

# Consumer Default After the 2005 Bankruptcy Reform\*

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## Abstract

The 2005 Bankruptcy Abuse Prevention and Consumer Protection Act is the most important reform of personal bankruptcy in the United States in recent years. This law left benefits of filing for bankruptcy mostly unchanged, but increased the monetary costs of filing, both for Chapter 7 and Chapter 13 bankruptcy. Using administrative credit bureau data from a nationally representative panel, we quantify the effects of the rise in filing costs exploiting geographical variation in this increase. We show that the increase in filing costs reduced Chapter 7 bankruptcy rates by 15% for newly financially distressed borrowers, but had no statistically significant effect on Chapter 13. We argue that this differential is consistent with binding liquidity constraints driving the response to the reform. Additionally, we find that the missing Chapter 7 bankruptcies lead to an increase in long term financial distress but also a limited rise in the rate consumers return to being current, while there is no evidence of substitution from Chapter 7 bankruptcy to Chapter 13 filing or foreclosure.

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# 1 Introduction

Personal bankruptcy is a form of social insurance intended to offer relief to financially distressed consumers who are unable to repay previously contracted debt. Since personal bankruptcy was introduced in current form in the United States with the Bankruptcy Reform Act of 1978, bankruptcy rates have been rapidly rising (Livshits, MacGee, and Tertilt (2010)). This trend gave rise to numerous studies on the sources of the rise,<sup>1</sup> and generated an active policy discussion on whether the existing law might be too generous, driving consumers to borrow and default on their debt. This led to the passing of the Bankruptcy Abuse Prevention and Consumer Protection Act (BAPCPA) in 2005 with the goal of reducing the incidence of consumer default and bankruptcy. This legislation, the most comprehensive reform since 1978, tightened filing requirements and substantially increased the monetary cost of filing for bankruptcy.

The provisions in BAPCPA fall into two main categories. First, the reform imposed new restrictions on filing. It introduced an income test for Chapter 7, with the goal of channeling more filers towards Chapter 13, and made refiling more difficult for both chapters. A second set of provisions increased the time and monetary burden of filing for bankruptcy. BAPCPA raised court filing fees and mandated that filers attend compulsory credit counseling courses at their own expense. It also increased documentation requirements in bankruptcy petitions and made attorneys personally liable for inaccuracies in information reported to the court. As a result, attorney fees, which account for 75% of the monetary cost of filing for bankruptcy, rose substantially for both chapters.

The purpose of this study is to assess the impact of BAPCPA on bankruptcy filing, consumer default and other related outcomes. We can think about the effects of the reform by considering the impact that it had on the benefits and costs of filing for bankruptcy. BAPCPA had minor impact on the benefits of filing for bankruptcy, while it substantially increased the monetary costs of filing for both chapters. The mean rise in attorney fees was 42% for Chapter 7, and 37% for Chapter 13 (Lupica (2012)). Still, in terms of dollar magnitudes, this increase in costs is small relative to the potential benefit of discharging debt for most filers. However, while the average increase in costs is similar across chapters, a crucial difference between Chapter 7 and Chapter 13 filings is that attorney fees for Chapter 7 have to be paid upfront, while fees for Chapter 13 can be paid in installments during

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<sup>1</sup>Including Athreya (2002), Domowitz and Eovaldi (1993), Domowitz and Sartain (1999), Gross and Souleles (2002b), Fay, Hurst, and White (2002), Livshits, MacGee, and Tertilt (2007), Livshits, MacGee, and Tertilt (2010).

the five year repayment plan period.<sup>2</sup> This means that if a substantial fraction of potential Chapter 7 filers do not have sufficient cash on hand to pay for these fees, even a small increase in the monetary cost can lead to a large decline in filings, whereas this should not occur for Chapter 13. Additionally, any changes in the benefits of filing are federal, while both the initial level of the fees and the change associated with the reform exhibit sizable variation across U.S. bankruptcy court districts (Lupica (2012)). We use this geographical variation in the change in attorney fees associated with BAPCPA to study its impact.

Our analysis is based on anonymous administrative credit report data from a nationally representative panel of U.S. individuals from 1999 to 2013. We aggregate the data at the bankruptcy court district level to capture geographical variation of attorney fees. This approach also allows us to control for a rich set of local economic indicators. We focus on borrowers experiencing a new spell of financial distress, which is defined as an initial 120 day delinquency, derogatory account or charge-off. We examine how these borrowers transition into various mutually exclusive outcomes, such as filing for Chapter 7 or Chapter 13 bankruptcy, continuing financial distress, foreclosure, or returning to being current on all loans.

