finally, in terms of the marginal effect of greater debt relief, I find that one standard deviation increase in debt relief from Chapter 7 leads to an increase in the probability of business creation by 10.79 percentage points and a decrease in the probability of home foreclosure by 51.74 percentage points.

Subsequently, I explore two potential channels for these findings. The first channel is the debtors' improved balance sheets stemming from the discharge of their unsecured debt obligations. The second channel arises from protection against non-judicial collection efforts, such as collection letters, phone calls, and visits at home or work.[8] My evidence suggests that the first channel is responsible for most of the results.[9]

I also examine key threats to the RD approach. Filers could try to manipulate their incomes, or debtors may opt out of filing if they are ineligible for Chapter 7. Using a rich set of robustness checks on the density of debtors and on filers' characteristics, I find no evidence that debtors file selectively or manipulate their incomes in order to fall just below the various thresholds. In addition, I find no evidence of reduction in labor supply (e.g., job tenure, other incomes, etc.) or other possible strategic behaviors from bankruptcy filers (e.g., expenses, household size, joint filing for married couples, etc.). Finally, all of the reported estimates are robust to a wide variety of specifications.

A caveat to the analysis is that because the empirical strategy is a fuzzy RD, the identified parameter measures the treatment effect for the marginal recipients of Chapter 7 bankruptcy protection at the income discontinuities. To address this issue, I estimate the marginal threshold treatment effect (MTTE) which approximates the impact on treatment effects of marginal change

if the debtor fails to fulfill contractual obligations. This variable includes tax liens and non-tax liens.

[8]To test for the second potential mechanism I exploit variations in anti-harassment statutes across different states. I find that no distinction can be found in the effects of Chapter 7 on debtors living in states with consumer protection laws that provide the right of action against harassment from abusive creditors compared to those in states without such protection.

[9]This is consistent with models of debt overhang (Myers, 1977; Krugman, 1988) and models of net worth and investment (e.g., Bernanke and Gertler, 1989) that suggest that debt relief can raise the probability of attracting new lending and value-increasing investment.

in the threshold ignoring general equilibrium considerations (Dong and Lewbel, 2012).[10] The MTTE estimates suggest that the local average treatment effect for the different post-filing outcomes would slightly decrease if each of the thresholds were marginally increased.[11]

This paper is related to a number of strands of literature. By analyzing the effect of Chapter 7 on foreclosure and financial outcomes, it complements recent work by Dobbie and Song (2015) and Dobbie et al. (2015). Both employ differences in judge leniency as an instrumental variable for bankruptcy protection to identify the impact of Chapter 13 on subsequent earnings, foreclosure, and credit scores of the marginal recipient of protection. However, their judge assignment instrument does not allow them to estimate the effect of Chapter 7 protection. Another key difference is that the present paper, using detailed data from bankruptcy petitions, estimates the marginal effect of debt relief on debtors' outcomes.

Related literature examines the effects of the BAPCPA. Li et al. (2011) estimate the impact of the 2005 bankruptcy reform on mortgage default and foreclosure. In contrast, the present paper uses the income thresholds introduced by the reform to identify the effect of Chapter 7 on debtors' post-filing outcomes. Finally, by analyzing the impact of debt relief on household outcomes, the present paper is related to that of Kanz (2015), who shows that a debt relief program in India, similar to Chapter 7, has no effect on household savings, consumption, or investment.

The paper is organized as follows. Section 2 provides a brief summary of the institutional details of the U.S. personal bankruptcy system, and it discusses the potential benefits of bankruptcy protection. Section 3 describes the data sources and introduces the research design. Section 4 documents the effect of Chapter 7 protection along with internal validity checks, and it discusses alternative explanations for the findings. Section 5 compares the estimates with the findings of prior literature and their external validity, and Section 6 concludes the paper.

[10] Knowledge of these magnitudes may be of interest for policy makers in assessing the likely impacts of changing the bankruptcy eligibility requirements.

[11] It is also important for the external validity of the findings to examine the characteristics of the compliers. I find that married filers over 40 and unmarried debtors under 40 are more likely to be among the compliers. In addition, these findings provide evidence on the types of filers who are more likely affected by BAPCPA eligibility requirements.

2 Personal Bankruptcy System

2.1 Institutional Background

There are two personal bankruptcy provisions in the United States, Chapter 7 and Chapter 13. Under Chapter 7 bankruptcy, filers have the ability to protect future wages due to the "fresh start" provision. Chapter 7 provides debt relief and protection from wage garnishment in exchange for a debtor's non-exempt assets. This is one reason most filings file under Chapter 7. Under this provision, bankruptcy filers are not allowed to re-file another Chapter 7 case for the next six years (increased to eight by the 2005 Act), and must have a bankruptcy flag on their credit report for 10 years after filing. The key feature of Chapter 7 bankruptcy protection is to provide debtors a financial fresh start through debt discharge. The primary justification for the discharge policy is to preserve human capital by maintaining incentives for work (White, 2009).[12]

In contrast, Chapter 13 bankruptcy filers have to forgo a fraction of earnings in order to repay creditors. Thus, Chapter 13 filers receive protection of most of their assets in exchange for a partial repayment of debt. Debtors propose their own repayment plans lasting from three to five years (post-2005 they must use all of their law-defined disposable income to pay off debts), with the restriction that the total proposed repayment cannot be lower than the value of their non-exempt assets under Chapter 7. A Chapter 13 bankruptcy flag stays on the credit record for 10 years after filing (Nosal et al., 2014).

Personal bankruptcy, similar to corporate bankruptcy, first determines the amount that debtors must repay, and secondly how repayment is shared among creditors, which has efficiency implications by affecting how aggressively creditors pursue collection efforts.[13] These

[12]While a debtor is in bankruptcy, a judge stops all collection efforts (foreclosure, repossession of other assets, civil suits, garnishment of wages, and dunning) while the court determines which debts are discharged and which debts the borrower must repay by reselling assets or by pledging future income.

[13]In the consumer debt context, debts do not tend to be individually negotiated due to transaction costs, so creditors have a stronger incentive to race to be first to collect White (2005).

efforts may generate deadweight losses since debtors may stop working if creditors repossess or institute wage garnishment (White, 2005).[14] These behavioral responses motivated the origination of the fresh start provision in order to preserve incentives to work.[15]

2.1.1 2005 Bankruptcy Reform

The number of personal bankruptcy filings in the US rose 5-fold between 1980 and 2005. This dramatic increase led congress to pass the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) in 2005, which made it costlier to file for personal bankruptcy.

BAPCPA caused two major changes. The first was the adoption of a means test which requires some bankruptcy filers to use some of their future earnings to repay debt. The second major change under the 2005 bankruptcy reform was to raise the cost of filing for bankruptcy by imposing a number of new requirements on both debtors and bankruptcy lawyers.

The new requirements increased debtors' costs of filing for Chapter 7 from a median level of $700 to $1,100 and for Chapter 13, from a median level of $2,000 to $3,000 (Jones, 2008). By making bankruptcy more difficult and costly, the reform caused the number of filings to plummet from around 1.5 million per year in 2004 to only 600,000 in 2006. In addition, the proportion of bankruptcy filings under Chapter 13 rose from 20 percent in 2005 to around 40 percent in 2006 and 2007.

Moreover, consumers must now, as a prelude to access, fulfill a number of new requirements, including enrollment in a pre-petition credit counseling course within the 180-day period prior to filing for bankruptcy and compliance with the mandate to produce a dramatically increased number of personal and financial documents and historical records before filing.[16]

[14]The bankruptcy law provides consumption insurance across states to debtors by discharging debt when repayment would cause significant reduction in consumption levels. On the other hand, the bankruptcy system should also provide enough ex-ante incentives to creditors through repayment in such a way that credit remains available and consumers can smooth consumption over time. The bankruptcy code has the role of finding the right balance between these opposing forces.

[15]The U.S. Supreme Court provided the justification for the fresh start: "from the viewpoint of the wage earner, there is little difference between not earning at all and earning wholly for a creditor." Local Loan Co. v. Hunt, 202 U.S. 234 (1934). However, "this argument has never been carefully analyzed" White (2005). The fresh start's effects on incentives to work are non-trivial because there are two competing effects—the substitution effect (no tax on future earnings) and the wealth effect (debtors no longer need to work to service their debt).

[16]Debtors are now required to submit copies of their past tax returns and copies of all pay stubs for income

2.1.2 Means Test

As mentioned above, one of the major changes that came with the BAPCPA of 2005 was the introduction of the means test that forces some debtors to file under Chapter 13 and to use their future income to repay part of their unsecured debt. Filers must first calculate their average gross monthly income (AGMI) and compare their AGMI to the appropriate median income figure. The bankruptcy law defines AGMI as the average monthly gross income received during the six-month period that ends on the last day of the month preceding the filing date, whether or not the income is taxable.[17]

After computing the AGMI, households need to convert it to a yearly income figure and compare it with the median family income of their states, adjusted for family size. The census bureau periodically publishes family median income figures for all 50 states for different household sizes. If the AGMI is lower than the state's median income for a similar household's size, filers automatically qualify for Chapter 7, and they are not subject to the means test in a Chapter 7 bankruptcy filing.[18] However, if their AGMI exceeds the state's median income for a similar size household, filers are required to take the means test in order to see if they qualify for Chapter 7. The means test measures certain expenses and deductions against AGMI to see whether households have any income they can spare to pay debt. Thus, if a debtor fails to pass the means test, meaning there is enough disposable income to propose a repayment plan under Chapter 13, the Chapter 7 case will be dismissed on the basis of "abusing" the bankruptcy law. In other words, the means test determines whether a "presumption of abuse" arises, that is, whether filing a Chapter 7 bankruptcy would be presumed to be an abuse of the bankruptcy laws (Elias and Bayer, 2013).

received during the prior 60-days and take a debt management course before they receive a debt discharge. Now, bankruptcy lawyers must certify the accuracy of all information that debtors provide on their bankruptcy forms, and they can be found liable if debtors provide false information.

[17] AGMI includes income from all sources except: i) payments received under the Social Security Act (including Social Security Retirement, SSI, SSDI, TANF), ii) payments to victims of war crimes, and iii) payments to victims of international or domestic terrorism.

[18] If the filer decides to file for Chapter 13 and her AGMI is lower than the state's median income, she may propose a plan that is based on her actual expenses and lasts for only three years.

The means test itself is contained in Official Forms 22A and 22C (see Appendix Table 1 and 2). To complete the test, filers must use certain predetermined allowances for housing costs, transportation costs, and personal expenses, which are formulated periodically by the IRS and vary according to state, region, and household size.[19] If the debtor's AGMI is above the state's median income, Chapter 13 filers also have to complete the statement of current monthly income using the same IRS standards to compute their disposable income to propose a five-year plan.[20]

Filers with a monthly disposable income less than $109.58 after all the deductions are entitled to file for Chapter 7.[21] On the other hand, if the filer's income is over $182.50 monthly, abuse is presumed, and the case will be dismissed.[22] Filers with a monthly disposable income above the latter cutoff should convert the case to Chapter 13 in order to have access to bankruptcy protection. If the disposable income is between the two thresholds, filers need to compute their unsecured (non-priority) debt to test whether the amount of disposable income over five years pays at least 25 percent of their unsecured, non-priority debt.[23] If the filers fail this test, abuse is presumed and the case will be dismissed as well.

Even if a filer passes the means test, the bankruptcy law allows the trustee to challenge his Chapter 7 bankruptcy case on the basis of "abuse under all the circumstances." For instance, a filer may have been unemployed during that six-month look-back period, but when he files for bankruptcy, he has just found a new job, which leaves him with a disposable income higher than $182.50 per month. Even though he passed the means test, his actual income when compared to his actual expenses leaves him enough disposable income every month that would fund a Chapter 13 repayment plan.

Another doctrine that may affect Chapter 7 eligibility is what's commonly called "bad faith." Under this doctrine, a judge can dismiss a bankruptcy filing if he or she believes the case was filed for reasons other than to get a fresh start, or if the filer engaged in pre-bankruptcy behavior that is inconsistent with the need for a bankruptcy debt discharge. For example, the court can

[19] In addition to the predetermined allowances, filers can also deduct from their AGMI: their mortgage and car loan payments, one-sixtieth of arrears they owe on a secured debt, and one-sixtieth of your priority debts.

[20] The bankruptcy forms are the same for Chapter 7 and 13.

[21] Before 2007, this cutoff was $100 per month.

[22] Before 2007, this cutoff was $166.67 per month.

[23] The unsecured non-priority debt can be found in the Statistical Summary of Certain Liabilities form.

dismiss a case because the debtor purchased an expensive good shortly before filing in order for the high monthly payments on that good to allow him to pass the means test.

To ensure that all the documents filed by debtors are accurate, the bankruptcy trustee assumes legal control of all property and debts as of the date of filing. The bankruptcy trustee's primary duties are: 1) to see that nonexempt property is seized and sold for the benefit of unsecured creditors, 2) to make sure that the paperwork submitted is accurate and complete, and 3) to administer the case for the court. Trustees seek to dismiss or convert Chapter 7 bankruptcy filings on the grounds of presumed abuse. In a Chapter 7 bankruptcy, the trustee is interested in what filers own and what property is claimed as exempt. This is because the court pays the trustee a commission on property that is sold for the benefit of the unsecured creditors.[24] The trustee is also required, under the supervision of the U.S. trustee, to assess all bankruptcy papers for accuracy and for signs of possible fraud or abuse of the bankruptcy system.

Random audits are also performed to verify the accuracy of filers' submitted documents. One out of every 250 bankruptcy cases is to be audited under the new bankruptcy rules. In addition, the bankruptcy trustee, who is a part of the U.S. Department of Justice, has an active role in those cases where bankruptcy papers or any testimony at the creditors' meeting might indicate that the filer's AGMI is more than the median income for their state, the filer earns enough actual income to support a Chapter 13 plan, and the filer has apparently engaged in illegal actions that warrant investigative follow-up (such as perjury).

2.2 Bankruptcy Protection: Potential Benefits

Chapter 7 protection provides discharge of the debtor's unsecured debt thus improving the debtor's balance sheet. The standard model of debt overhang (Myers, 1977) suggests that excessive leverage deters new productive investment, especially if the new investment is financed

[24]The trustee may receive up to 25% of the first $5,000, 10% of any amount between $5,000 and $50,000, and 5% of any additional money up to $1,000,000.

through junior claims to the current debt.[25] This is because with risky debt, part of the increase in value generated by the new investment goes to the existing creditors and is therefore unavailable to repay those who financed the investment.[26] Thus, a large debt burden can lead to underinvestment.[27]

Furthermore, previous debt obligations reduce the net worth which can decrease the probability of new financing. Bernanke and Gertler (1989) showed how shocks to the net worth of borrowers reduce their ability to borrow.[28], [29] Asymmetry of information between the borrower and the lender in the context of Townsend's (1979) costly-state-verification model, in which investors can only verify the cash flows by paying fixed auditing costs, means that lenders require borrowers to have equity in the project which can generate deadweight losses (expected agency costs).[30] Thus, changes in the net worth of borrowers (e.g., unsecured debt relief from bankruptcy) can affect their overall capacity to borrow.[31] A negative shock to the net worth reduces overall investment in the economy even if there are still plenty of value-increasing projects available as before.

Thus, excessive household indebtedness can distort economic decisions (i.e., investment and labor supply decisions). Chapter 7 bankruptcy protection tries to eliminate these distortions by reducing debt burdens and improving the balance sheet, which could increase investment and raise the likelihood of attracting new lending.

Another benefit is that bankruptcy protection stops non-judicial collection efforts such as collection letters or phone calls and visits at home or work. Debtors without bankruptcy protection could ignore collection letters and calls, change their telephone number, or move without leaving a forwarding address. However, a borrower in default without bankruptcy protection under

[25] In the context of international finance, Krugman (1988) suggests that the debtor's incentives may be distorted by the presence of a debt overhang and that the distortion will be reduced if creditors provide debt forgiveness.

[26] In addition, the new investment cannot be financed because renegotiation with previous creditors is not feasible.

[27] Melzer (2010) examines how mortgage debt overhang affects homeowners financial decisions. He shows that negative equity homeowners reduced significantly on home improvements and mortgage principal payments.

[28] See also Kiyotaki et al. (1997).

[29] Moral hazard can also lead to credit rationing if prior claims on assets decreases the net worth below the level required to satisfy the lenders individual rationality constraint (Tirole, 2006).

[30] The lower the net worth of the borrower, the more he must borrow, and the greater the likelihood that auditing costs will be incurred. Therefore, less net worth leads to greater deadweight costs and lower investment.

[31] Negative shocks on debtors' net worth can also affect consumption. See Eggertsson and Krugman (2012).

the federal Fair Debt Collection Practices Act (FDCPA) can request that a debt collector stop non-judicial collection efforts entirely. Even if the debtor moves without leaving an address, it would not prevent the collector from trying to collect. Collectors that do not have a consumer's address can legally contact the debtor's employers or friends to inquire about his address. In contrast, if the collector does have the debtor's address, then contacting employers or friends is illegal. Thus, there is no evidence that debtors without bankruptcy protection move more often or change their phones to avoid collectors. The FDCPA does not apply to original creditors, who are under other types of regulation. The Federal Trade Commission can use administrative actions against creditors for overly aggressive debt collection, and states have their own statutes specifically regulating non-judicial debt collection (Dawsey et al., 2013).

3 Data Sources and Research Design

3.1 Data Sources

Households declaring bankruptcy must reveal several financial and demographic details to the court at the time of filing. Such documents are available through the Public Access to Court Electronic Records (PACER) system. In order to be granted a fee waiver from PACER, I applied to 89 out of 90 bankruptcy district courts (Puerto Rico was not considered). I received fee exemptions to the records of 65 bankruptcy district courts in 45 states. Those courts are evenly spread throughout the U.S. (see Figure 1).

I constructed a random sample of around 45,000 filings from 2006 to 2009, with an equal number of cases per year. I downloaded over 1,200,000 pages of PDFs from the legal documents of those filing, hand-collected and parsed the documents, and then cleaned them into usable data.[32] From the bankruptcy forms, I recorded characteristics of households such as: gross income, disposable income, household size, expenses, address, employment status, employment tenure, assets, liabilities, among others. This is a novel dataset, which has not been collected in

[32]I collect 44,862 cases (and 51,000 documents) since some courts only granted me an exception fee for at the most 500 cases.

such magnitude and richness before.[33]

To ensure that I have at least five years of post-filing outcomes for all debtors, I have restricted the sample to first-time filers between 2006 and 2009.[34] I randomly selected an equal number of cases per year. From the 44,862 cases randomly selected, some filers had failed to submit some of the required documents (e.g., form 22A or 22C), and those restrictions left me with 38,856 filings in 65 bankruptcy district courts, that were split into 67% Chapter 7 and 33% Chapter 13 filings.

For the set of debtors' outcome variables, I have used data from two purchased proprietary sources. The first includes foreclosure data from RealtyTrac, which collects data from legal documents submitted by lenders during their foreclosure process. There are five types of filings collected by RealtyTrac. The first two are filings that are done before a foreclosure auction: a notice of default (NOD) and a *lis pendens* (LIS), or written notice of a lawsuit. Two of the filings are directly associated with a foreclosure auction: a notice of a trustee sale (NTS) and a notice of a foreclosure sale (NFS). RealtyTrac also collects information on whether the foreclosed home is purchased by the lender at auction or is real-estate owned (REO). I have been able to successfully match 48.62% of the filers using the real estate and addresses data provided in the bankruptcy forms.[35]

The second source for outcome variables is the LexisNexis Public Records. LexisNexis provides a panel data set of records for individuals over time. Specifically, I have obtained data indicating gender, race, address, judgment lien, real property records, bankruptcy information, personal business and criminal filings data. I have been able to successfully match 98.06% of filers using their names and SSNs provided in the bankruptcy forms.[36]

[33]To my knowledge, only Agarwal et al. (2010) and Gross et al. (2014) have collected data from electronics filing documents. However, in the first case the sample size was 3,000, and in the second case the samples size was 6,487 cases filed in 2001 and 2008 from 10 district courts. In addition, both papers did not collect the main data used in this paper (e.g., 22A and 22C forms).

[34]I select 2006 as my starting year, since the BAPCPA reform took place in 2005, and my empirical strategy relies on the means test adopted after October 2005.

[35]From Schedule A and Voluntary Petition of the bankruptcy forms.

[36]From the Voluntary Petition form.

3.1.1 Sample Description

Table 1 reports the summary statistics for all first-time filers between 2006 and 2009. I divide filers' characteristics into three groups: general characteristics, assets, and liabilities. All monetary values are expressed in (year) 2000 dollars.

The data show that the average debtor has a household size of around three family members. In terms of marital status, 49.4% of filers are married, however the proportion is higher for Chapter 13 filers. In addition, not all married debtors file for bankruptcy jointly, though 34.5% of the filers do file jointly.[37] Filers earn an average of $35,954 per year. Relative to gender, 67% of debtors (as the main filer) are male. [38] Only 15% of filers have criminal records, and 7% have their own business. Over the same period, debtors have had $105,272 in real property on average. Finally, the typical bankruptcy filer carries around $175,943 in debts.

3.2 Research Design

I recover estimates of Chapter 7 bankruptcy protection using a novel empirical strategy based on a RD design that compares outcomes for filers with incomes just below the incomes cutoffs to qualify for Chapter 7 protection to outcomes for filers with incomes just above the cutoffs.[39] The idea behind the RD approach is that if access to Chapter 7 protection changes discontinuously at the income thresholds, then the causal impact of this access can be identified. Intuitively, suppose that filers with incomes close to the cutoffs on either side are comparable in terms of the observable and unobservable (to the econometrician) determinants of debtors' outcomes (e.g., foreclosure), but that those just below the cutoff are more likely to receive Chapter 7 protection. Under this assumption, filers with incomes just above the cutoff will provide an adequate control

[37] Married couples are allowed to file bankruptcy together with one petition. Filing jointly means that the combined property and debts are all part of the same bankruptcy filing.