We find that larger increases in attorney fees are strongly negatively related to changes in Chapter 7 bankruptcy filings, but not to changes in Chapter 13 filings. Our estimates imply that the average increase in attorney fees reduced the transition from a new spell of financial distress to a Chapter 7 bankruptcy filing by 15% from the pre-reform mean, whereas there is no statistically significant effect for Chapter 13 filing. Since the fees for both chapters increased by similar magnitudes after the reform, this suggests that the upfront nature of the filing cost for Chapter 7 bankruptcy plays a crucial role in discouraging potential filers, which is consistent with the notion that these individuals are liquidity constrained.<sup>3</sup> We also find that the negative impact on Chapter 7 transition of the rise in attorney fees is the strongest for low credit score consumers, who have limited access to credit and typically have low income. This reinforces the notion that liquidity constraints are driving the response is consistent with the new income test for Chapter 7 filing being inconsequential.<sup>4</sup>

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<sup>2</sup>The difference between the treatment of Chapter 7 and Chapter 13 attorney fees stems from *Lamie v. United States Trustee*, 540 U.S. 526 (2004), which does not authorize compensation awards to debtors' attorneys from estate funds for Chapter 7. Given this decision, Chapter 7 filers must have cash on hand for attorney fees, since debts contracted to finance filing costs could be considered fraudulent, due to lack of intent to repay. Chapter 13 filers can pay attorney fees from the estate and Foohey, Lawless, and Thorne (2021) show that in about half of Chapter 13 cases all attorney fees were paid in the bankruptcy repayment plans.

<sup>3</sup>Mann and Porter (2009) show that borrowers tend to file for bankruptcy on paydays, while Gross, Notowidigdo, and Wang (2012) find that they file when they receive tax rebates checks.

<sup>4</sup>For a discussion of the impact of the income test, see Lawless et al. (2008), who argue that it did not

If indeed binding liquidity constraints drive the decline in Chapter 7 filings, borrowers who are not filing for bankruptcy may have very limited options for repaying or even managing their debt obligations. We provide some evidence on this by accounting for the ‘missing’ Chapter 7 bankruptcies. Newly financially distressed individuals who do not file for Chapter 7 bankruptcy can transition into the other possible states, such as Chapter 13 filing, foreclosure, continuing financial distress or returning to being current. We estimate district-level average changes in these outcomes, and then examine how they relate to the decline in Chapter 7 filings.

We find a strong negative and significant relation between the change in Chapter 7 filing rates and change in continuing financial distress and in returning to being current for borrowers entering a new spell of financial distress. Moving from the 10th to the 90th percentile of the change in the transition to Chapter 7 filing is associated with a 5% increase in the transition to continuing financial distress after one year, which is very sizable considering that the cross-district standard deviation of this transition is 5.6%. Additionally, moving from the 10th to the 90th percentile of the change in the transition to Chapter 7 filing is associated with a 3.8% increase in the transition to current, equal to approximately half of the cross-sectional dispersion of the change in this transition after the reform.

We find a positive relation between changes in transitions to Chapter 7 filing and Chapter 13 filing and foreclosure, with the change in Chapter 7 transitions accounting for roughly half of the cross-sectional dispersion of the change in the foreclosure and Chapter 13 transitions associated with the reform. This is consistent with the notion that the decline in Chapter 7 filing, by increasing the fraction of newly financially distressed borrowers who return to being current, reduces the incidence of both Chapter 13 and foreclosure.

Our analysis has implications for the design of policies regulating consumer credit and bankruptcy, as well as for theoretical modeling of consumer default. Our results suggests that BAPCPA may have contributed to increasing the size of a class of financially distressed borrowers who are not able to discharge their debts by filing for Chapter 7 bankruptcy or to return to making debt payments and thus remain in default. We attribute this effect to liquidity constraints associated with the cost of filing for bankruptcy, which were made more severe by BAPCPA following the rise in filings costs. This is consistent with other work on the role of liquidity constraints in bankruptcy filing decisions, such as Mann and Porter (2009), Gross, Notowidigdo, and Wang (2014) and Indarte (2020), that nevertheless does not directly address the role of attorney fees, and more generally with evidence on binding

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significantly affect filing decisions.

liquidity constraints.<sup>5</sup>

Our findings suggest that any policies affecting the monetary cost of filing for bankruptcy will disproportionately impact liquidity constrained borrowers, who could benefit most from the relief offered by bankruptcy. A straightforward policy prescription from our findings is that allowing consumers to pay Chapter 7 attorney fees in installments, as is the practice for Chapter 13 filers, would reduce the rate of long term financial distress. Given that BAPCPA was enacted 2 years before the start of the 2007-2009 recession, our results suggest that absent this reform, many vulnerable borrowers had to forgo debt relief during this unprecedented downturn. Auclert, Dobbie, and Goldsmith-Pinkham (2019) argue that the debt forgiveness provided by the U.S. consumer bankruptcy system during the Great Recession helped stabilize employment levels during this episode, suggesting that the curtailment of debt relief associated with BAPCPA may also have adversely impacted aggregate economic performance.

Our work also has implications for the theoretical literature on consumer default. Standard models equate default with bankruptcy and do not incorporate the liquidity constraints associated with bankruptcy filing (Chatterjee et al. (2007), Livshits, MacGee, and Tertilt (2007) and Mitman (2016)). As we show, only a small fraction of consumers who default on their debts transition into bankruptcy, while the others do not obtain debt discharge. Our analysis suggests that incorporating monetary costs of bankruptcy, liquidity constraints, and default without debt relief would allow them to offer a more accurate assessment of the welfare implications of incomplete insurance.

Finally, our paper contributes to the literature studying the effects of BAPCPA. Li, White, and Zhu (2011a) find that, by worsening the bankruptcy option for homeowners, BAPCPA increased foreclosure rates. Chakrabarti and Pattison (2019) find that the elimination of auto loan 'cramdowns' under Chapter 13 reduced interest rates on auto loans. Gross et al. (2021) estimate the causal impact of the reform on interest rates for unsecured loans. Relative to these studies, we present evidence for the mechanism driving the decline in Chapter 7 filings resulting from BAPCPA and account for the outcomes for financially distressed borrowers who do not file.

The rest of the paper is organized as follows. Section 2 provides a short overview of the bankruptcy law in the U.S., including the changes implied by the 2005 reform. Section 3.2 reports our estimates of transition probabilities starting from the onset of financial distress. Section 3.3 describes our cross-district regression analysis. Section ?? examines

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<sup>5</sup>See, for example, Gross and Souleles (2002a), Johnson, Parker, and Souleles (2006), Parker et al. (2013) among others.

the implications for access to credit and of the inability to file for bankruptcy. Section 4 concludes.

## 2 The 2005 Bankruptcy Reform

Filing for bankruptcy protection grants borrowers who have defaulted on their debts immediate relief from collection efforts, including direct communication, lawsuits and wage garnishment orders. Then, if the bankruptcy petition is approved, some or all of their debt may be discharged. Most unsecured debt is dischargeable in bankruptcy, excluding taxes, alimony and child support obligations, student loans and debt obtained by fraud. Below, we briefly summarize the main provisions of the two filing options, Chapter 7 and Chapter 13, and the changes introduced by BAPCPA.<sup>6</sup>

Chapter 7, also called ‘fresh start’ bankruptcy, is the most popular bankruptcy option, with around 70% of filings falling under this chapter until 2005, dropping post-reform. Under Chapter 7, all of filers’ assets above certain exemption levels are used to satisfy unsecured creditors and the remaining debt is discharged.<sup>7</sup> Filers who discharge their bankruptcy carry a bankruptcy flag on their credit report for 10 years after filing. Pre-2005, Chapter 7 bankruptcy filers were not allowed to refile another Chapter 7 petition for 6 years. Under Chapter 13, filers keep all of their assets and they enter into a plan that relies on future income to repay part of their unsecured debt.<sup>8</sup> Before the 2005 reform, filers were free to choose whether to file under Chapter 7 or 13 (White (2007b)), as well as propose a repayment plan for Chapter 13, lasting 3-5 years, with the restriction that the total proposed repayment could not be lower than the value of their non-exempt assets under Chapter 7. A Chapter 13 bankruptcy is considered discharged after the debt repayment plan has been completed and Chapter 13 bankruptcy flag stays on the credit record for 7 years after discharge. Prior to BAPCPA, there were no limits to refile for Chapter 13 bankruptcy.

BAPCPA was signed into law on April 20, 2005 and applied to bankruptcy cases filed on or after October 17, 2005. It introduced several major changes to bankruptcy regulation. An income test was established to determine eligibility for filing for Chapter 7 bankruptcy,

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<sup>6</sup>For details of the bankruptcy law and a comprehensive discussion of the BAPCPA provisions, which are beyond the scope of this paper, see Gargotta (2006).