[38] For the sub-sample of filers for which I found race data, 78% are white.

[39] The point estimates could be biased if OLS is used to estimate the effect of Chapter 7 because Chapter 7 bankruptcy protection might be correlated with unobservable variables that affect debtor's ex-post outcomes such as job loss (e.g., Keys, 2010) or health shocks (e.g., Gross and Notowidigdo 2011; Himmelstein et al. 2005; Ramsey et al. 2013).

group for debtors just below, and any difference in their outcomes can be attributed to access to Chapter 7.

In fuzzy regression discontinuity (FRD) designs, threshold-crossing causes a discontinuous jump in the probability of treatment, but this jump is not from zero to one (i.e., treatment is not a deterministic function of the running variable). Because filers whose access to Chapter 7 responds to threshold-crossing may differ from other debtors with similar incomes the estimates I have obtained should be interpreted as a local average treatment effect (LATE) for filers at the margin of access. One way to think of this group is as the group of compliers with the income eligibility thresholds from the bankruptcy law as Angrist et al. (1996).

The adoption of the means test provides three different cutoffs. The first one determines the automatic qualification for Chapter 7. Thus, filers with AGMI below the state median income do not have to take the means test for Chapter 7 protection. I call this cutoff 1 (C_1). In addition, those filers with AGMIs above the state median income but with disposable income lower than \$109.58 monthly can also file for Chapter 7. This is called cutoff 2 (C_2). Finally, debtors with AGMIs above the state median income and disposable income lower than \$182.5 monthly, and whose amount of disposable income does not pay at least 25% of their (non-priority) unsecured debt, can also file for Chapter 7. I refer to this as cutoff 3 (C_3) (see Figure 2).[40]

Because the thresholds are public data, debtors probably know them in advance, so this feature of the setting could lead to two phenomena.[41] First, debtors could manipulate the different running variables, or they may opt out of filing if they are ineligible for Chapter 7 protection. However, I conduct a range of tests that show no evidence of manipulation or selective filing at the different thresholds. Second, those debtors that would fail the means test would probably file directly for Chapter 13. Recall that the introduction of the means test was to restrict access to Chapter 7. Otherwise, if the debtor still files for Chapter 7, the trustee

[40] An alternative strategy is to consider the cases between the second and the third cutoff and try to create another discontinuity that exploits the constraint that limit access to Chapter 7 to those debtors whose disposable income pay at least 25 percent of their (non-priority) unsecured debt. However, because this constraint only affects debtors between C_2 and C_3 (e.g., it is not binding for those debtors with disposable income lower than \$109.58 or greater than \$182.5), it only uses around 40 percent of the debtors relative to the pooled specification explained below.

[41] The data for the state median income (first cutoff) comes from the Census Bureau, and it is updated quarterly.

will file a motion for the case to be dismissed (which will be subsequently approved). Since the bankruptcy forms are the same for Chapter 7 and 13, the setting provides the data to determine those Chapter 13 cases that did not qualify for Chapter 7 (i.e., would have failed the means test).[42]

As a support for the second point, from the sample's distribution, the number of Chapter 7 filers drops 16 times above the disposable income threshold of \$182.50 (C_3), and the number of Chapter 7 cases dismissed above this threshold increases 5 times. Thus, the empirical strategy uses those filers close to the thresholds who did not qualify for Chapter 7 and who are also non-homeowners or whose home equity was protected by the homestead exemption as part of the control group.[43] The assumption is that these filers make a reasonable control group.[44] I show as support for this assumption that there is no evidence of difference in a set of pre-treatment covariates between debtors who were close to the threshold and filed for Chapter 13 not qualifying for Chapter 7 and two other groups: Chapter 7 filers, and Chapter 7 filers whose cases were dismissed (see Table 3). [45]

Finally, the control group comprises: 1) debtors who filed for Chapter 7 and whose cases were dismissed, 2) filers who filed directly for Chapter 13 and did not qualify for Chapter 7 and whose assets were protected, and 3) debtors who filed first for Chapter 7 then converted their case to Chapter 13 after having their cases dismissed.[46] Thus, like Dobbie and Song (2015), I estimate the impact of receiving Chapter 7 protection relative to both no bankruptcy protection and protection via Chapter 13.

[42]If the debtor's AGMI is above the state's median income, Chapter 13 filers also have to complete the statement of current monthly income to compute the debtor's disposable income.

[43]Filers that would have to give up their home in Chapter 7 (because their home equity is higher than their homestead exemption) might be inclined to file for Chapter 13 regardless of whether they qualify for Chapter 7. This is because Chapter 13 is most often used as a home saving procedure (White and Zhu, 2008). However, the estimates are similar if all those filers who did not qualify for Chapter 7 are included in the control group.

[44]If the value of debtor's home is covered by homestead exemption, Chapter 7 is the best option, since by getting rid of most of other debts, maintaining the mortgage is more bearable for debtors (Caher and Caher, 2011).

[45]In addition, the estimates are qualitatively similar if the control group includes debtors that file for Chapter 13 even though qualifies for Chapter 7.

[46]In order to be discharged from debt under Chapter 13, debtors have to complete their repayment plans which may last from three to five years depending on their disposable incomes. In the sample, 49% of debtors successfully completed their repayment plans and had their remaining unsecured debt discharged (i.e., received Chapter 13 bankruptcy protection).

I estimate specifications of the following form. Let y_{it} be debtor's ex-post outcome (e.g., foreclosure) for individual i in period t. Let B_{it} be an indicator variable for Chapter 7 protection (i.e., 1 if the Chapter 7 case is discharged), $\tilde{R}_{it}$ is the running variable and represents the distance between the debtor's (gross or disposable) income and the respective cutoff faced, and $f()$ is a smooth function. The parameter of interest is τ which is the local average treatment effect for each regression.[47] Neither covariates nor any fixed effects are needed for identification. I include a set of covariates (e.g., age at filing, marital status, etc.) and year fixed effects to increase the precision of the point estimates. The estimating equation is then:

$$y_{it} = \alpha + \tau B_{it} + f(\tilde{R}_{it}) + \varepsilon_{it} \tag{1}$$

There are two ways to estimate the parameter τ in an RD design. First, one can impose a specific parametric function for $f()$, using all the available income data to estimate the above equation via ordinary least squares (typically referred to as the global polynomial approach). Alternatively, one can specify $f()$ to be a linear function of the running variable and estimate the equation over a narrower range of data, using a local linear regression. Following Hahn et al. (2001), Porter (2003) and Imbens and Lemieux (2008), in this paper the preferred specification is drawn from local linear regressions within an specific bandwidth on either side of the cutoff suggested by the procedure in Imbens and Kalyanaraman (2011). The estimator of the impact of Chapter 7 protection is constructed using kernel-based local linear regression on either side of the threshold (i.e., equal weight for all observations in the estimation sample). This estimator in the RD literature is non-parametrically identifiable under mild continuity conditions, and such regression estimators are particularly well-suited for inference in the RD approach because of their good properties at the boundary of the support of the regression function (Calonico et al., 2014).[48] In addition, heteroskedastic adjusted errors are used in all regressions.[49] Finally, the interpretation of τ as an effect for compliers requires the monotonicity condition where there

[47] The identified parameter measures the treatment effect for filers who receive Chapter 7 protection if and only if their (gross or disposable) income is below their respective cutoff (i.e., sub-population of compliers).

[48] See also Fan and Gijbels (1996) and Cheng et al. (1997) for more details.

[49] Since the running variables in the setting are continuous (Imbens and Lemieux, 2008; Lee and Card, 2008).

are no individuals who received Chapter 7 protections if and only if their income is above the respective cutoff (Angrist et al., 1996), this prerequisite seems plausible in the present setting.[50]

I instrument for B_{it} with Z_{it}, which is an indicator variable if the debtor's gross income (or disposable income) is below the specific threshold. Recall that BAPCPA of 2005 generated three cutoffs that determine access to Chapter 7.[51] I take advantage of the richness of the present setting and use all three cutoffs to identify the causal effect of interest. Thus, an additional benefit of the setting is that it allows the use of the three thresholds to estimate the heterogeneity of the treatment effect along different income levels.[52]

The first cutoff (C_1) allows to file for Chapter 7 automatically if the filer's AGMI is lower than the state median income. I define $\tilde{R}_{1isjt} = (I_{it} - C_{1sjt})$ and $Z_{1isjt} = 1[\tilde{R}_{1ijst} \leq 0]$, where I_{it} is the AGMI for household i and C_{1sjt} is the state median income in state s, adjusted by household size j in period t. Because each state has different median income levels which also vary by household size and time, I use a pooled specification across state cutoffs.[53] The first stage estimating equation associated with C_1 is:

$$B_{isjt} = \gamma_0 + \gamma_1 Z_{1isjt} + \gamma_2 \tilde{R}_{1isjt} + \gamma_3 Z_{1isjt} \tilde{R}_{1isjt} + \nu_{isjt} \tag{2}$$

Similarly for C_2, I define $\tilde{R}_{2it} = (DI_{it} - C_{2t})$ and $Z_{2it} = 1[\tilde{R}_{2it} \leq 0]$, where DI_{it} is the monthly disposable income for filer i and C_{2t} equals \$109.58 per month if $t \geq 2007$ and \$100 per month if $t = 2006$. The first stage estimating equation associated with C_2 is:

$$B_{it} = \delta_0 + \delta_1 Z_{2it} + \delta_2 \tilde{R}_{2it} + \delta_3 Z_{2it} \tilde{R}_{2it} + \epsilon_{it} \tag{3}$$

Finally for C_3, I define $\tilde{R}_{3it} = (DI_{it} - C_{3t})$ and $Z_{3it} = 1[\tilde{R}_{3it} \leq 0]$, where C_{3t} equals \$182.50

[50] Because those individuals would have also received Chapter 7 if they are below their respective cutoff.

[51] The IV exclusion restriction also has to hold. This is especially a concern for the first cutoff if threshold-crossing affects eligibility with other programs that may also depend on the debtor's income relative to the state median income. However, for programs like Medicaid, the eligibility depends on the federal poverty level. Thus, exclusion restriction plausibly holds in this setting including the first cutoff.

[52] The average gross income of households around cutoffs C_2 and C_3 is \$57,203 while around C_1, it is \$41,980.

[53] The data contain thousands of cutoffs for C_1. For the sake of statistical power, I focus on regressions which pool data across cutoffs relying on the fact that $(I_{it} - C_{1sjt})$ measures the distance between each debtor's AGMI and their respective state cutoff.

per month if $t \geq 2007$ and \$166.67 per month if $t = 2006$. The first stage estimating equation associated with C_3 is:

$$B_{it} = \lambda_0 + \lambda_1 Z_{3it} + \lambda_2 \tilde{R}_{3it} + \lambda_3 Z_{3it} \tilde{R}_{3it} + u_{it} \tag{4}$$

While I present the results for the second and third cutoffs individually, the preferred specification pools both cutoffs to gain statistical power.[54] For the pooled analysis, I need to make observations comparable in terms of the distance from their respective cutoff.[55] To this end, I partition the disposable income support into two segments, above and below the following segment variable, let seg_t equals \$133.33 if $t = 2006$ and seg_t equals \$146.04 if $t \geq 2007$. The running variable for this analysis is:

$$R_{it} = \begin{cases} DI_{it} - C_{2t} & if\ DI_{it} \leq seg_t \\ DI_{it} - C_{3t} & if\ DI_{it} > seg_t \end{cases}$$

The estimating equation for the reduced form (or intention-to-treat) in this case is:

$$y_{it} = \rho 1[R_{it} \leq 0] 1_p + [\alpha_{10} R_{it} + \alpha_{11} R_{it} 1[R_{it} \leq 0]]\, 1_1 + [\alpha_{20} R_{it} + \alpha_{21} R_{it} 1[R_{it} \leq 0]]\, 1_2 + \sum_{j=1}^{2} \beta_j 1_j + \xi_{it} \tag{5}$$

where $1_1 = 1[DI_{it} \leq seg_t]$, $1_2 = 1[DI_{it} > seg_t]$ and $1_p = 1_1 + 1_2$. Equation (5) imposes a common effect ρ. As mentioned, when estimating the above equations, I restrict my sample to filers with AGMIs or disposable incomes (whichever applies depending on the cutoff selected) within a relatively narrow window around the cutoff value. The goal of this restriction is to avoid identifying local effects caused by variation far from the cutoff value (Imbens and Lemieux, 2008).[56] As is standard in the RD literature, I present results for a variety of window bandwidths, in-

[54] Since the running variable in both thresholds are the distance between the debtor's disposable income and the respective disposable income threshold. In addition, treatment effects need not be the same across cutoffs. If treatment effects are heterogeneous, the pooled approach identifies the treatment effect average across cutoffs.

[55] For similar applications, see for example Anderson and Magruder (2012) and Litschig and Morrison (2013).

[56] For each separated threshold, I restrict the bandwidth to be the same above and below the cutoff. However, to increase power for the pooled sample I do not restrict the bandwidth to be the same above and below the cutoff.

cluding the optimal bandwidth, and functional forms.

4 Results

4.1 Internal Validity Checks

A standard concern with any RD design is the ability for individuals to precisely control the assignment variables (i.e., the average gross monthly income received during the six-month period prior to the filing or the debtor's disposable income).

The bankruptcy law has several mechanisms to avoid strategic behavior by filers. First, the U.S. Trustee seeks to dismiss (or convert) Chapter 7 bankruptcy filings on the grounds of presumed abuse, thus debtors are now required to submit copies of their past tax returns and pay stubs, which are carefully reviewed to avoid any misrepresentation, along with a statement of the average monthly gross income over the previous six months. Second, attorneys are now liable for any document submitted by client debtors. Third, because of filing fees and waiting periods, debtors cannot file for bankruptcy more than once each six months. Fourth, cases are selected for random audits (one out of every 250 bankruptcy cases). Finally, filers must swear under penalty of perjury that they have been truthful on their bankruptcy forms. The most likely consequence for failing to be scrupulously honest is a dismissal of the bankruptcy case, but the filer could be also prosecuted for perjury if it is evident that he deliberately lied.

Debtors in general file for bankruptcy because they have fallen behind on their payments, so they are likely subject to wage garnishment, notice of foreclosure, intensive phone calls, dunning letters, and a variety of other judicial and non-judicial debt collection techniques in an effort to induce debtors to pay. These mechanisms could reduce the possibility that individuals can delay filing for bankruptcy in order to perfectly manipulate their income.

Another concern is that debtors may opt out of filing for bankruptcy. This can be an option for very low income debtors and for those who do not qualify for Chapter 7 (i.e., would have failed the means tests). Debtors who file for bankruptcy protection are usually in default, so they

could face judicial and non-judicial collection practices. Thus, it is unclear whether a debtor in default could file for bankruptcy or not. If the debtor does not expect to be productive in the near future then he might choose not to file for bankruptcy protection. However, this hypothesis can be a concern in the case of very low income filers who do not earn enough, for creditors to choose to institute wage garnishment. In addition, because the empirical strategy uses for identification those debtors around the state median income, it is plausible to assume that they have enough income to trigger collection if they fall in default. I evaluate this hypothesis relative to high income debtors who may opt out of filing by testing whether the density of debtors is a continuous function of the Chapter 7 eligibility cutoffs, especially at pooled cutoff, and by examining the continuity of observable filer characteristics at the cutoffs. Table 2, as I will describe below, shows that there is no difference in pretreatment covariates for these thresholds. Finally, under the hypothesis, the point estimates would be downward biased because only debtors who are ineligible and expect to benefit the most from bankruptcy protection would file.

Since extensive manipulation of AGMI (or disposable income) would bias the estimates, I check for any evidence of sorting, notably discontinuous income distributions. In addressing these concerns, I consider two tests that are standard in the regression discontinuity literature. The main test looks for discontinuities in the density of AGMI and the disposable income at each cutoff point (McCrary, 2008). The argument is that if some filers manipulate their AGMIs by perfectly timing the bankruptcy filing date to fall below the state median income threshold, the density of the filer distributions will be significantly higher just below the cutoff than just above. Figure 3 shows the density of the two running variables for the three cutoffs for the random sample of filers between 2006-2009. The McCrary (2008) test shows no significant break in the AGMI or disposable income densities with (absolute value) test statistics equal to 0.967 and 1.177 respectively, which are statistically not significantly different from zero at any conventional level.[57]

[57]The setting and the data also enable me to: i) test whether debtors are timing by testing for potential manipulation in states that ban wage garnishment, since filers could delay filing for bankruptcy, and ii) by excluding these states, estimate the potential bias that manipulation of the running variables could generate. In untabulated results, I find that in those states in which wage garnishment is banned for most debts (i.e., Texas, Pennsylvania, North Carolina, and South Carolina), only in Texas and within Texas only one district courts (out of three) the McCrary test rejects the null hypothesis of no manipulation at 10% only in the first cutoff. In

To further test the density distribution, following Zimmerman (2014), I provide another informative visual test for income manipulation for the first cutoff. In absence of manipulation, the test should show a relative continuity in the ratios of the conditional densities to the unconditional density (i.e., $\frac{f(\tilde{R}|x)}{f(\tilde{R})}$). Assume that observable and unobservable outcome determinants (x, ε) have some continuous unconditional joint distribution $h(x, \varepsilon)$. A sufficient condition for unbiased RD estimation is that the conditional joint distribution $h(x, \varepsilon|\tilde{R})$ be continuous in $\tilde{R}$. Using Bayes's rule,

$$h(x, \varepsilon|\tilde{R}) = h(x, \varepsilon)\frac{f(\tilde{R}|x, \varepsilon)}{f(\tilde{R})}$$

Therefore, $h(x, \varepsilon|\tilde{R})$ is continuous if the ratio of the conditional to unconditional densities is continuous. This test is considered more direct than the McCrary, which is based on $f(\tilde{R})$, since it focuses specifically on the object that determines the continuity of debtor outcome determinants in income. The intuition is that if the discontinuity in the income distribution is due to a process that is plausibly exogenous to the determination of the treatment, any jumps in the conditional distributions should be matched by discontinuous jumps in the unconditional distribution. The ratio of the two densities should be continuous even if each individual density is not. Appendix Figure 2 presents the density ratios described in the above equation for three different pretreatment covariates: household size, age at filing, and marital status. Each point represents the ratio of the proportion of observations in the sample of filers with the stated characteristic to the proportion of all observations within each bin. Consistent with a valid RD, each density ratio is continuous around the cutoff value.

The continuity of the density ratios is closely related to the second standard test of RD validity, which is to test for the balance of observable covariates across the threshold. This second main test estimates equations (2)-(5) for a host of pretreatment covariates. This test has become standard in the RD literature as an alternative and is often the preferred approach for testing the validity of the RD design (Lee and Lemieux, 2010). The intuition here is that if discontinuities in pretreatment variables are observed, then the treatment is not randomly

addition, Appendix Table 6 show that the point estimates remain unchanged when all four states are excluded.

assigned. Table 2 reports the point estimates of the effects of threshold crossing on baseline characteristics. Each column presents the local linear regression estimates. To alleviate any concerns over bandwidth, I present the baseline characteristics over varying bandwidths. There is no statistical evidence of discontinuities in the pretreatment covariates, out of the 54 hypothesis tests in Table 3 for all there thresholds none reject the null. In particular, for variables in which there could also be strategic behavior such as household size or joint filing, there are no significant differences for each threshold (nor for the pooled threshold). A visual representation for the first and pooled cutoffs is provided in Figure 4 and 5 (see Appendix Figure 3 and 4 for the second and third cutoffs, respectively). Additionally, in Appendix Table 3, I also test for discontinuities in the pooled cutoffs in expenses allowed under IRS, additional expenses and deduction for debt payments in the means test, and I find no evidence of discontinuities.

One may think that some filers have incentives to decrease labor supply as a mechanism to reduce their income and fall below the thresholds. To understand the potential for identification problems caused by manipulation, consider a simple labor supply model. Debtors strive to maximize the present discounted value of utility from income. Each debtor may choose to work full-time, part-time, or not at all. Debtors are eligible for Chapter 7 bankruptcy protection if their AGMIs are lower than the state median income or if they pass a means test based on their disposable income. If the program did not exist, debtors would supply full labor. However, the existence of those thresholds raise the possibility that debtors can manipulate the running variable, withholding labor supply in order to meet the means test and gain access to Chapter 7 protection.

For highly compensated debtors with AGMIs (or disposable income) beyond the respective thresholds, reducing labor supply is never worth it, because even with part-time work, the debtor could not satisfy the means test. Resigning to their current job may also be costly since firms may deny future employment upon learning the applicant has filed for bankruptcy.[58] Similarly for poorly paid debtors with AGMIs or disposable incomes below the respective threshold, the

[58]Federal, state, and local governmental units cannot legally discriminate against filers simply because they have filed for bankruptcy. However, the rules are more lax when it comes to private entities and businesses (Elias and Bayer, 2013).

model predicts no manipulation, but for a different reason: such a debtor has access to Chapter 7, even if working full-time. However, those debtors with AGMIs or disposable income very close to the cutoff may indeed find it worthwhile to reduce labor supply, because they would otherwise fail the means test. These debtors would reduce their labor supply in response to the bankruptcy protection requirements if the utility of receiving protection under Chapter 7 (instead of the alternative Chapter 13) was higher than the cost of reducing their labor supply.