<sup>7</sup>Asset exemptions are determined at the state level. Exempt assets may include clothing, furniture, ‘tools of trade’, a vehicle up to some value. Additionally, most states have homestead exemptions, which protect equity in the primary residence up to a state specified limit.

<sup>8</sup>More debts are dischargeable under Chapter 13 than Chapter 7, including some car loans and debts incurred by fraud or cash advances shortly before filing.

requiring the filer’s income to be below the state median adjusted for family size.<sup>9</sup> BAPCPA also imposed some restrictions on the homestead exemption.<sup>10</sup> Chapter 13 filers lost the ability to propose their own repayment plans. Plans now last 5 years and are based on a notion of disposable income, that is income net of necessary expenses, which depends on family size (see White (2007b)). BAPCPA also tightened exemption rules and refiling requirements. The reform significantly increased the administrative burden of filing under both chapters. Filers are now required to submit more detailed financial information to prove their inability to pay and document good faith attempts at paying back. Bankruptcy lawyers must certify the accuracy of the information, and are held liable for the veracity of claims. In addition, the new law requires debtors to enroll in a credit counseling class before they file and a financial management course before their debts are discharged.

The expansion of documentation requirements resulting from BAPCPA increased costs for attorneys representing bankruptcy petitioners, which led to a rise in their fees. Attorney fees comprise approximately 75% of total monetary costs for Chapter 7 and 90% for Chapter 13 both pre- and post-reform and are the biggest component of filing costs (Lupica (2012)). Baseline attorney fees are in principle set by individual attorneys, but can be challenged and changed by the bankruptcy judge presiding over the particular case. They vary widely across court districts. Importantly, Chapter 7 filers must pay attorney fees upfront, whereas Chapter 13 filers can fold them in their repayment plan and pay them in installments.

For Chapter 7, we use attorney fees for no asset cases, which account for approximately 90% of all filings (Lupica (2012)). Table 1 presents descriptive statistics on the distribution of Chapter 7 attorney fees and their change after BAPCPA. These costs exhibit large cross-district variation both before and after the bankruptcy reform. The pre-reform range for Chapter 7 attorney fees was \$356 (Tennessee Middle) to \$1,920 (Florida Southern), while the post-reform range was \$538 (Washington Eastern) to \$1,581 (Georgia Southern). As shown in Lupica (2012), even controlling for state characteristics and filers’ characteristics,

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<sup>9</sup>Chapter 7 filers are required to have income below their state’s median, potentially limiting the possibility of choosing the filing chapter. Individuals who fail the income test can still file if (i) their monthly income net of allowable expenses calculated according to IRS rules is less than \$166.67 per month or (ii) their net monthly income multiplied by 60 is less than 25 percent of their unsecured debt. As an exception to that rule, individuals with business income can always file for Chapter 7. However, since borrowers who file for Chapter 7 bankruptcy pre-reform were documented to have extremely low incomes (Sullivan, Warren, and Westbrook (1994a), Sullivan, Warren, and Westbrook (2006)), it is unlikely that the income test prevented disqualified many borrowers from filing.

<sup>10</sup>First, a petitioner who moves to a new state within two years from filing must use the exemption level of the original state. Second, if a home is purchased within 1,215 days of filing, the homestead exemption is capped at \$125,000. Finally, any additional equity converted from a non-exempt asset within 1,215 days prior to filing is not exempt.

BAPCPA had a significant effect on attorney fees changes across districts. The cross-district average Chapter 7 attorney fee pre-reform was \$715 and went up to \$991 post-reform. These numbers are consistent the averages reported in the study on filing costs in Government Accountability Office (2008) which also documents that the fraction of pro se cases is only 11% for Chapter 7, and no change in the fraction of filers getting free legal advice, making the increase in the cost applicable to most filers.<sup>11</sup>

Table 1: Chapter 7 Attorney Fees

	Pre-reform	Post-reform	% Change
Mean	\$715	\$991	42%
90th percentile	\$937	\$1300	85%
75th percentile	\$797	\$1131	58%
Median	\$689	\$968	37%
25th percentile	\$608	\$813	24%
10th percentile	\$509	\$692	15%

Source: Author’s calculations based on Lupica (2012).

A similar pattern of cost increases can be seen for Chapter 13 filings, which are reported in Table 2. Since Chapter 13 cases are more complicated and usually involve working with the filer for several years to oversee the repayment plan process, the level of the costs is much higher than for Chapter 7.<sup>12</sup> The average percentage increase in Chapter 13 fees post-BAPCPA is 37%, with a wide cross-district dispersion, as for Chapter 7. The correlation between the change in Chapter 7 and Chapter 13 attorney fees associated with the reform is only 0.03, which suggests that the geographical dispersion of these changes differs substantially across the two chapters.

We take attorney fees as a proxy for bankruptcy costs and exploit their variation across court districts to provide examine the effects of BAPCPA on bankruptcy and default behavior.

<sup>11</sup>See also White (2007b) for similar conclusions based on different data sources.

<sup>12</sup>As previously noted, Chapter 13 attorney fees are folded into the filer’s repayment plan. If the borrowers fails to complete the repayment plan, the attorney will not be paid the full amount of the fees. The risk of incomplete repayment, as well as greater complexity of cases, may also account for the higher Chapter 13 fees (Lupica (2012)), Foohey et al. (2016)).



Table 2: Chapter 13 Attorney Fees

	Pre-reform	Post-reform	% Change
Mean	\$1910	\$2531	37%
90th percentile	\$2483	\$3265	78%
75th percentile	\$2245	\$2832	54%
Median	\$1847	\$2515	29%
25th percentile	\$1561	\$2141	16%
10th percentile	\$1246	\$1839	3%

Source: Author's calculations based on Lupica (2012).

## 2.1 The Economics of Bankruptcy

We now provide a simple conceptual framework to illustrate the economics of the bankruptcy filing decision. This stylized model augments the analysis in Fay, Hurst, and White (2002) and White (2007a) to examine the role of liquidity constraints in the decision to file for Chapter 7 or Chapter 13 bankruptcy.

**Chapter 7** We can express the net financial benefit from filing for Chapter 7 bankruptcy as  $NetB = D - [W - E]$ , where  $D$  is unsecured debt,  $W$  is wealth and  $E$  is the value of non-exempt assets. Accessing this net benefit requires paying an upfront filing cost  $C$ . The filing cost comprises all court and administrative fees, as well as the attorney fees. Whenever  $NetB > C$ , a consumer would gain financially from filing for Chapter 7 bankruptcy. For each combination of debt, cost and exempt asset level, this calculation implies that there is a cutoff value of wealth,  $W^*$ , such that if a household's wealth falls below it, then the household would benefit from filing for bankruptcy. Borrowers with no assets will benefit from filing, as long as their level of debt is greater than the filing cost. Post-BAPCPA, the values of exempt assets and the filing costs changed adversely for the debtor, and hence the new wealth cutoff,  $W'^*$  would be lower than pre-BAPCPA, implying fewer households would benefit from filing. However, since these adverse changes were small, they should have a limited impact on Chapter 7 filings.

The above calculation derives the net benefit from filing, but does not account for the possibility that households may not have the cash on hand to pay the upfront cost  $C$ . Let  $L$  be *liquid assets* available to a borrower, which can be thought of as net savings after covering necessary expenses such as rent, gas, food, etc. Now, for households with  $NetB > C$ , an additional condition from filing is that  $L > C$ . Liquidity constraint imply that there will be

a mass of borrowers with positive  $NetB - C$  that may not be able to file because they don't have enough liquidity.

We can now focus on the effect of an increase in the filing cost  $C$ . Given that the majority of Chapter 7 cases are no-asset cases (Lupica (2012)) and typical values of unsecured debt are on the order of \$20,000 (White (2007a), Sullivan, Warren, and Westbrook (1994a), Sullivan, Warren, and Westbrook (2006)), most of the changes in the net benefits from filing should derive from the change in cost. However, since the rise in cost, on average \$300, is small relative to the benefit, it should not have a large effect on the net benefit or filings.<sup>13</sup> However, if more borrowers face binding liquidity constraints ( $L < C$ ) at the higher cost, those consumers will now be prevented from filing despite positive net benefit. The prevailing evidence on liquidity constraints for potential bankruptcy filers (Mann and Porter (2009), Gross, Notowidigdo, and Wang (2012)) suggests that a possibly large negative effect of the increase in filing cost on Chapter 7 filings.