To further test this hypothesis, I hand-collect data from pay stubs for each bankruptcy case around the thresholds to compare the income volatility for those filers below and above each cutoff. Table 2 shows that the null hypothesis that income volatility is equal among those debtors cannot be rejected. In the same spirit, using hand-collected data from the bankruptcy documents (i.e., Schedule I), I also test if the job-tenure differs between those debtors above and below the cutoffs.[59] The rationale behind this test is that if individuals are manipulating the running variable through labor supply, then the tenure for those below the cutoff should be significantly different from those above the cutoff. Table 2 reports that there are no significant differences between those debtors above and below the thresholds. In addition, another way to decrease labor supply is to give up second sources of income. I test whether there are significant differences in other incomes between those above and below the cutoff. Table 2 reports that there are no significant differences between those debtors with other incomes above and below the thresholds. Finally, I test for differences in pre-treatment covariates between the filers close to the thresholds who did not qualify for Chapter 7 and two other groups: the Chapter 7 filers and the Chapter 7 cases that were dismissed. Table 3 reports the estimates showing that there is no evidence of differences in observable characteristics.[60]

Overall, these findings reject the hypothesis of strategic threshold crossing in favor of a non-strategic sorting hypothesis. I have shown that the baseline characteristics are smooth around all thresholds. Indeed, if debtors were strategically manipulating results, then this phenomenon should occur at cutoffs. I find no evidence of significant discontinuities at any cutoffs for the

[59] Among the information bankruptcy filers should submit in Schedule I are their occupation, name of employer, and tenure of the main job.

[60] I find similar results for second and third cutoff separately.

baseline covariates.

4.2 Access to Chapter 7 Bankruptcy Protection

Table 4 and Figure 6 present first stage results. The econometric specifications differ only in terms of bandwidth. Panel A shows results for the first cutoff. Panels B, C and D present estimates for the remaining thresholds and the pooled cutoff respectively. Figure 6 shows that the probability of receiving Chapter 7 protection changes discontinuously not only when filers have higher AGMIs than the state median income, but especially when the disposable income is higher than C_2 and C_3. Having a AGMI just higher than the median income reduces the probability of Chapter 7 by around 9 percentage points. This small drop is explained by the extensive amount of debtors just above the first threshold who receives Chapter 7 since they pass the means test. This can reduce the power for this instrument because most filers either below or above this cutoff are receiving Chapter 7 protection.

In contrast, the probability of being granted access to bankruptcy protection drops around 25 percentage points when the disposable income is slightly higher than C_2, and 55 percentage points when it is above C_3. These results are expected since for those filers with disposable incomes above the third threshold, "abuse" is automatically assumed and the case is dismissed.[61] Finally, Table 4 shows that the point estimates with other bandwidths, functional forms and the inclusion of pre-treatment covariates are qualitatively similar. It is therefore safe to conclude that the IV estimates do not suffer from the problem of weak instruments.

4.3 Impact on Debtor Outcomes

This section discusses the impact of Chapter 7 bankruptcy protection on post-filing households' investment behavior and their financial health. In terms of investment decisions, debtor outcomes include the business creation and the buying of real estate properties (particularly if filers become new homeowners). Related to financial distress, the outcomes are foreclosure (for homeowners

[61] However, there are special circumstances (e.g., serious medical condition or an order to active duty in the Armed Forces) in which the judge could grant Chapter 7 protection to a debtor who fail the means test.

at the time of the filing), judgment liens, and bankruptcy refiling. Finally, I also estimate the effect of Chapter 7 on debtor mortality.[62]

Since filers who are granted Chapter 7 bankruptcy protection have their unsecured debt discharged around three months after filing, it is of interest to study the dynamics of the ex-post effects not only in the long term but also in the short term. Thus, I define short-term as three years post-filing and long-term as six years post-filing.

Figure 7 and 8 show the estimates of the intention-to-treat or reduced form estimates (i.e., outcome variables on threshold crossing indicator) for each threshold.

Real Investment Behavior

Table 5 reports the fuzzy RD estimates of the impact of Chapter 7 on household outcome for the first and pooled cutoffs. In addition, I present the point estimates for different bandwidths, linear and quadratic forms and with the inclusion of pre-treatment covariates. Appendix Table 4 shows that the estimates are similar for the second and third cutoff separately.

Business creation outcome is an indicator for a filer registering a business on or before the indicated year (after filing for bankruptcy).[63] Receiving Chapter 7 protection leads to an economic and significant increase in the likelihood of starting a business within 6-years post-filing by around 23 and 17 percentage points for the marginal recipients of Chapter 7 in the first and pooled cutoffs, respectively.

To study the effect across the filers' characteristics, Appendix Table 5 reports the estimates by marital status, age at filing, and household size for both thresholds. The effect is larger for single filers with household size below 3, who are employed homeowners with a job tenure of 2 to 7 at the time of filing. In addition, Table 6 Panel A shows that the estimates are qualitatively similar after adjusting business creation for firm survival. This last finding is suggestive evidence that Chapter 7 leads to productive investment.[64]

One of the economic justifications for having a personal bankruptcy procedure is that it en-

[62] See Variable Definitions in the appendix for more details.

[63] This can be a proxy of self-employment.

[64] Business licenses must be renewed each year, and a fictitious business name statement expires five years from the date it is filed.

courages entrepreneurial behavior ex-ante. Starting a business is risky and risk-averse individuals are more likely to do so if bankruptcy softens the consequences of failure by discharging the entrepreneur's debts in those states where the business does not succeed. However, interestingly these estimates show that Chapter 7 has positive ex-post effect on entrepreneurial behavior.

One concern is that those new businesses that Table 5 documents are from entrepreneurs with previous entrepreneurial experience.[65] However, a partial test for this concern is that there are no pretreatment differences across the thresholds in business ownership. Additionally, Table 6 Panel B reports the estimates for those filers who were not business owners at the time of filing. I find that Chapter 7 increases the probability of becoming a new business owner by 15 and 12 percentage points for the marginal recipient in the first and the pooled cutoffs, respectively.

Table 7 shows the estimates separately by whether or not the debtor has positive home equity (at the time of filing). Interestingly, the effect of Chapter 7 on starting a business is relatively higher when the household has positive home equity. A possible explanation for this finding is that debtors could use their positive home equity to obtain financing to fund their new businesses.

Bankruptcy can negatively affect the ability to obtain credit. Filers receive a bankruptcy flag in their credit report that remains up to 10 years after filing. Moreover, even debtors who file for bankruptcy and have their cases dismissed receive a flag for the same period. In addition, bankruptcy can also affect the ability to be hired by private employers because the bankruptcy code permits private employers to conduct credit checks on job applicants.[66] One may think that Chapter 7 marginal recipients are more prone to start businesses, relative to those whose cases are dismissed, because they have a "bankruptcy stigma" that does not allow them to find a job. However, because filers in both the treatment and control group have a bankruptcy flag (regardless of they were dismissed or discharged) the results in terms of business creation are

[65] In addition, if more than 50% of debtor's debt is from business debts, then he does not have to take the means test.

[66] Section 525 of the Bankruptcy code contains two subsections. Subsection (a) states that government employers may not deny employment to, terminate the employment of, or discriminate with respect to employment against a person who has filed bankruptcy solely because of that filing. Subsection (b) provides that no private employer "may terminate the employment of, or discriminate with respect to employment against" individuals for declaring bankruptcy. However, section (b) relative to private entities is very salient since it does not mention denial of employment in its list of prohibited discriminatory actions.

not due to the bankruptcy flag.[67]

An important real investment decision for households is to acquiring real estate properties. Real assets account for the most important portion (70%) of household wealth, with little variation across wealth levels (Guiso and Sodini, 2012). Thus, studying home ownership is of interest. Table 5 reports that Chapter 7 protection increases the probability of acquiring a property by 20.7 percentage points for marginal recipients in the pooled threshold. The effect is similar but imprecise for debtors in the first cutoff. In terms of new homeowners, Chapter 7 also has positive effects. Appendix Table 8 shows that marginal recipients of Chapter 7 are 15 percentage points more likely to become new homeowners relative to filers in the control group.

Overall, the estimates show that Chapter 7 has real effects in terms of business formation and home ownership.

Household Financial Performance

In the case of foreclosure, Chapter 7 could help homeowners save their homes because discharge of unsecured debt loosens their budget constraints and increases their ability to pay their mortgages. In addition, filing under Chapter 7 stops mortgage lenders from foreclosing for a few months, so homeowners who have fallen behind on their mortgage payments get additional time to repay their arrears (Li et al., 2011). Not only academics but also practitioners have long recognized how filing Chapter 7 and discharging unsecured debts can help avert foreclosure. Many debtors file bankruptcy precisely so that they can pay their mortgage by discharging other debts (Berkowitz and Hynes, 1999).

Table 5 reports estimates of the effect of Chapter 7 on foreclosure (conditional on being matched to a home).[68] For filers below the state median income threshold (first cutoff), Chapter 7 reduces the likelihood of facing home foreclosure, but the estimates are imprecise. The marginal recipient of bankruptcy protection in the pooled threshold is 60 percentage points less likely to

[67] Interestingly, exploiting employment information from the bankruptcy data in untabulated results, I find a positive and significant effect of Chapter 7 on new firms for debtors employed at the time of the filing, while the point estimates are negative for the unemployed filers.

[68] Home foreclosure is an indicator for a debtor's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to a REO or a guarantor on or before the indicated year (after filing) similarly as Dobbie and Song (2015).

be involved in a foreclosure event relative to filers in the control group (similar results are found for each separate cutoff). The effect is persistent through six years after filing.[69] In terms of the impact of Chapter 7 by filers characteristics, as shown in Appendix Table 5 panel B, the effect is larger for filers who are married, older than 40, with a family size greater than two.[70]

In addition, it is of interest to study the foreclosure outcomes depending on the debtor's home equity. It could be the case that even if filers receive Chapter 7 (and their unsecured debt is discharged), that they may choose to reallocate resources to pay (or continuing paying) their mortgages only if she has positive home equity (i.e., no underwater mortgages). Table 7 shows the estimates separately by whether the debtor has positive home equity (at the time of the filing). Interestingly, the effect of Chapter 7 on foreclosure is concentrated on filers with positive home equity. Thus, after receiving debt relief, which increases debtors' ability to pay their mortgages, filers on average decide to repay when they are not underwater.

As other measures of the post-filing financial distress, I employ a judgment lien indicator function and an ex-post bankruptcy dummy (for any chapter). The judgment lien variable includes tax liens and non-tax liens that may come from past due medical bills and rent eviction, among others.[71] Table 5 reports the estimates of the effect of Chapter 7. Being granted Chapter 7 bankruptcy protection leads to substantial reduction in the probability of being subject to a judgment lien by 60 percentage points for filers in the first cutoff and around 41 percentage points for debtors in the pooled cutoff. Thus, Chapter 7 protection helps to avoid debtor default on contractual obligations (e.g., taxes), and the effect is persistent through time. Table 5 presents the results by debtor characteristics. The Chapter 7 effect leads to a greater decline in judgment liens for debtors who are married, older than 40, and with household sizes greater than two.

Since one of the objectives of the fresh start is to avoid bankruptcy refiling, this is seen as a failure of the bankruptcy process, and it is thus interesting to study if Chapter 7 helps debtors' avoid subsequent refiling for bankruptcy.[72] Chapter 7 leads to a reduction of 67 percentage

[69] In untabulated results the estimates are qualitatively similar by dismissing the first year after filing.

[70] In untabulated results, I also find that the impact of Chapter 7 on foreclosure is larger in recourse states and in states with homestead exemptions higher than the median.

[71] A tax lien may be imposed for delinquent taxes owed on real property or due to failure to pay income (or other) taxes

[72] Debtors can refile for Chapter 7 after 8 years. While, to receive a discharge on a subsequent Chapter 13, the

points for a second bankruptcy within eight years for those filers in the first cutoff. However, there is a negative but imprecise effect of debt relief on future bankruptcy for debtors with positive disposable incomes in the pooled cutoff.

Overall, these findings show that Chapter 7 does lead to an improvement in the debtor's ex-post financial health, which is one of the main goals of the Bankruptcy Law.

Miscellaneous Outcome

Using public records data from LexisNexis, I next look at the impact of Chapter 7 on debtors' mortality. I find no evidence of effect of Chapter 7 on mortality both in the short term and long run for those debtors in the first cutoff. Mortality is reduced by 8.50 percentage points in the short run for those debtors' in the pooled cutoff. However, the effects of Chapter 7 largely disappear in the long run. These findings contrast with Dobbie and Song (2015) who find that Chapter 13 leads to a reduction of 1.3 percentage points in mortality.

4.4 Additional Robustness Tests

Heaping will only bias RD estimates to the extent that it creates imbalances in outcome determinants across the thresholds. Standard tests show no evidence of this. However, Barreca et al. (2011) argue that if heaping is associated with determinants of the outcome variable, it can create biases even when the RD passes standard balance tests. To address the concern, I follow two approaches recommended in Barreca et al. (2011). The first is to estimate a "donut" RD that drops observations precisely at the cutoff value and just below each cutoff. The second approach is to control flexibly for heterogeneity related to the possibility of heaping by allowing for separate intercepts and trends for the observations just below each threshold. Table 12 presents results obtained by implementing these modifications in the main specification. The estimates are robust to both approaches.

Finally, it is also of interest to study if there are cohort effects by estimating the post-filing

petitioner must wait 4 years from the date of filing the first Chapter 7.

outcomes for debtors that filed in 2006-07 and 2008-09. I find, as shown in Appendix Table 7, that the estimates of Chapter 7 protection on financial distress and real investment behavior are similar in both cohorts and not statistically different.

4.5 Potential Mechanisms

In this section, I explore two potential mechanisms that may explain the results.

Improvement of the Debtor's Balance Sheet

First, Chapter 7 protection leads to a discharge of the debtor's unsecured debt improving their balance sheet. Debt-overhang (Myers, 1977; Krugman, 1988), and net worth effects and investment models (e.g., Bernanke and Gertler, 1989; Kiyotaki et al., 1997) suggest that debt relief can raise the probability of attracting new lending and value-increasing investment.

Since distortions should be diminishing for debtors who receive relatively higher debt forgiveness (i.e., had previously higher relative leverage), I estimate the effective debt relief received by filers on the basis of the bankruptcy data. Debtors who receive Chapter 7, obtain unsecured debt relief net of non-exempt assets. I estimate the non-exempt assets using debtors' home equity and their state homestead exemption. The debt relief in the case of those debtors who filed for Chapter 13 and had their cases discharged (either because they were Chapter 7 filers, whose cases were dismissed and converted to Chapter 13 or who did not qualify for Chapter 7 at all) is their unsecured debt net of their repayment plan. The five-year repayment plan is their monthly disposable income, as established by the means tests. If the debtor is a homeowner, the repayment plan is the larger of either their disposable income for the next five years or their entire home equity minus their homestead exemption. Finally, dismissed filers do not receive debt forgiveness. Due to outlying observations, the debt relief variable is Winsorized at the 5th and 95th percentiles.[73] Table 8 reports the estimates. I find that one standard deviation increase in debt relief through Chapter 7 leads to an increase in the probability of business creation by 10.79 percentage points for filers in the first cutoff and 12.48 percentage points for filers in the

[73] I find similar results if I use the log of the (raw) debt relief.

pooled cutoff. It also increases the probability of acquiring a new property by 18.72 percentage points. Debt relief also has substantial effects in terms of foreclosure. One standard deviation increase in debt relief decreases the probability of home foreclosure by 51.74 percentage points. It also reduces the probability of being subject to liens by 38.74 percentage points.[74]

In addition, debt-overhang models predict that debt relief can improve debtors' incentives because the returns of investment/effort are captured mainly by the debtors themselves rather that the lenders. Thus, by discharging unsecured debt, Chapter 7 can preserve debtors' incentives by protecting their wages from garnishment. Thus, as a test for the improvement of incentives from bankruptcy protection, I exploit the across-state variation in wage garnishment. Appendix Table 9 reports the estimates for those states that ban wage garnishment or at least preserve 90% of the debtor's wages (low wage garnishment), and those states that do allow wage garnishment (high wage garnishment). I find large and significant effects on judgment liens in the set of states that allow wage garnishment and positive point estimates in the business creation measure.

Furthermore, for homeowners with positive home equity the homestead exceptions directly impact the net benefit of Chapter 7. The benefits are lower when the homestead exceptions are relative less generous. Using the across-state variations in homestead exemptions, I find that in those states with homestead exemptions above the median filers are on average more likely to start a business and also avoid financial distress (see Table 9).

However, even though the debtors in the treatment group received unsecured debt relief, homeowners can still face debt-overhang problems from their mortgages. An additional test of the importance of debt-overhang on household behavior is to estimate the effect of Chapter 7 on foreclosures based on debtors' home equity. Table 7 reports the estimates of Chapter 7 on whether or not the debtor is underwater (at the time of the filing). The effects of Chapter 7 on foreclosure are stronger for both thresholds for homeowners with positive home equity. These findings are consistent with the prediction of standard debt-overhang models (Myers, 1977; Krugman, 1988).[75] Finally, Table 10 reports the effects of Chapter 7 on Uniform Commercial

[74]Figure 9 shows the first-stage estimation.

[75]These results provide support for the mortgage cram-down proposal (e.g., Mian and Sufi (2015)). Even with unsecured debt relief, households have no incentive to save their house if they are underwater.

Code (UCC) secured loans.[76] I find that Chapter 7 protection increases the probability of secured lending for marginal recipients, especially those filers with positive home equity.

Non-Judicial Collection Protection

Another potential explanation for the estimated effects is that bankruptcy protection stops non-judicial collection efforts, such as collection letters, phone calls, and visits at home or work. To test for this mechanism, I use the across-state variation in anti-harassment statutes that tries to protect borrowers against aggressive collection techniques.[77] Under this mechanism, the effect of Chapter 7 protection should be higher in those states that do not regulate non-judicial debt collection. Table 11 reports the findings and overall shows no clear evidence of a difference in Chapter 7's effects on debtors in states with or without statutes that provide the right of action against a harassing or abusive creditor.

Overall, these results suggest that improving the debtor's balance sheet is the main driver for the estimates of Chapter 7 bankruptcy protection.

5 Discussion

5.1 Comparison to Other Studies

The results show that receiving Chapter 7 bankruptcy protection has economically and statistically significant effects on real investment decisions and ex-post financial performance. However, the prior literature has found mix results for the benefits of bankruptcy protection (e.g., Han and Li, 2007). One explanation for the lack of consistent results in prior studies is the shortage of a suitable control group (Dobbie and Song, 2015).

[76] UCC is a state-level filing registry that records loans secured by fixed assets.

[77] In addition, in this mechanism debtors in the control group that do not receive bankruptcy protection could be more prone to move or change their phone number. Using public records data, I estimate the impact of Chapter 7 on the number of times post-filing that debtors move and the number of phones. Appendix Table 10 shows that there are no significant effects.

In terms of financial well-being post-filing, Porter and Thorne (2006) find using survey data that in the first year post-bankruptcy, 25% of debtors struggle to pay routine bills, and 33% are in a financial situation similar or worse than before bankruptcy. On the other hand, Dobbie and Song (2015) and Dobbie et al. (2015) find positive effects on Chapter 13 marginal recipients. They find that Chapter 13 protection reduced by 127% the probability of being involved in home foreclosure and by 100% the probability of receiving liens over the first five post-filing years relative to their control group. I find that debtors 86% less likely to be involved in home foreclosure within six years post-filing, relative to the control group filers mean. In addition, the Chapter 7 marginal recipient has 124% lower probability (pooled cutoff) for receiving a judgment lien. One explanation for this difference is that through Chapter 13, filers should use part of their budget to repay unsecured debt, which leaves less resources available to serve current debt and to pay routine bills, which makes them more vulnerable relative to Chapter 7 recipients.

One may think that debt relief should alleviate debt-overhang problems and have positive effects on productive investment. Kanz (2015) uses quasi-experimental data from India's largest household-level debt relief program and finds that debt forgiveness, even though it has a positive impact on a household's balance sheets, does not affect investment. Specifically, the investment expenditures of households receiving full debt relief is around 20 percentage points lower relative to households receiving partial or no debt relief. My results show exactly the opposite, that debt relief through Chapter 7 protection has real effects. One explanation for the difference in findings is that contrary to India's program, Chapter 7 has not only significant impact on household balance sheets but it also relaxes liquidity constraints (e.g., through secure lending) sufficient enough to encourage new investment.

Finally, a related literature examines the effect of debt relief on access to credit, in the sense that bankruptcy provisions affect incentives for the ex-post supply of credit, and effectively worsen the financial access of poorer borrowers. In line with this prediction, some studies find that households have less access to credit after receiving debt relief through bankruptcy protection (Cohen-Cole et al., 2013; Han and Li, 2011), presumably because lenders perceive these borrowers as having observably higher default risk. However, consistent with my results

showing that Chapter 7 recipients have access to secured lending such as Mortgages and UCC loans, Dobbie et al. (2015) also find that Chapter 13 recipients have significantly more access to mortgages; however they do not find significant results for unsecured debt.

5.2 External Validity of the Results

Marginal Threshold Treatment Effect (MTTE)

FRD models identify the local average treatment effect (LATE) at one point (Hahn et al., 2001). Thus, the external validity of the estimates is a concern, unless we assume homogenous effects. It is useful to know whether the effects documented in Table 5 for the marginal recipient of Chapter 7 bankruptcy protection are similar at points other than the specific thresholds. For example, if the effects were substantially different at only slightly different values of the cutoffs, then the external validity of the estimate should be a concern. On the other hand, if marginal changes in the thresholds do not significantly affect the identified LATE, then it would be plausible to extrapolate the results (Dong and Lewbel, 2012).

To investigate how robust the results are as we move away from the cutoff, I estimate the marginal threshold treatment effect (MTTE), which is the change in the treatment effect that would result from a marginal change in the threshold.

There are three main assumptions to identify the MTTE. First, for each individual, the outcome variable, the running variable, and the endogenous variable are observed. Second, smoothness of the conditional means of potential outcomes and probabilities of selection into each type of individuals (i.e., compliers, always takers and never takers) is required . Thus, the mean outcome just below or above the cutoff is a weighted average of the mean outcomes for each type of individual, weighted by the probabilities of each type (Dong and Lewbel, 2012).[78] The last assumption requires local policy invariance, which is a *ceteris paribus* assumption like the one often used in partial equilibrium analysis. Under the local policy invariance assumption, the MTTE equals the derivative of the treatment effect with respect to the running variable at the

[78]Intuitively, when the conditional means for each type and the related probabilities are all smooth at the cutoff, the mean outcome difference at the cutoff then just equals the mean change in outcomes for compliers.

cutoff (also referred to as TED). Policy invariance implies that the treatment effect as a function of the running variable does not change when the policy threshold changes infinitesimally.

A sufficient condition for local policy invariance is if the treatment effect for current compliers would not change if the thresholds used for determining treatment were increased from c to c_{new}, which would lead to more compliers.[79] This assumption holds if having more debtors qualifying for Chapter 7 does not affect the propensity of current compliers to pay their bills (i.e., avoid lien), acquire new real properties, or start businesses or foreclosures. There is one caveat in terms of foreclosure. If the marginal increase in the cutoff allows an individual who lives close to the original complier to have access to Chapter 7, then any peer effects that induce changes in foreclosure decision and affects their house prices would lead to such a violation. It seems unlikely that the magnitude of these effects could be large enough to cause more than a very small difference between the TED and the MTTE; thus the local policy invariance assumption is plausible in this setting.

The estimation results are reported in Table 13. The first column report the estimated effect of Chapter 7 on household outcomes at the pre-determined regulatory threshold as in Table 5. The second column present the TED (or MTTE if local policy invariance holds) and the new treatment effect, if the regulatory threshold were marginally increased by 1 percent (i.e., \$41 in the first cutoff and \$1.40 in the pooled cutoff), which means that more debtors would qualify for Chapter 7. Standard errors for the estimated TED (MTTE) and the new treatment effect are calculated using the Delta Method.

The estimated TEDs or MTTEs for debtors' outcomes imply that the impact of Chapter 7 on debtors would be lower if the eligibility thresholds were marginally increased. Therefore, the impact of Chapter 7 negatively depends on the distance to the eligibility threshold, so filers with higher income (or disposable income) are slightly less responsive. Finally, knowledge of these magnitudes may be of interest for policy makers for assessing the likely impacts of changing the bankruptcy eligibility requirements.

[79] It does not place any restriction on how the treatment effect depends on the running variable.

Characteristics of Compliers

As previous mentioned, the fuzzy RD strategy identifies the effect of Chapter 7 protection for the complier group: filers who receive Chapter 7 protection if and only if their (gross or disposable) income is below specific cutoffs. Examining certain characteristics of the complier group is also important for the external validity of the findings.

The proportion of compliers in a given marital status–age group are calculated as the ratio of the first stage for that subgroup to the overall first stage, multiplied by the proportion of the full sample in the marital status–age group (Angrist and Pischke, 2008). Column 1 in Table 11 reports the proportion of the sample in each marital status–age group, and column 2 shows the first stage estimates for different marital status–age groups. Column 3 reports the distribution of the compliers by marital status-age, whereas column 4 shows the relative probability of a complier's belonging to a particular marital status–age group compared to the full sample.

In the pooled cutoff, although 20.5% of the total filers are married with ages less than or equal to 40 (at filing), only 4.2% of the compliers are debtors in this marital status-age group. In addition, while 34.3% of the full sample are filers married with ages greater than 40, 44.8% of the compliers are debtors in this marital status-age group. Table 11 also shows that unmarried filers under 40 are more likely to be among the compliers. These results also provide evidence on the types of filers who are more likely affected by BAPCPA eligibility requirements for Chapter 7 protection. Finally, in the first cutoff, unmarried filers over 40 are overrepresented in the compliers subpopulation, while unmarried filers under 40 are underrepresented among the compliers.

6 Conclusion

In this paper, I estimate the impact of Chapter 7 bankruptcy protection on debtors' post-filing financial distress and investment behavior. RD estimates show that Chapter 7 lowers the probability of financial distress by reducing the likelihood of post-filing foreclosures, judgment liens, and subsequent bankruptcy. In addition, in terms of household's investment decisions,

marginal recipients generally are more likely (after receiving Chapter 7 protection) to start businesses, obtain secured lending, and become first time homeowners. Finally, after a rich variety of tests I find no evidence of discontinuities in the pretreatment covariates, manipulation of gross income or disposable income, reduction in labor supply, or other strategic behaviors (e.g., expenses, household size, etc.) from bankruptcy filers.

I also explore the potential mechanisms that may explain the results. Taking advantage of the unique data, I estimate the impact of debt relief provided by Chapter 7 on debtors' outcomes, which is a critical parameter in consumer credit markets and for policy makers. I find that one standard deviation increase in debt relief from Chapter 7 leads to an increase in the probability of business creation by 10.79 percentage points and a decrease in the probability of home foreclosure by 51.74 percentage points. The findings are consistent with models of debt overhang (Myers, 1977; Krugman, 1988) and models of net worth and investment (e.g., Bernanke and Gertler, 1989; Kiyotaki et al., 1997).

These results provide direct evidence that the BAPCPA generated negative consequences on those debtors for whom access to Chapter 7 was restricted. Moreover, in the wake of the Great Recession, household indebtedness has increased continually;[80] bankruptcy filing has been reduced due to BAPCPA's increased barriers to filing, in particular the increase in filing and legal fees. This last feature of the new law can negatively affect liquidity-constrained households (Gross et al., 2014); and, given the estimates of this paper, such debtors are worse off.

Finally, any quantitative valuation of the U.S. consumer bankruptcy system typically involves the assessment of two opposing effects. First, in incomplete markets, bankruptcy enables consumption smoothing across states by discharging some debt when debtors' ability to repay turns out to be low. Second, bankruptcy reduces debtors' ability to smooth consumption over time by making credit more costly (Athreya, 2002; Livshits et al., 2007). However, it would be interesting to incorporate, in these general equilibrium models of the credit market, the first-order relationships of bankruptcy, ex-post investment behavior, and financial distress that this study estimates.

[80] See "A fresh start" published in The Economist on March 14, 2015.

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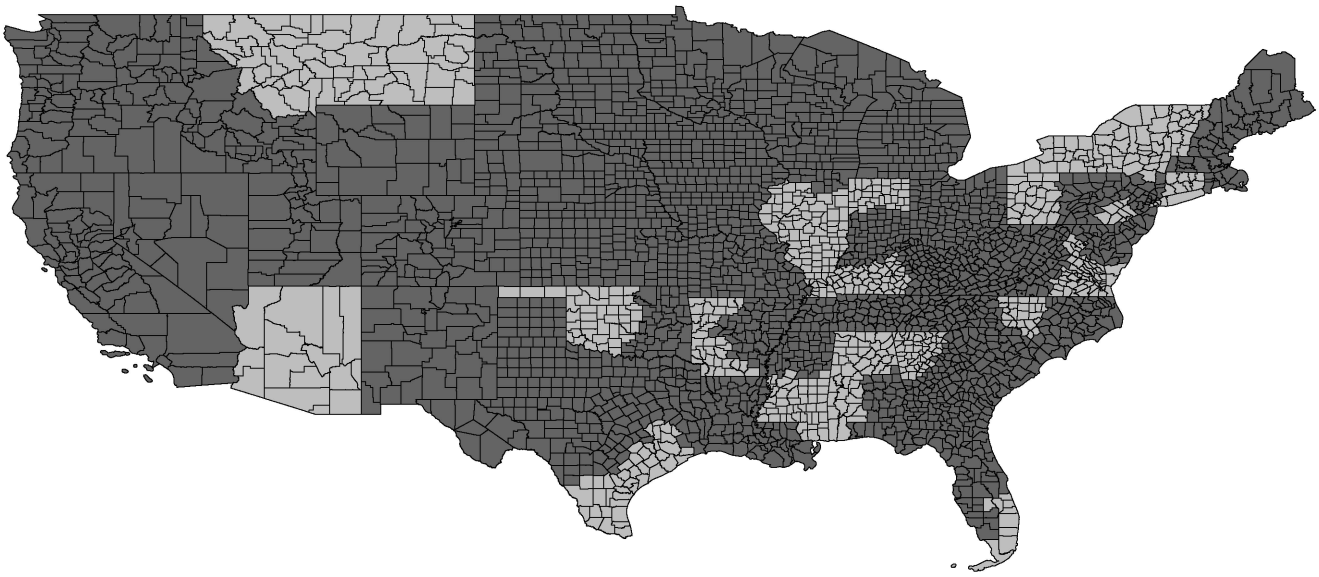


Figure 1 Bankruptcy Districts in Sample

The 65 bankruptcy district courts shaded in dark gray, plus Alaska, are those included in the sample.

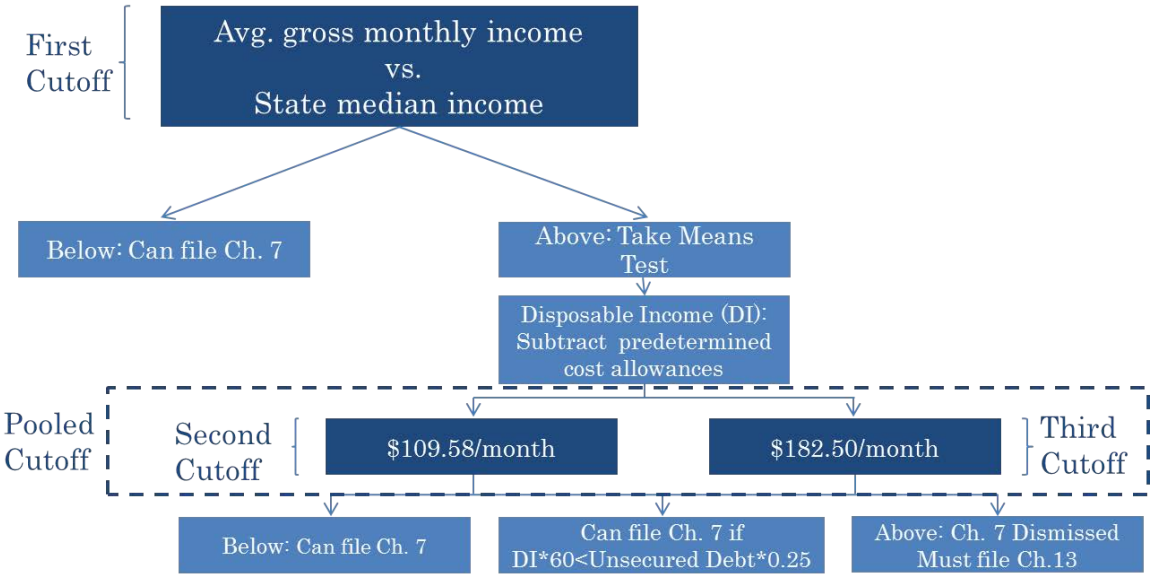


Figure 2 The Bankruptcy Means Test

The diagram describes the eligibility for Chapter 7 bankruptcy protection based on the current bankruptcy law.

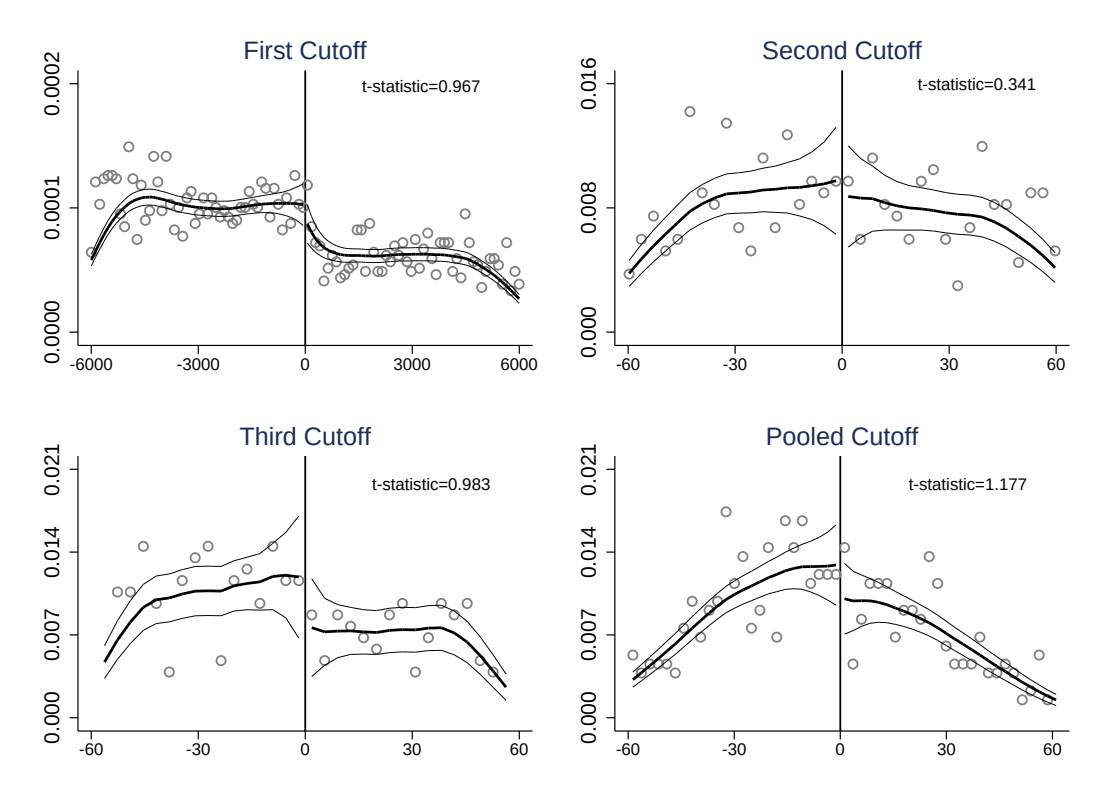


Figure 3 Density of the Running Variables

The McCrary density test fails to reject the null hypothesis of no discontinuity in the density at conventional levels of significance for the four cutoffs. The x-axis presents the running variable measured in US Dollars. The y-axis corresponds to the density of filers. The solid vertical line represents the respective cutoffs. The pooled cutoff comprises the second and third cutoff. The figure shows the histogram, estimated density, and 95% confidence intervals generated using the code provided by J. McCrary on his website and based on McCrary (2008).

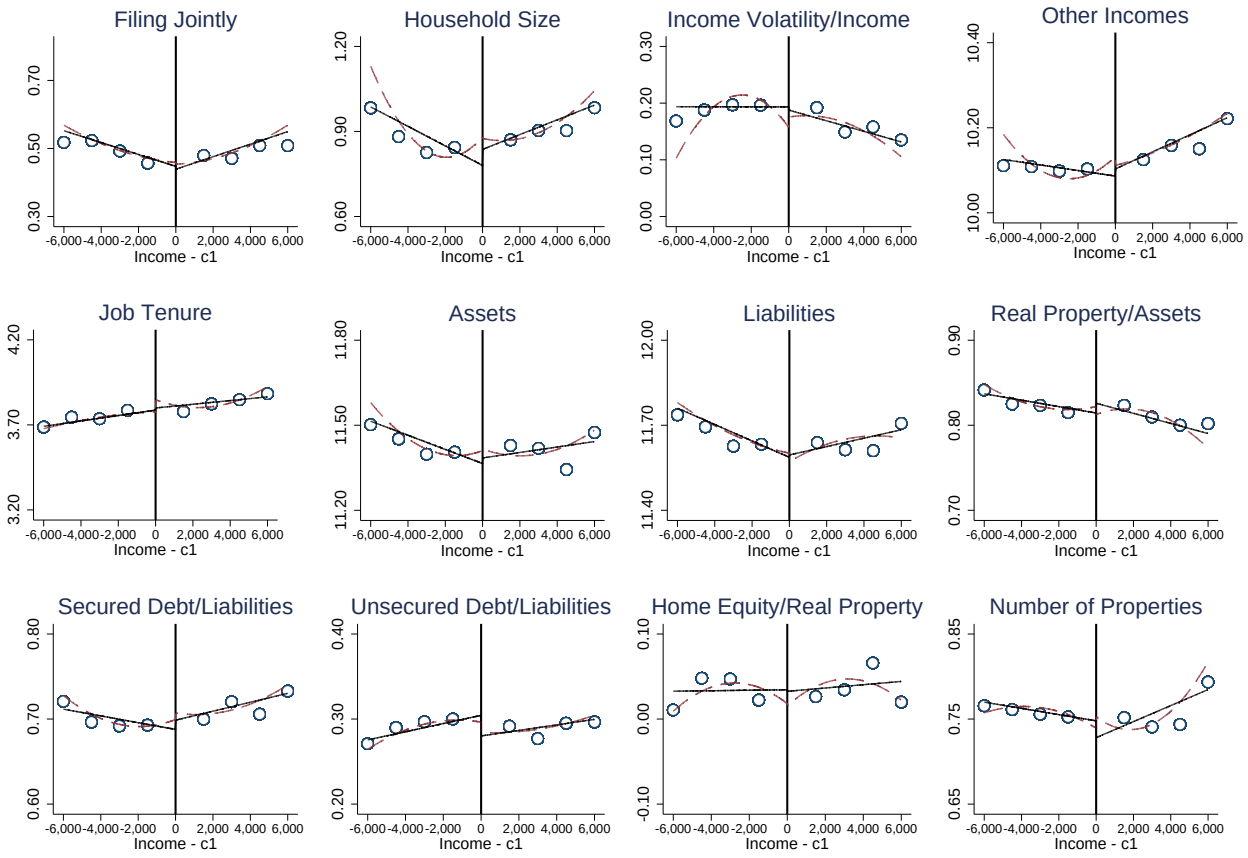


Figure 4 Test for Smoothness of Baseline Characteristics around the First Cutoff

The figure describes means of pretreatment covariates by distance relative to the first cutoff in order to test for covariate balance around the threshold. In the first cutoff, the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. Household size corresponds to the log of all the people who occupy a housing unit as their usual place of residence and are dependent on the debtor for tax purposes. Debtor income volatility is the standard deviation of the debtor's income over the last six months before filing relative to the income. Other Income is the log of the gross income other than wages. Job tenure is the log of the debtor's tenure in years at the filing date. Assets and Liabilities correspond to the log of total assets and total liabilities at the filing date. Real Property/Assets is real property to total assets. Secured Debt/Liabilities comprises total debt backed by collateral relative to total debt. Unsecured Debt/Liabilities is unsecured claims to liabilities. Home equity/ Real property is the difference between the property's market value and the outstanding balance of all liens on the property relative to the total real estate assets. Number of properties is the log of the number of real properties held by the debtor at the date of filing. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. The bin width is $1,500. All specifications allow for differential slopes on each side of the cutoff.

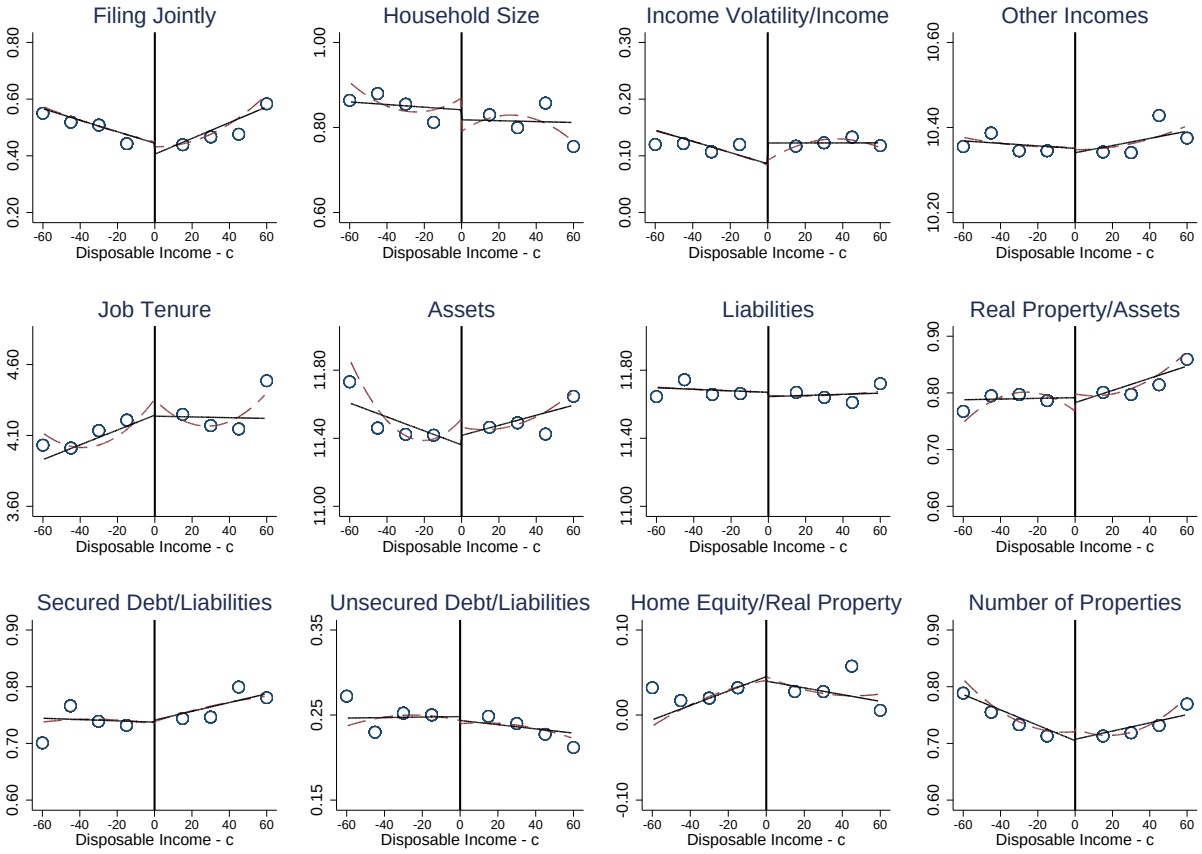


Figure 5 Test for Smoothness of Baseline Characteristics around the Pooled Cutoff

The figure describes means of pretreatment covariates by distance relative to the pooled cutoff to test for covariates balance around the threshold. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Household size corresponds to the log of all the people who occupy a housing unit as their usual place of residence and are dependent on the debtor for tax purposes. Debtor income volatility is the standard deviation of the debtor's income over the last six months before filing relative to the income. Other Income is the log of the gross income other than wages. Job tenure is the log of the debtor's tenure in years at the filing date. Assets and Liabilities correspond to the log of total assets and total liabilities at the filing date. Real Property/Assets is real property to total assets. Secured Debt/Liabilities comprises total debt backed by collateral relative to total debt. Unsecured Debt/Liabilities is unsecured claims to liabilities. Home equity/ Real property is the difference between the property's market value and the outstanding balance of all liens on the property relative to the total real estate assets. Number of properties is the log of the number of real properties held by the debtor at the date of filing. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. The bin width is $15. All specifications allow for differential slopes on each side of the cutoff.

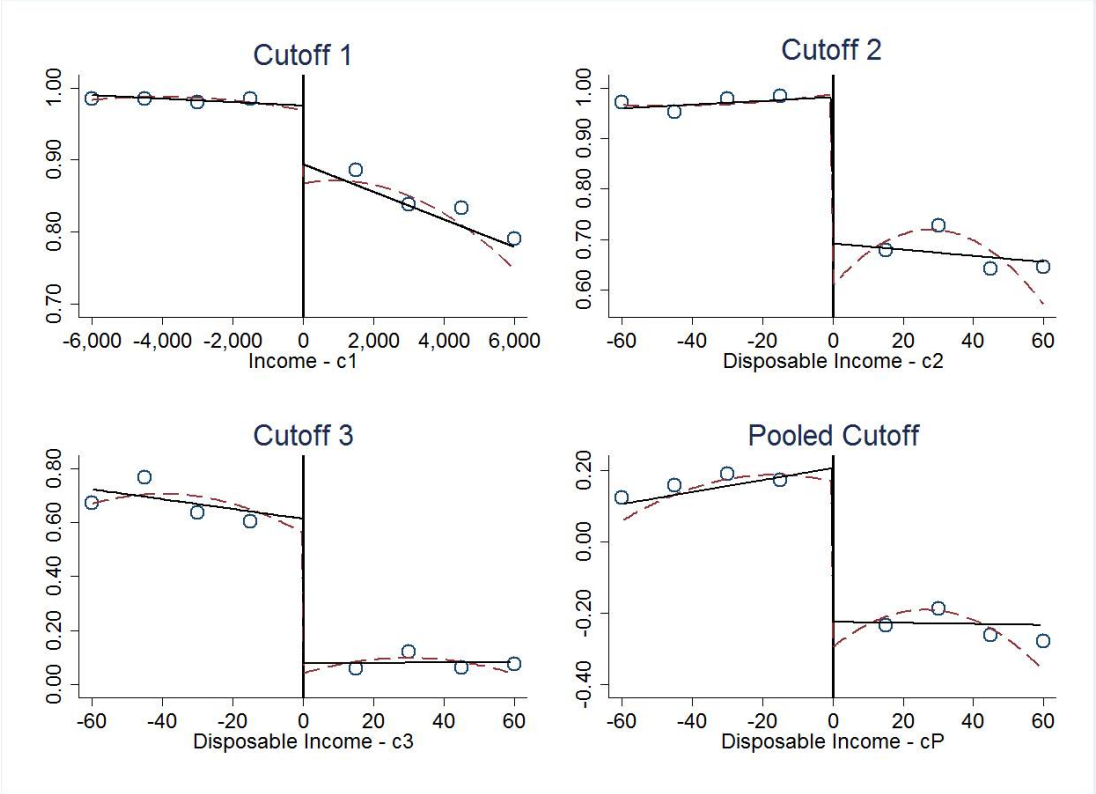


Figure 6 Access to Chapter 7

The figure illustrates the first stage for the probability receiving of Chapter 7 protection, by plotting the distribution of filers and the running variables around the cutoff. The x-axis presents the running variable in a bandwidth of $6,000 for the first cutoff and $60 for the other cutoffs. The y-axis corresponds to the probability of receiving Chapter 7 bankruptcy protection. In the first cutoff, the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. In the second cutoff, the running variable is the difference between monthly disposable income and $100 (before 2007 and $109.58 after 2007). In the third cutoff, the running variable is the difference between monthly disposable income and $166.67 (before 2007 and $182.50 after 2007). The pooled cutoff combines the second and third cutoffs. The pooled specifications include thresholds indicator. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. All specifications allow for differential slopes on each side of the cutoffs.

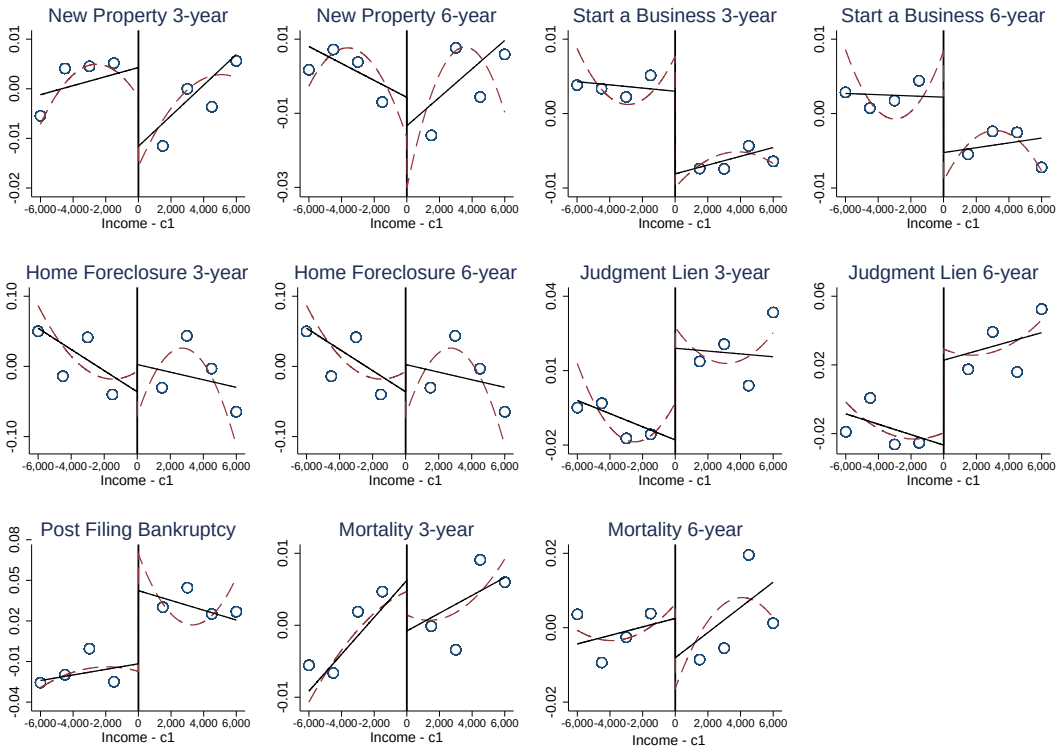


Figure 7 Impact on Debtors' Post-Filing Outcomes for the First Cutoff

The figure describes the intention to treat (or reduced form) of the first cutoff on debtors' post-filing outcomes. The running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. Debtors' outcome variables are measured three years and six years post-filing. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an official claim that gives a creditor the right to take possession of a debtor's real property if the debtor fails to fulfill his or her contractual obligations. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. The bin width is $1,500. All specifications allow for differential slopes on either side of the cutoff.

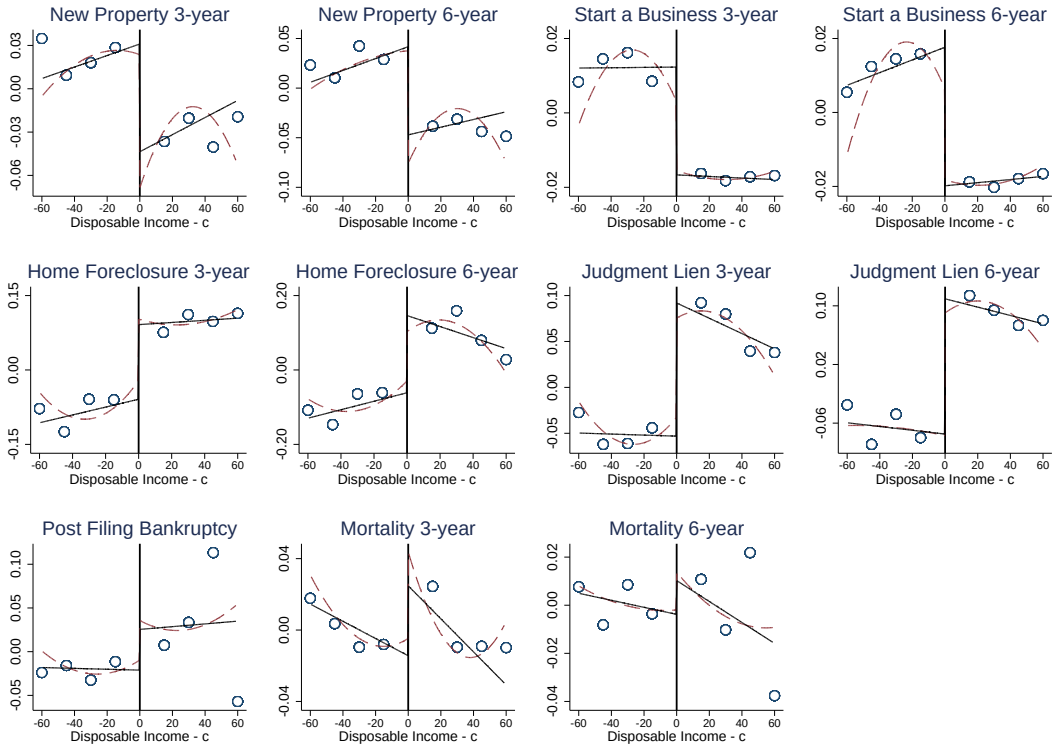


Figure 8 Impact on Debtors' Post-Filing Outcomes for the Pooled Cutoff

The figure describes the intention to treat (or reduced form) of the pooled cutoff on debtors' post-filing outcomes. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Debtors' outcome variables are measured three years and six years post-filing. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an official claim that gives a creditor the right to take possession of a debtor's real property if the debtor fails to fulfill his or her contractual obligations. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. The bin width is \$15. All specifications allow for differential slopes on each side of the cutoff.

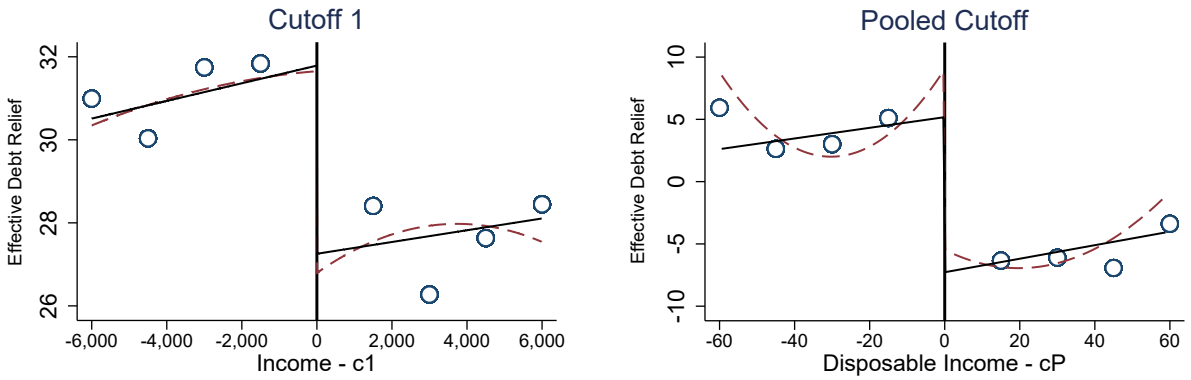


Figure 9 Debt Relief at the Cutoffs

The figure illustrates the debt relief provided by Chapter 7, by plotting the distribution of filers and the running variables around the cutoff. The x-axis presents the running variable in a bandwidth of $6,000 for the first cutoff and $60 for the other cutoffs. The y-axis corresponds to the effective debt relief received through Chapter 7 bankruptcy protection. Debtors who receive Chapter 7, obtain unsecured debt relief net of non-exempt assets, thus I estimate the non-exempt assets using debtors' home equity and their state homestead exemption. The debt relief in the case of those debtors who filed for Chapter 13 and had their cases discharged (either because they were Chapter 7 filers, whose cases were dismissed and converted to Chapter 13 or who did not qualify for Chapter 7 at all) is their unsecured debt net of their repayment plan. The five-year repayment plan is their monthly disposable income, as established by the means tests. Dismissed filers do not receive debt forgiveness. In the first cutoff, the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. The pooled specifications include thresholds indicator. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. All specifications allow for differential slopes on each side of the cutoffs.

Table 1 Summary Statistics

This table reports summary statistics. The full sample consists of a random sample of first-time filers from 65 bankruptcy courts between 2006 and 2009. The RD sample comprises those cases around the thresholds. The data comes from legal bankruptcy documents submitted by filers through PACER and Lexis-Nexis public records. Household size, marital status, filing jointly and gross annual income come from Forms 22A and 22C. Assets and liabilities of individual debtors come from the Summary of Schedules. Data on age at filing, gender, race, criminal background (e.g., arrest records, court conviction records, traffic violations) and business owners comes from Lexis-Nexis public records. All monetary values are expressed in year 2000 U.S. dollars divided by 1,000.

	Full Sample			RD Sample			
	Total	Chapter 7	Chapter 13	Total	Chapter 7	Chapter 13	p-value
General Debtors Characteristics							
Household size	2.57	2.42	2.97	2.38	2.37	2.41	0.568
Age at filing	44.01	43.68	45.82	43.87	43.71	44.26	0.210
% Marital status (Married)	49.41	45.10	56.08	49.76	49.69	50.35	0.798
% Filing jointly	34.56	33.03	36.93	38.24	38.42	36.64	0.487
% Gender (Male)	67.45	66.53	77.31	64.42	64.30	65.60	0.772
% Race (White)	78.04	79.76	78.26	77.01	79.05	70.60	0.146
% Criminal background	15.87	15.94	13.75	15.95	15.85	17.18	0.185
% Business owners	6.92	7.16	4.33	6.99	7.15	5.62	0.220
Gross Annual Income	35.95	31.59	42.71	44.05	43.89	45.98	0.227
Liabilities-to-income-ratio	4.89	5.66	3.99	4.08	4.11	3.83	0.235
Assets of individual debtors							
Total Assets	129.63	116.14	141.43	141.41	140.49	149.67	0.206
Real Property	105.27	92.81	113.34	114.54	113.57	123.25	0.289
Liabilities of individual debtors							
Liabilities	175.94	178.94	170.56	180.00	180.53	175.73	0.768
Secured Debt	112.40	102.81	129.64	116.99	116.94	117.56	0.952
Unsecured Debt	60.03	71.24	40.04	59.06	59.68	53.45	0.443
Number of Cases	38,855			4,536			

Table 2 Test of Discontinuities in Pretreatment Covariates

This table reports the estimates of the test for the balance of observable covariates across the threshold. In the first cutoff, the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff, the running variable is the difference between monthly disposable income and the respective threshold the debtor faces. Table entries are local linear regression estimates with a rectangular kernel of discontinuities in pretreatment covariates around the different cutoffs provided by law and described in Figure 7. Neighborhood is the distance from the respective cutoffs (bandwidth). Each cell represents a separate regression with baseline covariates as the dependent variable and the threshold crossing variable. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate the p-values of 1%, 5%, and 10%, respectively.

	First cutoff		Second cutoff		Third cutoff	
Running variable	AGMI		Disposable Income		Disposable Income	
Neighborhood	5,000	6,000	50	60	50	60
Household size	-0.030	-0.004	0.131	0.162	-0.051	-0.117
	(0.046)	(0.042)	(0.130)	(0.102)	(0.159)	(0.127)
Married	0.043	0.044	0.081	0.063	-0.187	-0.013
	(0.039)	(0.036)	(0.137)	(0.089)	(0.139)	(0.111)
Filing jointly	-0.003	-0.002	0.081	0.139	-0.050	-0.100
	(0.037)	(0.034)	(0.116)	(0.092)	(0.136)	(0.109)
Ln Assets	-0.080	-0.030	0.366	0.273	-0.059	-0.047
	(0.131)	(0.122)	(0.407)	(0.318)	(0.347)	(0.310)
Ln Liabilities	0.015	0.007	0.144	0.173	0.031	0.042
	(0.110)	(0.102)	(0.272)	(0.240)	(0.316)	(0.272)
Ln Job tenure	-0.095	-0.089	-0.059	-0.037	-0.067	-0.068
	(0.116)	(0.110)	(0.347)	(0.299)	(0.363)	(0.284)
Age at filing	0.424	0.539	-3.776	-3.458	-0.813	-1.655
	(0.876)	(0.806)	(2.669)	(2.600)	(2.955)	(2.370)
Male	0.080	0.069	-0.177	-0.118	-0.356	-0.353
	(0.060)	(0.055)	(0.171)	(0.148)	(0.354)	(0.334)
White	-0.025	-0.017	-0.054	-0.085	0.070	0.102
	(0.083)	(0.069)	(0.263)	(0.229)	(0.287)	(0.260)
Criminal background	0.011	0.012	-0.144	-0.044	0.065	0.068
	(0.029)	(0.026)	(0.092)	(0.069)	(0.097)	(0.080)
Business owners	-0.009	-0.011	-0.050	-0.031	0.054	0.038
	(0.024)	(0.018)	(0.040)	(0.034)	(0.059)	(0.049)
Income Volatility/Income	0.123	0.132	0.054	0.048	0.172	0.267
	(0.123)	(0.121)	(0.055)	(0.058)	(0.237)	(0.277)
Real Properties/Assets	-0.022	-0.029	-0.016	-0.033	-0.081	-0.042
	(0.018)	(0.021)	(0.047)	(0.036)	(0.049)	(0.038)
Secured Debt/Liabilities	-0.021	-0.021	-0.012	-0.012	-0.034	-0.046
	(0.025)	(0.023)	(0.052)	(0.042)	(0.057)	(0.049)
Unsecured Debt/Liabilities	0.022	0.023	0.021	0.010	0.047	0.057
	(0.024)	(0.023)	(0.051)	(0.033)	(0.057)	(0.049)
Home Equity/Real Properties	0.007	0.012	-0.066	-0.023	-0.100	-0.063
	(0.034)	(0.032)	(0.064)	(0.052)	(0.069)	(0.055)
Number of Properties	0.039	0.036	-0.044	-0.055	-0.235	-0.182
	(0.056)	(0.052)	(0.136)	(0.119)	(0.184)	(0.220)

Table 3 Test of Discontinuities in Pretreatment Covariates for Filers who do not Qualify for Chapter 7

Panel A tests for differences between those debtors who file for Chapter 13 protection but do not qualify for Chapter 7 against those who file for Chapter 7. Panel B tests for differences between those debtors who file for Chapter 13 protection but do not qualify for Chapter 7 against those who file for Chapter 7 and are dismissed. In the first cutoff, the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff, the running variable is the difference between monthly disposable income and the respective threshold that the debtor faces. The pooled specifications include thresholds indicator. Table entries are local linear regression estimates with a rectangular kernel of discontinuities in pretreatment covariates using the first and the pooled cutoffs. Each cell represents a separate regression with baseline covariates as the dependent variable and an indicator variable for filers do not qualify for Chapter 7. Neighborhood is the distance from the respective cutoffs. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A	First cutoff		Pooled cutoff	
Running variable	AGMI		Disposable Income	
Neighborhood	5,000	6,000	50	60
Household size	0.158	0.100	0.065	0.092
	(0.141)	(0.136)	(0.113)	(0.109)
Married	-0.127	-0.104	-0.175	-0.147
	(0.124)	(0.119)	(0.113)	(0.106)
Filing jointly	-0.119	-0.116	0.084	0.039
	(0.117)	(0.113)	(0.105)	(0.094)
Ln Assets	-0.038	-0.037	0.028	0.017
	(0.143)	(0.140)	(0.105)	(0.099)
Ln Liabilities	-0.178	-0.156	-0.184	-0.137
	(0.195)	(0.187)	(0.219)	(0.111)
Ln Job tenure	-0.014	-0.048	0.077	0.038
	(0.154)	(0.150)	(0.062)	(0.046)
Age at filing	0.157	0.188	-1.361	-1.795
	(0.251)	(0.247)	(2.445)	(2.145)
Male	0.079	0.045	-0.028	-0.061
	(0.170)	(0.169)	(0.147)	(0.124)
White	-0.035	-0.064	0.078	0.042
	(0.074)	(0.072)	(0.190)	(0.095)
Criminal background	-0.091	-0.071	0.113	0.158
	(0.079)	(0.076)	(0.083)	(0.079)
Business owners	0.046	0.055	0.086	0.072
	(0.081)	(0.074)	(0.058)	(0.053)
Income Volatility/Income	0.033	0.040	0.051	0.058
	(0.149)	(0.159)	(0.069)	(0.073)
Real Properties/Assets	0.011	0.021	0.046	0.031
	(0.036)	(0.037)	(0.047)	(0.026)
Secured Debt/Liabilities	0.054	0.057	0.086	0.076
	(0.060)	(0.057)	(0.077)	(0.065)
Unsecured Debt/Liabilities	-0.068	-0.069	-0.091	-0.080
	(0.061)	(0.057)	(0.086)	(0.085)
Home Equity/Real Properties	0.107	0.103	0.064	0.081
	(0.073)	(0.071)	(0.059)	(0.075)
Number of Properties	-0.029	-0.036	0.072	0.062
	(0.034)	(0.036)	(0.052)	(0.041)

Table 3 (Continued)

Panel B	First cutoff		Pooled cutoff	
Running variable	AGMI		Disposable Income	
Neighborhood	5,000	6,000	50	60
Household size	-0.014	-0.019	-0.020	-0.016
	(0.245)	(0.233)	(0.082)	(0.071)
Married	-0.240	-0.264	-0.294	-0.237
	(0.216)	(0.206)	(0.273)	(0.258)
Filing jointly	-0.129	-0.103	-0.180	-0.164
	(0.113)	(0.112)	(0.180)	(0.173)
Ln Assets	-0.179	-0.252	-0.225	-0.197
	(0.190)	(0.185)	(0.215)	(0.205)
Ln Liabilities	-0.113	-0.135	-0.128	-0.153
	(0.179)	(0.171)	(0.176)	(0.183)
Ln Job tenure	-0.541	-0.561	0.720	0.752
	(0.439)	(0.457)	(0.776)	(0.824)
Age at filing	-2.385	-3.452	3.101	2.942
	(5.683)	(5.659)	(2.994)	(2.817)
Male	0.073	0.081	-0.091	-0.036
	(0.328)	(0.321)	(0.209)	(0.147)
White	-0.163	-0.178	-0.073	-0.109
	(0.172)	(0.155)	(0.096)	(0.101)
Criminal background	-0.109	-0.102	0.175	0.127
	(0.199)	(0.198)	(0.181)	(0.196)
Business owners	-0.021	-0.022	0.007	0.005
	(0.108)	(0.107)	(0.007)	(0.008)
Income Volatility/Income	-0.103	-0.108	0.080	0.101
	(0.261)	(0.270)	(0.070)	(0.124)
Real Properties/Assets	0.084	0.055	0.077	0.072
	(0.192)	(0.190)	(0.048)	(0.046)
Secured Debt/Liabilities	0.158	0.140	0.016	0.020
	(0.233)	(0.231)	(0.061)	(0.054)
Unsecured Debt/Liabilities	-0.146	-0.130	-0.028	-0.031
	(0.173)	(0.171)	(0.059)	(0.042)
Home Equity/Real Properties	0.101	0.090	0.093	0.084
	(0.097)	(0.094)	(0.101)	(0.092)
Number of Properties	-0.137	-0.150	0.102	0.107
	(0.139)	(0.139)	(0.111)	(0.104)

Table 4 Access to Chapter 7

This table presents the first stage estimates of the respective threshold crossing indicator (e.g., below the first cutoff) on Chapter 7 protection. In the first cutoff, the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff, the running variable is the difference between monthly disposable income and the respective threshold the debtor faces. The pooled specifications include thresholds indicator. Table entries are local linear regression with a rectangular kernel. Each cell represents a separate regression as the dependent variable (Chapter 7 protection indicator) and the threshold crossing variable. Covariates include age at filing, household size and marital status. Neighborhood is the distance from the respective cutoffs. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A Running variable	First cutoff AGMI				
Neighborhood	5,000	5,000	6,000	6,000	6,000
Chapter 7	0.093*** (0.022)	0.097*** (0.022)	0.082*** (0.021)	0.085*** (0.021)	0.108*** (0.031)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Panel B Running variable	Second Cutoff Disposable Income				
Neighborhood	50	50	60	60	60
Chapter 7	0.315*** (0.080)	0.305*** (0.081)	0.266*** (0.067)	0.260*** (0.068)	0.338*** (0.095)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Panel C Running variable	Third Cutoff Disposable Income				
Neighborhood	50	50	50	60	60
Chapter 7	0.554*** (0.081)	0.548*** (0.081)	0.556*** (0.079)	0.549*** (0.078)	0.515*** (0.109)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Panel D Running variable	Pooled Cutoff Disposable Income				
Neighborhood	50	50	60	60	60
Chapter 7	0.446*** (0.066)	0.443*** (0.067)	0.444*** (0.064)	0.438*** (0.064)	0.450*** (0.086)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Table 5 Chapter 7 and Debtors' Post-Filing Outcomes

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on post-filing investment decisions, financial distress events and miscellaneous outcomes. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Local linear regression estimates with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff				
Running variable	AGMI				
Neighborhood	5,000	5,000	6,000	6,000	6,000
Investment decisions					
New real property (3-year)	0.266	0.256	0.249	0.241	0.265
	(0.217)	(0.211)	(0.234)	(0.228)	(0.237)
New real property (6-year)	0.157	0.148	0.156	0.150	0.148
	(0.247)	(0.241)	(0.269)	(0.262)	(0.274)
Start a Business (3-year)	0.210**	0.210**	0.233**	0.233**	0.241**
	(0.096)	(0.094)	(0.113)	(0.112)	(0.121)
Start a Business (6-year)	0.188*	0.192*	0.194**	0.216**	0.211*
	(0.110)	(0.103)	(0.102)	(0.109)	(0.117)
Financial Distress Events					
Home foreclosure (3-year)	-0.288	-0.298	-0.370	-0.357	-0.238
	(0.412)	(0.407)	(0.377)	(0.375)	(0.463)
Home foreclosure (6-year)	-0.538	-0.553	-0.597	-0.589	-0.434
	(0.445)	(0.440)	(0.409)	(0.408)	(0.471)
Judgment Lien (3-year)	-0.589**	-0.618**	-0.586**	-0.616**	-0.634**
	(0.299)	(0.297)	(0.286)	(0.300)	(0.305)
Judgment Lien (6-year)	-0.713**	-0.696**	-0.680**	-0.665**	-0.674**
	(0.342)	(0.334)	(0.343)	(0.334)	(0.316)
Future Bankruptcy	-0.664***	-0.687***	-0.675***	-0.692***	-0.804***
	(0.229)	(0.221)	(0.212)	(0.209)	(0.296)
Miscellaneous Outcome					
Mortality (3 year)	0.051	0.050	0.057	0.055	0.033
	(0.067)	(0.064)	(0.070)	(0.068)	(0.078)
Mortality (6-year)	0.119	0.127	0.123	0.111	0.136
	(0.156)	(0.124)	(0.166)	(0.124)	(0.164)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Table 5 (Continued)

	Pooled cutoff				
Running variable	Disposable Income				
Neighborhood	50	50	60	60	60
Investment decisions					
New real property (3-year)	0.239***	0.225***	0.213**	0.202**	0.206**
	(0.089)	(0.085)	(0.087)	(0.083)	(0.099)
New real property (6-year)	0.229**	0.219**	0.212**	0.207**	0.201**
	(0.109)	(0.104)	(0.106)	(0.102)	(0.094)
Start a Business (3-year)	0.076*	0.078*	0.083**	0.082**	0.066**
	(0.043)	(0.044)	(0.040)	(0.042)	(0.033)
Start a Business (6-year)	0.145*	0.169*	0.152**	0.167**	0.096**
	(0.082)	(0.088)	(0.077)	(0.085)	(0.041)
Financial Distress Events					
Home foreclosure (3-year)	-0.617**	-0.639**	-0.617**	-0.605**	-0.452**
	(0.315)	(0.321)	(0.309)	(0.303)	(0.220)
Home foreclosure (6-year)	-0.640**	-0.658**	-0.658**	-0.646**	-0.497**
	(0.323)	(0.328)	(0.317)	(0.311)	(0.241)
Judgment Lien (3-year)	-0.353**	-0.377**	-0.391***	-0.410***	-0.414**
	(0.150)	(0.161)	(0.147)	(0.158)	(0.207)
Judgment Lien (6-year)	-0.485***	-0.508***	-0.527***	-0.540***	-0.498**
	(0.171)	(0.184)	(0.168)	(0.182)	(0.231)
Future Bankruptcy	-0.131	-0.145	-0.114	-0.131	-0.085
	(0.122)	(0.117)	(0.122)	(0.117)	(0.144)
Miscellaneous Outcome					
Mortality (3 year)	-0.105*	-0.104*	-0.086*	-0.085*	-0.093
	(0.058)	(0.057)	(0.050)	(0.049)	(0.057)
Mortality (6-year)	-0.020	-0.012	-0.024	-0.017	-0.010
	(0.070)	(0.070)	(0.060)	(0.060)	(0.070)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Table 6 Business Creation adjusted for Firm Survival and New Business Owners

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on different sub-samples for starting a business. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Panel A includes only those firms that were created post-filing and remain active in 2015. Panel B comprises only those firms created by a filer who did not have a business registered before filing for bankruptcy. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First Cutoff				Pooled			
Running variable	AGMI				Disposable Income			
Neighborhood	5,000	5,000	6,000	6,000	50	50	60	60
Panel A: Adjusting for Firm Survival								
Start a Business (3-year)	0.210**	0.211**	0.187**	0.188**	0.025**	0.026**	0.030**	0.031**
	(0.088)	(0.087)	(0.079)	(0.078)	(0.012)	(0.013)	(0.015)	(0.015)
Start a Business (6-year)	0.192**	0.212**	0.162*	0.184**	0.076**	0.096**	0.087**	0.103**
	(0.097)	(0.097)	(0.087)	(0.088)	(0.033)	(0.046)	(0.041)	(0.045)
Panel B: New Business Owners								
Start a Business (3-year)	0.141**	0.137**	0.139**	0.136**	0.071**	0.078**	0.073**	0.080**
	(0.070)	(0.068)	(0.069)	(0.067)	(0.036)	(0.038)	(0.035)	(0.038)
Start a Business (6-year)	0.149**	0.146**	0.148**	0.145**	0.101*	0.121*	0.107*	0.121*
	(0.072)	(0.071)	(0.072)	(0.071)	(0.058)	(0.072)	(0.065)	(0.070)
Specification	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Covariates and Year FE	N	Y	N	Y	N	Y	N	Y

Table 7 Home Equity and Debtors' Post-Filing Outcomes

This table presents the fuzzy RD estimates of Chapter 7 bankruptcy protection by home equity. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff			Pooled cutoff		
Home Equity	Negative	Positive		Negative	Positive	
Neighborhood / p-value	6,000	6,000	p-value	60	60	p-value
Investment Decisions						
New real property (3-year)	0.284	0.303	0.332	0.157*	0.228**	0.130
	(0.220)	(0.221)		(0.089)	(0.100)	
New real property (6-year)	0.156	0.181	0.287	0.138	0.282*	0.044
	(0.259)	(0.261)		(0.138)	(0.153)	
Start a Business (3-year)	0.143*	0.181*	0.083	0.047*	0.110**	0.010
	(0.087)	(0.099)		(0.026)	(0.055)	
Start a Business (6-year)	0.108	0.145*	0.104	0.025	0.141**	0.059
	(0.083)	(0.075)		(0.030)	(0.070)	
Financial Distress Events						
Home foreclosure (3-year)	-0.381	-0.628*	0.000	-0.479	-0.659*	0.074
	(0.373)	(0.373)		(0.351)	(0.349)	
Home foreclosure (6-year)	-0.523	-0.772*	0.000	-0.609*	-0.831**	0.028
	(0.398)	(0.399)		(0.370)	(0.370)	
Judgment Lien (3-year)	-0.535	-0.585*	0.027	-0.513***	-0.561***	0.443
	(0.330)	(0.334)		(0.196)	(0.198)	
Judgment Lien (6-year)	-0.647*	-0.688*	0.105	-0.663***	-0.671***	0.919
	(0.378)	(0.383)		(0.219)	(0.227)	
Future Bankruptcy	-0.531**	-0.541**	0.481	-0.040	-0.115	0.088
	(0.223)	(0.225)		(0.144)	(0.140)	
Covariates and Year FE	Y	Y		Y	Y	

Table 8 Impact of Debt relief on Debtors' Post-Filing Outcomes

This table reports the fuzzy RD estimates of debt relief through Chapter 7 bankruptcy protection on post-filing investment decisions, and financial distress events. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Debt relief is expressed in 1981 dollars divided by 1,000 and corresponds to the total amount of debt discharged. Due to outlying observations, the debt relief variable is Winsorized at the 5th and 95th percentiles. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and debt relief. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff		Pooled Cutoff	
Running Variable	AGMI		Disposable Income	
Neighborhood	5,000	6,000	50	60
Investment decisions				
New real property (3-year)	0.0025	0.0021	0.0068**	0.0071**
	(0.0043)	(0.0044)	(0.0034)	(0.0033)
New real property (6-year)	0.0020	0.0021	0.0072**	0.0072**
	(0.0053)	(0.0055)	(0.0037)	(0.0035)
Start a Business (3-year)	0.0049**	0.0043**	0.0030**	0.0033**
	(0.0024)	(0.0021)	(0.0014)	(0.0014)
Start a Business (6-year)	0.0047**	0.0036**	0.0046**	0.0048**
	(0.0020)	(0.0017)	(0.0019)	(0.0017)
Financial Distress Events				
Home foreclosure (3-year)	-0.0032	-0.0030	-0.0228**	-0.0258**
	(0.0065)	(0.0061)	(0.0110)	(0.0126)
Home foreclosure (6-year)	-0.0053	-0.0050	-0.0178**	-0.0199**
	(0.0074)	(0.0068)	(0.0093)	(0.0101)
Judgment Lien (3-year)	-0.0143**	-0.0132**	-0.0121**	-0.0124**
	(0.0062)	(0.0061)	(0.006)	(0.006)
Judgment Lien (6-year)	-0.0158**	-0.0156**	-0.0156**	-0.0149**
	(0.0068)	(0.0063)	(0.0070)	(0.0067)
Future Bankruptcy	-0.0147**	-0.0149**	-0.0051	-0.0047
	(0.0074)	(0.0076)	(0.0062)	(0.0077)
Covariates and Year FE	Y	Y	Y	Y

Table 9 Homestead Exemption and Debtors' Post-Filing Outcomes

This table reports the Fuzzy RD estimates of access of Chapter 7 Bankruptcy protection for states with above median and below median homestead exemption, conditional on having positive home equity. Local linear regression estimates with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of access to Chapter 7. Controls include pretreatment covariates include age at filing, household's size and marital status. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff			Pooled cutoff		
Homestead Exemption	Below Median	Above Median		Below Median	Above Median	
Neighborhood	6,000	6,000	p-value	60	60	p-value
Investment decisions						
New real property (3-year)	0.090	0.227	0.268	0.130	0.108	0.638
	(0.666)	(0.267)		(0.172)	(0.136)	
New real property (6-year)	0.031	0.278	0.319	0.315	0.186	0.217
	(0.530)	(0.303)		(0.233)	(0.168)	
Start a Business (3-year)	0.170	0.225**	0.087	0.065	0.202*	0.070
	(0.184)	(0.115)		(0.057)	(0.108)	
Start a Business (6-year)	0.233	0.228*	0.124	0.087	0.245**	0.002
	(0.204)	(0.132)		(0.060)	(0.116)	
Financial Distress Events						
Home foreclosure (3-year)	-0.371	-0.774**	0.071	-0.346	-0.748**	0.057
	(0.731)	(0.356)		(0.674)	(0.291)	
Home foreclosure (6-year)	-0.131	-0.895**	0.068	-0.348	-0.839***	0.043
	(0.828)	(0.408)		(0.701)	(0.276)	
Judgment Lien (3-year)	0.167	-0.896**	0.049	-0.446	-0.501**	0.069
	(0.355)	(0.386)		(0.416)	(0.223)	
Judgment Lien (6-year)	-0.279	-0.888**	0.033	-0.687	-0.490*	0.095
	(0.299)	(0.413)		(0.576)	(0.257)	
Future Bankruptcy	-0.478	-0.644**	0.086	-0.077	-0.446**	0.067
	(0.480)	(0.326)		(0.288)	(0.213)	
Covariates and Year FE	Y	Y		Y	Y	

Table 10 Chapter 7 and Secured Lending

This table presents the fuzzy RD estimates of Chapter 7 Bankruptcy protection on secured lending. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. UCC loans are loans with collateral in which a UCC-1 form was filed. Mortgage corresponds to loans for the acquisition of real estate properties. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Covariates include age at filing, household size and marital status. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

Running Variable	First cutoff AGMI	Pooled cutoff Disposable Income
Neighborhood	6,000	60
UCC loans (3-year)	0.074	0.085**
	(0.114)	(0.041)
UCC loans (6-year)	0.094	0.102**
	(0.142)	(0.045)
UCC loans / Home equity (3-year)	0.201**	0.089**
	(0.095)	(0.040)
UCC loans / Home equity (6-year)	0.179**	0.188**
	(0.101)	(0.100)
Mortgage (3-year)	0.028	0.123**
	(0.148)	(0.061)
Mortgage (6-year)	0.121	0.165**
	(0.224)	(0.076)
Covariates and Year FE	Y	Y

Table 11 Non-Judicial Debt Collection and Debtors' Post-Filing Outcomes

This table presents the fuzzy RD estimates of Chapter 7 Bankruptcy protection by level of Non-Judicial Debt Collection laws. States with anti-harassment laws are those which do not allow non-judicial debt collection. Local linear regression estimates a with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff			Pooled cutoff		
Non-Judicial Debt Collection allowed	No	Yes		No	Yes	
Neighborhood / p-value	6,000	6,000	p-value	60	60	p-value
Investment Decisions						
New real property (3-year)	0.199	0.194	0.613	0.245**	0.210**	0.480
	(0.187)	(0.187)		(0.104)	(0.095)	
New real property (6-year)	0.095	0.083	0.364	0.278**	0.193*	0.120
	(0.218)	(0.217)		(0.124)	(0.116)	
Start a Business (3-year)	0.223**	0.211**	0.066	0.102**	0.052*	0.038
	(0.093)	(0.089)		(0.046)	(0.029)	
Start a Business (6-year)	0.179*	0.167*	0.121	0.137*	0.101*	0.123
	(0.103)	(0.101)		(0.075)	(0.057)	
Financial Distress Events						
Home foreclosure (3-year)	-0.142	-0.213	0.057	-0.531	-0.634**	0.122
	(0.346)	(0.342)		(0.326)	(0.298)	
Home foreclosure (6-year)	-0.377	-0.413	0.366	-0.527	-0.694**	0.365
	(0.373)	(0.370)		(0.328)	(0.310)	
Judgment Lien (3-year)	-0.543**	-0.526*	0.251	-0.392**	-0.375**	0.166
	(0.268)	(0.264)		(0.166)	(0.148)	
Judgment Lien (6-year)	-0.626**	-0.594**	0.128	-0.568***	-0.494***	0.656
	(0.302)	(0.300)		(0.190)	(0.172)	
Future Bankruptcy	-0.701***	-0.690***	0.538	-0.106	-0.166	0.070
	(0.211)	(0.207)		(0.124)	(0.110)	
Covariates and Year FE	Y	Y		Y	Y	

Table 12 Robustness of Core Results to the Possibility of Heaping

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on post-filing investment decisions and financial distress as robustness to the possibility of heaping, following Barreca et al. (2011). "Drop Cutoff Heap" drops observations $500 below the first cutoff and $5 below the pooled cutoff ("donut" RD). "Trends in Heaps" controls for a dummy equal to one for observations $500 below the first cutoff and $5 below the pooled cutoff and an interaction between those dummies and distance from the cutoff and also the interaction with distance from the cutoff threshold crossing variable. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. Local linear regression estimates with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff AGMI				Pooled cutoff Disposable Income			
	Drop Cutoff Heap		Trends in Heap		Drop Cutoff Heap		Trends in Heap	
Neighborhood	6,000		6,000		60		60	
Investment decisions								
New real property (3-year)	0.336	0.304	0.290	0.304	0.231**	0.220**	0.231**	0.226**
	(0.241)	(0.231)	(0.221)	(0.231)	(0.105)	(0.101)	(0.105)	(0.101)
New real property (6-year)	0.269	0.222	0.211	0.224	0.185**	0.178**	0.190**	0.179**
	(0.273)	(0.263)	(0.253)	(0.263)	(0.083)	(0.076)	(0.092)	(0.081)
Start a Business (3-year)	0.193**	0.191**	0.209**	0.211**	0.079**	0.087**	0.084**	0.089**
	(0.088)	(0.087)	(0.092)	(0.091)	(0.040)	(0.044)	(0.040)	(0.043)
Start a Business (6-year)	0.191**	0.209**	0.194*	0.211**	0.105**	0.114**	0.092**	0.105**
	(0.097)	(0.095)	(0.107)	(0.106)	(0.045)	(0.041)	(0.039)	(0.040)
Financial Distress Events								
Home foreclosure (3-year)	-0.418	-0.405	-0.426	-0.404	-0.602**	-0.589**	-0.611**	-0.597**
	(0.363)	(0.339)	(0.364)	(0.339)	(0.307)	(0.302)	(0.305)	(0.300)
Home foreclosure (6-year)	-0.668*	-0.635*	-0.656*	-0.637*	-0.682**	-0.669**	-0.694**	-0.685**
	(0.392)	(0.369)	(0.384)	(0.370)	(0.342)	(0.337)	(0.352)	(0.336)
Judgment Lien (3-year)	-0.534**	-0.554**	-0.534*	-0.523*	-0.505**	-0.505**	-0.517**	-0.516**
	(0.276)	(0.278)	(0.287)	(0.285)	(0.225)	(0.232)	(0.226)	(0.229)
Judgment Lien (6-year)	-0.651**	-0.637**	-0.651**	-0.636**	-0.577**	-0.592**	-0.569**	-0.574**
	(0.326)	(0.314)	(0.327)	(0.324)	(0.254)	(0.265)	(0.247)	(0.250)
Future Bankruptcy	-0.658***	-0.663***	-0.641***	-0.635***	-0.086	-0.085	-0.078	-0.089
	(0.206)	(0.200)	(0.212)	(0.210)	(0.129)	(0.129)	(0.133)	(0.128)
Specification	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Covariates and Year FE	N	Y	N	Y	N	Y	N	Y

Table 13 Change in Debtors' Post-Filing Outcomes Resulting from a Marginal Increase in Thresholds

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on post-filing investment decisions and financial distress events if thresholds were increased 1% (i.e., increased access to Chapter 7), following Dong and Lewbel (2012). The MTTE is the change in the RD treatment effect resulting from a marginal change in the RD threshold. For the first cutoff, 1% increase in the gross monthly income is $41, and for the pooled cutoff, 1% increase in the monthly disposable income is $1.40. Treatment effect - new refers to the RD treatment effect if the threshold were marginally increased by 1%. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses for the treatment effect. Standard errors for the estimated MTTE and the new treatment effect are calculated using the Delta method. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff			Pooled cutoff		
	Treatment	MTTE	Treatment New	Treatment	MTTE	Treatment New
Neighborhood		6,000			60	
Investment Decisions						
New real property (3-year)	0.241	-0.0031	0.238	0.202**	-0.0078	0.194**
	(0.228)	(0.0040)	(0.228)	(0.083)	(0.0083)	(0.083)
New real property (6-year)	0.150	-0.0043	0.146	0.207**	-0.0119	0.195**
	(0.262)	(0.0046)	(0.262)	(0.102)	(0.0103)	(0.102)
Start a Business (3-year)	0.233**	-0.0029	0.230**	0.082**	0.0040	0.078*
	(0.112)	(0.0025)	(0.112)	(0.042)	(0.0035)	(0.042)
Start a Business (6-year)	0.216**	-0.0014	0.215**	0.167**	-0.0095	0.157*
	(0.109)	(0.0019)	(0.109)	(0.085)	(0.0068)	(0.085)
Financial Distress Events						
Home foreclosure (3-year)	-0.357	0.0010	-0.356	-0.605**	0.0090	-0.596*
	(0.375)	(0.0046)	(0.375)	(0.303)	(0.0256)	(0.304)
Home foreclosure (6-year)	-0.589	0.0014	-0.588	-0.646**	0.0149	-0.631**
	(0.408)	(0.0052)	(0.408)	(0.311)	(0.0266)	(0.312)
Judgment Lien (3-year)	-0.616**	0.0067	-0.609**	-0.410***	0.0084	-0.401***
	(0.300)	(0.0058)	(0.300)	(0.158)	(0.0124)	(0.158)
Judgment Lien (6-year)	-0.665**	0.0054	-0.659**	-0.540***	0.0141	-0.529***
	(0.334)	(0.0063)	(0.334)	(0.182)	(0.0110)	(0.183)
Future Bankruptcy	-0.692***	0.0070	-0.685***	-0.131	-0.0076	-0.123
	(0.209)	(0.0045)	(0.209)	(0.117)	(0.0119)	(0.118)

Appendix

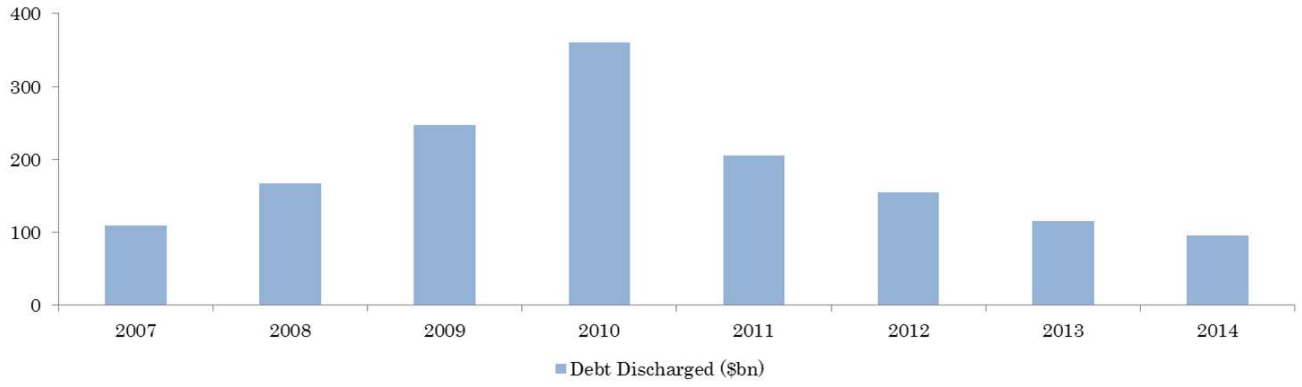


Figure 1 Debt Relief Provided by Consumer Bankruptcy

This figure plots the yearly debt relief in billions of dollars through the consumer bankruptcy system in year 2000 dollars from 2007 through 2014 extracted from the Statistics Division of the Administrative Office of the United States Courts.

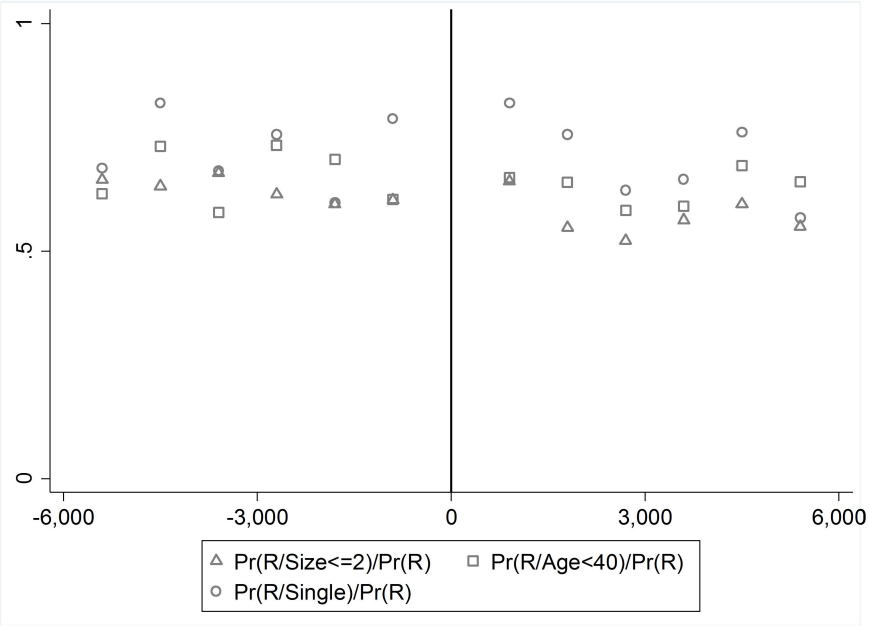


Figure 2 Test of Continuity Based on Ratios of Conditional to Unconditional Densities

Ratios of conditional to unconditional densities, following Zimmerman (2014), of filers by distance relative to the Average Gross Monthly Income (AGMI) and the state median income for three different conditioning pre-treatment characteristics: household size, marital status, and age.

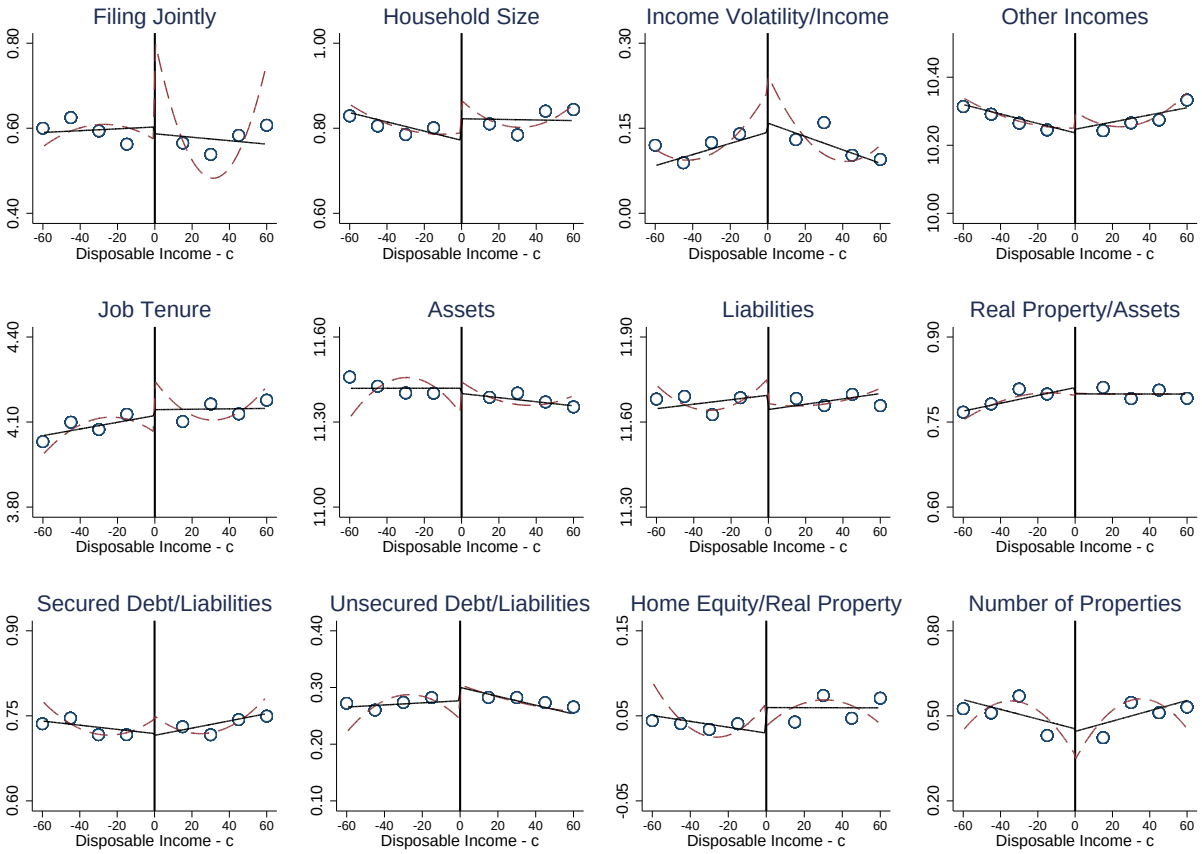


Figure 3 Test for Smoothness of Baseline Characteristics around the Second Cutoff

The figure describes means of pretreatment covariates by distance relative to the second cutoff to test for covariates balance around the threshold. Household size corresponds to the log of all the people who occupy a housing unit as their usual place of residence and are dependent on the debtor for tax purposes. Debtor income volatility is the standard deviation of the debtor's income over the last six months before filing relative to the income. Other Income is the log of the gross income other than wages. Job tenure is the log of the debtor's tenure in years at the filing date. Assets and Liabilities correspond to the log of total assets and total liabilities at the filing date. Real Property/Assets is real property to total assets. Secured Debt/Liabilities comprises total debt backed by collateral relative to total debt. Unsecured Debt/Liabilities is unsecured claims to liabilities. Home equity/ Real property is the difference between the property's market value and the outstanding balance of all liens on the property relative to the total real estate assets. Number of properties is the log of the number of real properties held by the debtor at the date of filing. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. The bin width is $15. All specifications allow for differential slopes on each side of the cutoff.

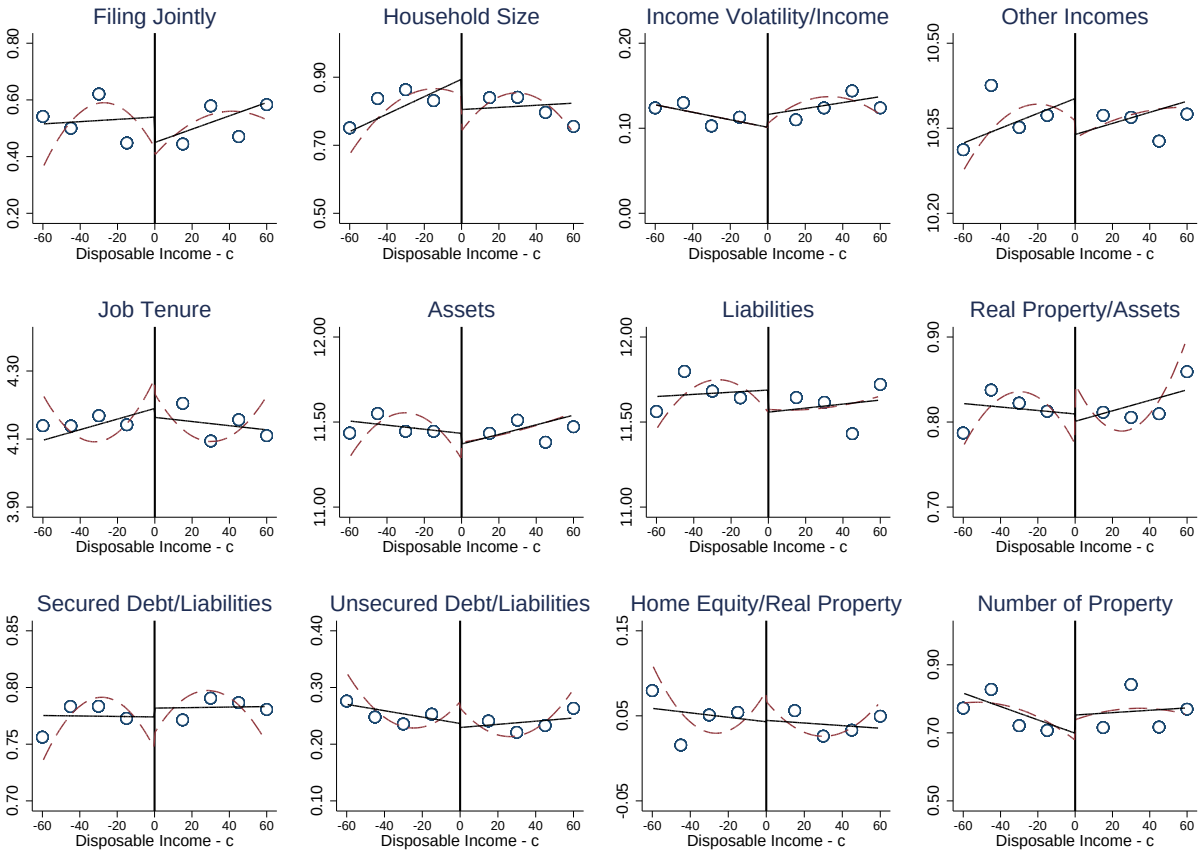


Figure 4 Test for Smoothness of Baseline Characteristics around the Third Cutoff

The figure describes means of pretreatment covariates by distance relative to the third cutoff to test for covariates balance around the threshold. Household size corresponds to the log of all the people who occupy a housing unit as their usual place of residence and are dependent on the debtor for tax purposes. Debtor income volatility is the standard deviation of the debtor's income over the last six months before filing relative to the income. Other Income is the log of the gross income other than wages. Job tenure is the log of the debtor's tenure in years at the filing date. Assets and Liabilities correspond to the log of total assets and total liabilities at the filing date. Real Property/Assets is real property to total assets. Secured Debt/Liabilities comprises total debt backed by collateral relative to total debt. Unsecured Debt/Liabilities is unsecured claims to liabilities. Home equity/ Real property is the difference between the property's market value and the outstanding balance of all liens on the property relative to the total real estate assets. Number of properties is the log of the number of real properties held by the debtor at the date of filing. Solid lines are nonparametric fits from a local linear regression, and dashed lines are quadratic fits that use rectangular kernels. The bin width is $15. All specifications allow for differential slopes on each side of the cutoff.

Appendix Table 1 Form 22A Means Test Calculation for Chapter 7 Debtors

First page of Form 22A. This form is required for Chapter 7 filers and provides the means test calculation submitted by debtors through PACER.

Form B22A (Chapter 7) (10/05)

In re _____ Debtor(s)

Case Number: _____ (If known)

According to the calculations required by this statement:

☐ **The presumption arises.**

☐ **The presumption does not arise.**

(Check the box as directed in Parts I, III, and VI of this statement.)

STATEMENT OF CURRENT MONTHLY INCOME AND MEANS TEST CALCULATION

FOR USE IN CHAPTER 7 ONLY

In addition to Schedules I and J, this statement must be completed by every individual Chapter 7 debtor, whether or not filing jointly, whose debts are primarily consumer debts. Joint debtors may complete one statement only.

Part I. EXCLUSION FOR DISABLED VETERANS

1	If you are a disabled veteran described in the Veteran's Declaration in this Part I, (1) check that box at the beginning of the Veteran's Declaration, (2) check the box for "The presumption does not arise" at the top of this statement, and (3) complete the verification in Part VIII. Do not complete any of the remaining parts of this statement. ☐ **Veteran's Declaration.** By checking this box, I declare under penalty of perjury that I am a disabled veteran (as defined in 38 U.S.C. § 3741(1)) whose indebtedness occurred primarily during a period in which I was on active duty (as defined in 10 U.S.C. § 101(d)(1)) or while I was performing a homeland defense activity (as defined in 32 U.S.C. §901(1)).

Part II. CALCULATION OF MONTHLY INCOME FOR § 707(b)(7) EXCLUSION

		Column A Debtor's Income	Column B Spouse's Income
2	**Marital/filing status.** Check the box that applies and complete the balance of this part of this statement as directed. a. ■ Unmarried. **Complete only Column A ("Debtor's Income") for Lines 3-11.** b. ☐ Married, not filing jointly, with declaration of separate households. By checking this box, debtor declares under penalty of perjury: "My spouse and I are legally separated under applicable non-bankruptcy law or my spouse and I are living apart other than for the purpose of evading the requirements of § 707(b)(2)(A) of the Bankruptcy Code." **Complete only column A ("Debtor's Income") for Lines 3-11.** c. ☐ Married, not filing jointly, without the declaration of separate households set out in Line 2.b above. **Complete both Column A ("Debtor's Income") and Column B ("Spouse's Income") for Lines 3-11.** d. ☐ Married, filing jointly. **Complete both Column A ("Debtor's Income") and Column B ("Spouse's Income") for Lines 3-11.**		
3	Gross wages, salary, tips, bonuses, overtime, commissions.	$	
4	Income from the operation of a business, profession or farm. Subtract Line b from Line a and enter the difference on Line 4. Do not enter a number less than zero. **Do not include any part of the business expenses entered on Line b as a deduction in Part V.** a. Gross receipts — $ — Debtor — Spouse b. Ordinary and necessary business expenses — $ — Debtor — Spouse c. Business income — Subtract Line b from Line a	$	
5	Rents and other real property income. Subtract Line b from Line a and enter the difference on Line 5. Do not enter a number less than zero. **Do not include any part of the operating expenses entered on Line b as a deduction in Part V.** a. Gross receipts — $ — Debtor — Spouse b. Ordinary and necessary operating expenses — $ — Debtor — Spouse c. Rental income — Subtract Line b from Line a	$	
6	Interest, dividends, and royalties.	$	
7	Pension and retirement income.	$	
8	Regular contributions to the household expenses of the debtor or the debtor's dependents, including child or spousal support. Do not include contributions from the debtor's spouse if Column B is completed.	$	

Appendix Table 2 Form 22C Means Test Calculation for Chapter 13 Debtors

First page of Form 22C. This form is required for Chapter 13 filers and provides the means test calculation since it determines the payment plan. The form is submitted through PACER.

5/11/09 3:07PM

B22C (Official Form 22C) (Chapter 13) (01/08)

In re _____ Debtor(s)

Case Number: _____ (If known)

According to the calculations required by this statement:
☐ **The applicable commitment period is 3 years.**
■ **The applicable commitment period is 5 years.**
■ **Disposable income is determined under § 1325(b)(3).**
☐ **Disposable income is not determined under § 1325(b)(3).**
(Check the boxes as directed in Lines 17 and 23 of this statement.)

CHAPTER 13 STATEMENT OF CURRENT MONTHLY INCOME AND CALCULATION OF COMMITMENT PERIOD AND DISPOSABLE INCOME

In addition to Schedules I and J, this statement must be completed by every individual chapter 13 debtor, whether or not filing jointly. Joint debtors may complete one statement only.

	Part I. REPORT OF INCOME		
1	**Marital/filing status.** Check the box that applies and complete the balance of this part of this statement as directed. a. ■ Unmarried. **Complete only Column A ("Debtor's Income") for Lines 2-10.** b. ☐ Married. **Complete both Column A ("Debtor's Income") and Column B ("Spouse's Income") for Lines 2-10.**		
	All figures must reflect average monthly income received from all sources, derived during the six calendar months prior to filing the bankruptcy case, ending on the last day of the month before the filing. If the amount of monthly income varied during the six months, you must divide the six-month total by six, and enter the result on the appropriate line.	**Column A** **Debtor's Income**	**Column B** **Spouse's Income**
2	**Gross wages, salary, tips, bonuses, overtime, commissions.**	$	
3	**Income from the operation of a business, profession, or farm.** Subtract Line b from Line a and enter the difference in the appropriate column(s) of Line 3. If you operate more than one business, profession or farm, enter aggregate numbers and provide details on an attachment. Do not enter a number less than zero. **Do not include any part of the business expenses entered on Line b as a deduction in Part IV.**		
	a. Gross receipts — Debtor $; Spouse		
	b. Ordinary and necessary business expenses — Debtor $; Spouse		
	c. Business income — Subtract Line b from Line a	$	
4	**Rents and other real property income.** Subtract Line b from Line a and enter the difference in the appropriate column(s) of Line 4. Do not enter a number less than zero. **Do not include any part of the operating expenses entered on Line b as a deduction in Part IV.**		
	a. Gross receipts — Debtor $ **0.00** ; Spouse $		
	b. Ordinary and necessary operating expenses — Debtor $ **0.00** ; Spouse $		
	c. Rent and other real property income — Subtract Line b from Line a	$	
5	**Interest, dividends, and royalties.**	$	
6	**Pension and retirement income.**	$	
7	**Any amounts paid by another person or entity, on a regular basis, for the household expenses of the debtor or the debtor's dependents, including child support paid for that purpose.** Do not include alimony or separate maintenance payments or amounts paid by the debtor's spouse.	$	
8	**Unemployment compensation.** Enter the amount in the appropriate column(s) of Line 8. However, if you contend that unemployment compensation received by you or your spouse was a benefit under the Social Security Act, do not list the amount of such compensation in Column A or B, but instead state the amount in the space below:		
	Unemployment compensation claimed to be a benefit under the Social Security Act — Debtor $; Spouse $	$	

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Appendix Table 3 Test of Discontinuities in Pretreatment Deductions and Expenses

This table reports the estimates of the test for the balance of deductions and expenses allowed by the IRS across the threshold. Total expenses comprise standard predetermied expenses allowed under IRS such as: food, personal care, transportation, housing, health care among others. Deductions for debt comprise future payments on secured claims. Additional Expenses comprise other necessary expenses not included by the IRS and must be actual, reasonable, necessary and documented. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff, the running variable is the difference between monthly disposable income and the respective threshold the debtor faces. Table entries are local linear regression estimates with a rectangular kernel of discontinuities in pretreatment covariates around the different cutoffs provided by law. Neighborhood is the distance from the respective cutoffs (bandwidth). Each cell represents a separate regression with baseline covariates as the dependent variable and the threshold crossing variable. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate the p-values of 1%, 5%, and 10%, respectively.

	Pooled cutoff	
Running variable	Disposable Income	
Neighborhood	50	60
Ln Total Deductions	0.043	0.044
	(0.049)	(0.047)
Ln Total Expenses	0.086	0.071
	(0.070)	(0.069)
Ln Deductions for Debt	-0.056	-0.061
	(0.051)	(0.049)
Ln Additional Expenses	0.021	0.017
	(0.035)	(0.028)

Appendix Table 4 Chapter 7 and Debtors' Post-Filing Outcomes Cutoff 2 and 3

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on post-filing investment decisions, financial distress events and miscellaneous outcomes. In the second and third cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces, as Figure 7 describes. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

	Second cutoff				
Running variable	Disposable Income				
Neighborhood	50	50	60	60	60
Investment decisions					
New real property (3-year)	0.342*	0.338*	0.337*	0.340*	0.327*
	(0.187)	(0.187)	(0.198)	(0.198)	(0.180)
New real property (6-year)	0.431*	0.452*	0.385*	0.400*	0.449*
	(0.239)	(0.242)	(0.222)	(0.239)	(0.271)
Start a Business (3-year)	0.182*	0.195*	0.180*	0.192*	0.238*
	(0.088)	(0.104)	(0.085)	(0.100)	(0.123)
Start a Business (6-year)	0.116*	0.125*	0.123*	0.131*	0.101*
	(0.067)	(0.073)	(0.072)	(0.069)	(0.057)
Financial Distress Events					
Home foreclosure (3-year)	-0.563*	-0.581*	-0.633**	-0.649**	-0.471*
	(0.312)	(0.309)	(0.307)	(0.301)	(0.261)
Home foreclosure (6-year)	-0.663**	-0.679**	-0.684**	-0.699**	-0.510*
	(0.301)	(0.297)	(0.322)	(0.319)	(0.270)
Judgment Lien (3-year)	-0.568**	-0.585**	-0.553**	-0.570**	-0.526*
	(0.274)	(0.276)	(0.264)	(0.270)	(0.306)
Judgment Lien (6-year)	-0.502**	-0.527**	-0.519**	-0.530**	-0.461*
	(0.230)	(0.211)	(0.209)	(0.210)	(0.243)
Future Bankruptcy	-0.208	-0.211	-0.176	-0.167	-0.186
	(0.133)	(0.137)	(0.128)	(0.132)	(0.126)
Miscellaneous Outcome					
Mortality (3 year)	-0.088	-0.079	-0.086	-0.079	-0.060
	(0.071)	(0.064)	(0.071)	(0.067)	(0.087)
Mortality (6-year)	-0.084	-0.073	-0.018	-0.027	-0.035
	(0.073)	(0.068)	(0.076)	(0.066)	(0.094)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Appendix Table 4 (Continued)

	Third cutoff				
Running variable	Disposable Income				
Neighborhood	50	50	60	60	60
Investment decisions					
New real property (3-year)	0.108**	0.101**	0.149**	0.152**	0.131*
	(0.051)	(0.046)	(0.073)	(0.075)	(0.075)
New real property (6-year)	0.225**	0.224**	0.247**	0.253**	0.209**
	(0.103)	(0.105)	(0.097)	(0.100)	(0.099)
Start a Business (3-year)	0.110*	0.131*	0.094**	0.118**	0.108*
	(0.062)	(0.072)	(0.044)	(0.056)	(0.060)
Start a Business (6-year)	0.128*	0.154*	0.113**	0.141**	0.090*
	(0.077)	(0.089)	(0.049)	(0.065)	(0.051)
Financial Distress Events					
Home foreclosure (3-year)	-0.498*	-0.524*	-0.504*	-0.512*	0.442*
	(0.292)	(0.293)	(0.304)	(0.300)	(0.245)
Home foreclosure (6-year)	-0.583**	-0.594**	-0.663**	-0.668**	0.497**
	(0.286)	(0.288)	(0.307)	(0.306)	(0.233)
Judgment Lien (3-year)	-0.301*	-0.306*	-0.333**	-0.343**	-0.301**
	(0.170)	(0.172)	(0.163)	(0.165)	(0.146)
Judgment Lien (6-year)	-0.508***	-0.514***	-0.533***	-0.545***	-0.541***
	(0.191)	(0.194)	(0.185)	(0.187)	(0.212)
Future Bankruptcy	-0.102	-0.118	-0.077	-0.092	-0.026
	(0.170)	(0.163)	(0.172)	(0.166)	(0.194)
Miscellaneous Outcome					
Mortality (3 year)	-0.106	-0.106	-0.099	-0.099	-0.121
	(0.076)	(0.074)	(0.071)	(0.069)	(0.082)
Mortality (6-year)	-0.018	-0.018	-0.029	-0.028	-0.017
	(0.091)	(0.090)	(0.085)	(0.084)	(0.097)
Specification	Linear	Linear	Linear	Linear	Quadratic
Covariates and Year FE	N	Y	N	Y	Y

Appendix Table 5 Impact by Debtor Characteristic

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection by baseline characteristics: marital status, age and household size. Local linear regression estimates with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Heteroskedasticity-robust standard errors in parentheses.***, **, and * indicate p-values of 1%, 5%, and 10%, respectively.

Panel A	First cutoff					
Debtor's Characteristics	Married	Single	Age<=40	Age>40	Size<=2	Size>2
Neighborhood	6,000					
Investment decisions						
New real property (3-year)	-0.088	0.387	-0.303	0.333*	0.325	0.056
	(0.579)	(0.252)	(0.687)	(0.201)	(0.316)	(0.300)
New real property (6-year)	-0.816	0.526*	-0.017	0.126	0.522	-0.356
	(0.859)	(0.297)	(0.741)	(0.229)	(0.395)	(0.377)
Start a Business (3-year)	0.149	0.261**	0.542*	0.077	0.244*	0.093
	(0.157)	(0.113)	(0.324)	(0.104)	(0.147)	(0.101)
Start a Business (6-year)	0.093	0.243*	0.552*	-0.002	0.309*	0.058
	(0.172)	(0.124)	(0.330)	(0.117)	(0.166)	(0.113)
Financial Distress Events						
Home foreclosure (3-year)	-0.083	-0.221	0.644	-0.553	-0.092	-0.406
	(0.989)	(0.367)	(0.954)	(0.362)	(0.518)	(0.507)
Home foreclosure (6-year)	-0.500	-0.226	0.650	-0.812*	-0.148	-0.720
	(1.074)	(0.408)	(0.989)	(0.415)	(0.575)	(0.546)
Judgment liens (3-year)	-0.886*	-0.252	-0.773	-0.649**	-0.965**	-0.091
	(0.512)	(0.286)	(0.809)	(0.330)	(0.491)	(0.324)
Judgment liens (6-year)	-0.923	-0.413	-0.847	-0.831**	-0.835*	-0.260
	(0.603)	(0.329)	(0.914)	(0.372)	(0.503)	(0.349)
Future Bankruptcy	-0.790**	-0.273	-0.844	-0.824***	-0.972**	-0.577*
	(0.322)	(0.203)	(0.573)	(0.292)	(0.417)	(0.342)
Miscellaneous Outcome						
Mortality (3 year)	0.601	-0.086	0.499	-0.039	-0.022	0.260
	(0.442)	(0.115)	(0.361)	(0.137)	(0.179)	(0.163)
Mortality (6-year)	0.515	-0.034	0.432	-0.008	0.009	0.241
	(0.426)	(0.134)	(0.347)	(0.157)	(0.208)	(0.173)
Covariates and Year FE	N	N	N	N	N	N

Appendix Table 5 (Continued)

Panel B	Pooled cutoff					
Debtor's Characteristics	Married	Single	Age<=40	Age>40	Size<=2	Size>2
Neighborhood			60			
Investment decisions						
New real property (3-year)	0.158	0.259**	0.553**	0.077	0.114	0.340*
	(0.113)	(0.124)	(0.267)	(0.089)	(0.101)	(0.183)
New real property (6-year)	0.239*	0.125	0.744**	0.023	0.051	0.549**
	(0.142)	(0.162)	(0.312)	(0.116)	(0.112)	(0.235)
Start a Business (3-year)	0.028	0.182*	0.043	0.059*	0.135**	0.028
	(0.077)	(0.105)	(0.045)	(0.032)	(0.063)	(0.029)
Start a Business (6-year)	0.028	0.216*	0.072	0.101*	0.153**	-0.023
	(0.077)	(0.113)	(0.056)	(0.055)	(0.066)	(0.114)
Financial Distress Events						
Home foreclosure (3-year)	-0.702**	-0.602	-0.463	-0.658**	-0.266	-0.837*
	(0.287)	(0.491)	(0.811)	(0.289)	(0.277)	(0.507)
Home foreclosure (6-year)	-0.568*	-0.797	-0.689	-0.698**	-0.397	-0.782
	(0.317)	(0.657)	(0.923)	(0.299)	(0.363)	(0.599)
Judgment Lien (3-year)	-0.243*	-0.087	0.292	-0.571***	-0.353**	-0.344
	(0.128)	(0.082)	(0.314)	(0.180)	(0.143)	(0.322)
Judgment Lien (6-year)	-0.504**	-0.317	0.181	-0.718***	-0.385**	-0.575*
	(0.241)	(0.258)	(0.362)	(0.203)	(0.169)	(0.349)
Future Bankruptcy	-0.103	0.107	0.189	-0.118	-0.175	0.0745
	(0.179)	(0.181)	(0.252)	(0.131)	(0.139)	(0.217)
Miscellaneous Outcomes						
Mortality (3 year)	-0.095	-0.075	-0.005	-0.102*	-0.071	-0.090
	(0.073)	(0.071)	(0.009)	(0.060)	(0.053)	(0.103)
Mortality (6-year)	-0.025	-0.083	0.046	-0.029	-0.026	-0.001
	(0.085)	(0.073)	(0.069)	(0.075)	(0.066)	(0.121)
Covariates and Year FE	N	N	N	N	N	N

Appendix Table 6 Chapter 7 and Debtors' Post-Filing Outcomes Excluding States that Ban Wage Garnishment

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on post-filing investment decisions and financial distress events excluding those filers in Texas, Pennsylvania, South Carolina, and North Carolina where wage garnishment is banned. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. The pooled specifications include thresholds indicator. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. Local linear regression estimates with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff				Pooled cutoff			
Running variable	AGMI				Disposable Income			
Neighborhood	5,000	5,000	6,000	6,000	50	50	60	60
Investment decisions								
New real property (3-year)	0.192	0.187	0.168	0.161	0.279***	0.260***	0.233**	0.224***
	(0.233)	(0.229)	(0.247)	(0.244)	(0.097)	(0.089)	(0.093)	(0.086)
New real property (6-year)	0.109	0.099	0.114	0.101	0.278**	0.247**	0.245**	0.225**
	(0.265)	(0.262)	(0.283)	(0.280)	(0.116)	(0.107)	(0.111)	(0.103)
Start a Business (3-year)	0.193**	0.200**	0.207*	0.217**	0.077**	0.080**	0.080**	0.084**
	(0.092)	(0.093)	(0.106)	(0.109)	(0.039)	(0.040)	(0.039)	(0.040)
Start a Business (6-year)	0.175*	0.205*	0.193**	0.223**	0.144*	0.163**	0.148**	0.165**
	(0.097)	(0.112)	(0.101)	(0.113)	(0.076)	(0.082)	(0.075)	(0.082)
Financial Distress Events								
Home foreclosure (3-year)	-0.367	-0.380	-0.322	-0.319	-0.497*	-0.485**	-0.536*	-0.510**
	(0.525)	(0.522)	(0.443)	(0.445)	(0.261)	(0.236)	(0.282)	(0.244)
Home foreclosure (6-year)	-0.756	-0.770	-0.644	-0.646	-0.564*	-0.582**	-0.605**	-0.613**
	(0.579)	(0.579)	(0.481)	(0.485)	(0.289)	(0.277)	(0.309)	(0.304)
Judgment Lien (3-year)	-0.664**	-0.678**	-0.649**	-0.657**	-0.395***	-0.437***	-0.369**	-0.407**
	(0.331)	(0.333)	(0.324)	(0.331)	(0.152)	(0.166)	(0.151)	(0.165)
Judgment Lien (6-year)	-0.749**	-0.728**	-0.728**	-0.693**	-0.562***	-0.555***	-0.551***	-0.545***
	(0.384)	(0.362)	(0.380)	(0.343)	(0.203)	(0.190)	(0.201)	(0.189)
Future Bankruptcy	-0.689***	-0.712***	-0.680***	-0.701***	-0.169	-0.168	-0.172	-0.172
	(0.223)	(0.215)	(0.223)	(0.215)	(0.130)	(0.131)	(0.127)	(0.127)
Specification	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Covariates and Year FE	N	Y	N	Y	N	Y	N	Y

Appendix Table 7 Debtors' Post-Filing Outcomes for Those Who Filed Before and During the Great Recession

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on post-filing investment decisions and financial distress events by cohort. The first cohort comprises the sub-sample of debtors who filed for bankruptcy before the financial crisis (2006-2007). The second cohort comprises debtors who filed during the financial crisis (2008-2009). In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome by cohort as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year. New Property comprises the acquisition of a new real property by the filer. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator variable for any business registered in public records by the debtor post-filing. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff			Pooled cutoff		
Running variable	AGMI			Disposable Income		
Neighborhood / p-value	6,000		p-value	60		p-value
Investment decisions						
New real property (6-year)	0.098	0.233	0.558	0.228**	0.198**	0.521
	(0.196)	(0.370)		(0.110)	(0.100)	
Start a Business (6-year)	0.196**	0.256*	0.589	0.212*	0.144*	0.225
	(0.099)	(0.158)		(0.110)	(0.075)	
Financial Distress Events						
Home foreclosure (6-year)	-0.318	-0.545	0.617	-0.685*	-0.615*	0.850
	(0.336)	(0.593)		(0.391)	(0.338)	
Judgment Lien (6-year)	-0.666**	-0.660**	0.740	-0.567**	-0.470**	0.630
	(0.335)	(0.331)		(0.232)	(0.194)	
Future Bankruptcy	-0.650***	-0.809**	0.463	-0.126	-0.159	0.794
	(0.188)	(0.318)		(0.153)	(0.117)	
Cohort	2006-2007	2008-2009		2006-2007	2008-2009	
Specification	Linear	Linear		Linear	Linear	
Covariates and Year FE	Y	Y		Y	Y	

Appendix Table 8 Chapter 7 and New Homeowners

This table reports the fuzzy RD estimates of Chapter 7 bankruptcy protection on new homeowners. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Local linear regression estimates a with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First Cutoff				Pooled			
Running variable	AGMI				Disposable Income			
Neighborhood	5,000	5,000	6,000	6,000	50	50	60	60
New Homeowners (3-year)	-0.118	-0.132	-0.106	-0.119	0.123**	0.122**	0.112**	0.111**
	(0.159)	(0.154)	(0.159)	(0.154)	(0.056)	(0.055)	(0.053)	(0.052)
New Homeowners (6-year)	-0.068	-0.082	-0.058	-0.072	0.161**	0.162**	0.148**	0.149**
	(0.176)	(0.170)	(0.174)	(0.169)	(0.063)	(0.063)	(0.060)	(0.060)
Specification	Linear	Linear	Linear	Linear	Linear	Linear	Linear	Linear
Covariates and Year FE	N	Y	N	Y	N	Y	N	Y

Appendix Table 9 Wage Garnishment Regulations and Debtors' Post-Filing Outcomes

This table presents the fuzzy RD estimates of Chapter 7 bankruptcy protection by level of wage garnishment. States with low wage garnishment are those which ban wage garnishment or preserve at least 90 percent of debtors' wages. In the first cutoff the running variable is the difference between the Average Gross Monthly Income (AGMI) and the state median income based on household size. The pooled cutoff combines the second and third cutoffs, as Figure 7 describes. In the pooled cutoff the running variable is the difference between monthly disposable income and the respective threshold that debtor faces. The pooled specifications include thresholds indicator. Local linear regression estimates with rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Home foreclosure is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to a REO or a guarantor on or before the indicated year. New property is an indicator variable which takes a value equals one if the filer acquires a new real property. Judgment Lien is an indicator variable if debtor receives at least one lien. It includes tax liens, hospital liens, and judicial liens. Start a Business is an indicator if the filer registers a fictitious business. Covariates include age at filing, household size and marital status. Neighborhood is the distance from respective cutoff. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	First cutoff		Pooled cutoff	
Level of wage garnishment	Low	High	Low	High
Neighborhood	6,000	6,000	60	60
Investment Decisions				
New real property (3-year)	0.058	0.062	0.173	0.253**
	(0.487)	(0.259)	(0.147)	(0.123)
New real property (6-year)	0.101	0.200	0.174	0.205*
	(0.610)	(0.313)	(0.179)	(0.120)
Start a Business (3-year)	0.192	0.298**	0.021	0.085*
	(0.168)	(0.137)	(0.047)	(0.048)
Start a Business (6-year)	0.280	0.244*	0.044	0.211*
	(0.206)	(0.148)	(0.050)	(0.123)
Financial Distress Events				
Home foreclosure (3-year)	-0.179	-0.333	-0.180	-0.429***
	(0.696)	(0.559)	(0.315)	(0.166)
Home foreclosure (6-year)	-0.120	-0.613	-0.246	-0.567**
	(0.739)	(0.621)	(0.344)	(0.260)
Judgment Lien (3-year)	-0.119	-0.849**	-0.261	-0.423**
	(0.604)	(0.404)	(0.256)	(0.180)
Judgment Lien (6-year)	-0.599	-0.834*	-0.185	-0.586***
	(0.702)	(0.441)	(0.276)	(0.209)
Future Bankruptcy	-0.472	-0.770***	-0.049	-0.157
	(0.308)	(0.280)	(0.208)	(0.128)
Covariates and Year FE	Y	Y	Y	Y

Appendix Table 10 Chapter 7 and Harassment

This table presents the fuzzy RD estimates of Chapter 7 bankruptcy protection and debtors pots-filing outcomes. Local linear regression estimates with a rectangular kernel. Each cell represents a separate regression with debtor's ex-post outcome as the dependent variable and the indicator variable of Chapter 7 protection. Covariates include age at filing, household size and marital status. Heteroskedasticity-robust standard errors in parentheses. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

Running Variable	First cutoff AGMI	Pooled cutoff Disposable Income
Neighborhood	6,000	60
Total phone numbers	-1.112	-0.760
	(1.141)	(1.066)
Total number of addresses	-1.652	-0.654
	(1.595)	(0.732)
Covariates and Year FE	Y	Y

Appendix Table 11 Compliance by Marital Status and Age

This table presents characteristics of compliers, following Angrist and Pischke (2008). Column 1 reports the distribution of the full sample by marital status and age, $P(X = x)$. Column 2 shows the first-stage estimates for each marital status and age group. Column 3 reports the distribution of compliers by marital status and age, $P(X = x \mid I_1 > I_0)$, calculated as (first-stage estimate for the marital status–age group × sample share) divided by the overall first-stage estimate. Column 4 shows the relative likelihood of a filer belonging to a particular marital status–age group, in the complier group compared to the full sample.

Panel A: First cutoff	$P(X = x)$	First Stage	$P(X = x \mid I_1 > I_0)$	$\frac{P(X=x\|I_1>I_0)}{P(X=x)}$
Married				
Age at Filing <=40	0.214	0.017	0.047	0.219
Age at Filing >40	0.271	0.079	0.272	1.003
Not Married				
Age at Filing <=40	0.210	0.078	0.207	0.986
Age at Filing >40	0.304	0.123	0.474	1.557

Panel B: Pooled cutoff	$P(X = x)$	First Stage	$P(X = x \mid I_1 > I_0)$	$\frac{P(X=x\|I_1>I_0)}{P(X=x)}$
Married				
Age at Filing <=40	0.205	0.082	0.042	0.207
Age at Filing >40	0.343	0.518	0.448	1.308
Not Married				
Age at Filing <=40	0.142	0.508	0.182	1.283
Age at Filing >40	0.311	0.417	0.327	1.053

7 Variable Definitions

All variables are measured three years and six years post-filing.

New Real Property: It is an indicator variable equal to one if there is a registry that records the individual acquires a real estate property on or before the indicated year post-filing. New real property data is obtained from public records (LexisNexis).

Start a Business: It is an indicator variable that takes a value equal to one if there is a registry that records a business creation (i.e., fictitious business (DBA), business license, limited liability corporations) on or before the indicated year post-filing. Business creation data is obtained from public records (LexisNexis).

UCC Liens: It is an indicator variable that takes a value equal to one if there is a registry that records an UCC loans secured by fixed assets on or before the indicated year post-filing. UCC loans are loans with collateral in which a UCC-1 form was filed. This data is obtained from public records (LexisNexis).

Home Foreclosure: It is an indicator for a filer's home receiving a notice of default, receiving a notice of transfer or sale, or having been transferred to an REO or a guarantor on or before the indicated year post-filing. Foreclosure ranges from an actual sale or transfer of the home, to merely a notice that foreclosure was initiated. Foreclosure data is obtained from RealtyTrac.

Judgment Lien: It is an indicator variable that takes a value equal to one if there is a registry that records a civil or tax judgment suits on or before the indicated year post-filing. This data is obtained from public records (LexisNexis).

Future Bankruptcy: It is an indicator variable that takes a value equal to one if a debtor refiles for bankruptcy either for Chapter 7 or 13 on or before the indicated year post-filing. Chapter 7 filers can refile for bankruptcy after 8 years. While, to receive a discharge on a subsequent Chapter 13, the petitioner must wait 4 years from the date of filing the first Chapter 7. Future Bankruptcy data is obtained from public records (LexisNexis).