**Chapter 13** As discussed in White (2007a), pre-BAPCPA, filers were free to choose the chapter and propose their own Chapter 13 repayment plans, which would imply that the financial benefit from filing would be the same as for Chapter 7, but subject to higher filing costs  $C$ , which in this case can be paid over time. Post-BAPCPA, Chapter 13 filers cannot propose their own repayment plans, which are instead guided by formulas involving the amount of debt and the disposable income of the filer, which may reduce the net benefit of filing for some consumers relative to pre-reform.<sup>14</sup> Together with the rise in filings costs, BAPCPA should lead to a reduction in Chapter 13 filings. However, given that Chapter 13 filing costs can be included in the repayment plan, and the absolute change in filing cost is small relative to the amount of unsecured debt being discharged, there should be a very small effect of filing cost changes on filing behavior. Given that still a significant fraction of households do finish their repayment plans, the average differential impact of the change in Chapter 13 fees on filing incentives should still be zero if net filing benefit is positive and lawyer fees can be paid in installments. In terms of the lawyer fee increase, Lupica (2012) - our source for the data - reports that about 37% of Chapter 13 cases is dismissed but both closed dismissed and closed discharged exhibit similar magnitude of increases of total filing costs.

This analysis considers the two bankruptcy filing chapters in isolation. In practice, the

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<sup>13</sup>In 2019, the median total debt for Chapter 7 filers was \$84,907, with a median debt to income ratio of 2.5 and the median total debt for Chapter 13 filers was \$124,357, with a median debt to income ratio of 1.5 (Foohy, Lawless, and Thorne (2021)).

<sup>14</sup>For detailed discussion, see White (2007a).

decision to file for Chapter 13 may also be driven by the changing eligibility and net benefits of filing for Chapter 7. Some eligible Chapter 7 filers who are liquidity constrained may decide to file for Chapter 13 instead. This may increase the demand for Chapter 13 filing and offset and decline in filing due to higher costs.

In summary, given the limited changes in the net benefits of filing for bankruptcy on both chapters, and some incentive to switch to Chapter 13 from Chapter 7 post-reform, the framework would predict a substantial decline in Chapter 7 filings if liquidity constraints are binding for a substantial fraction of potential filers and limited effects on Chapter 13 filings.

### **3 Measuring the Effects of the Reform**

We now document the impact of BAPCPA on bankruptcy filings by chapter, as well as other outcomes. We perform our analysis at the bankruptcy court district-level, as this allows us to observe changes in filing rates over time within a geographical area with uniform bankruptcy practices. While bankruptcy law is federal, bankruptcy court districts may differ in meaningful ways in the practical implementation of bankruptcy laws, may depend on local legal culture (Braucher (1993), Sullivan, Warren, and Westbrook (1994b), Lawless and Littwin (2017)) and on the influence of bankruptcy judges who are appointed for long terms and who may vary in experience and workload, (Iverson et al. (2023)). This approach also allows us to include controls for local economic conditions that may influence bankruptcy filing rates.

#### **3.1 Data and Sample Construction**

We use the Federal Reserve Bank of New York’s Consumer Credit Panel/Equifax Data, which is an anonymous longitudinal nationally representative panel of consumers with a credit report with Equifax, which includes quarterly information for approximately 2.5 million individuals. The data is quarterly, starting in 1999:Q1 and ending in 2013:Q3 and is described in detail in Lee and van der Klaauw (2010). The data contains over 600 variables, including bankruptcy and foreclosure, various types of debt, with number of accounts and balances and missed payments. Apart from the financial information, the data contains individual descriptors such as age, ZIP code and credit score. The variables included in our analysis are described in detail in Appendix A. Bankruptcies by chapter, including filing and discharge information, are included in the data.

We focus on a sample of individuals at the onset of a new spell of financial distress. We

define borrowers as being financially distressed in a given quarter if they have an account that is 120 days or more past due, derogatory or in charge-off. A borrower enters a new spell of financial distress if they do not experience financial distress in the previous 8 quarters.<sup>15</sup> We focus on new spells of financial distress to capture adverse shocks that may have not been anticipated at the time debt was contracted and that we do not directly observe in our data.<sup>16</sup> We seek to exclude chronically delinquent borrowers whose state may depend on disability, poor financial literacy or behavioral traits such as time inconsistent preferences. In our dataset, the majority of new Chapter 7 and 13 filers experience a new spell of financial distress in the 2 quarters preceding the bankruptcy filing (55%). We calculate the fraction of individuals that transition from a new spell of financial distress to one of a mutually exclusive set of states, including Chapter 7 and Chapter 13 bankruptcy filing, continuing financial distress, foreclosure (without bankruptcy) and returning to current, all computed at a four quarter-ahead horizon.

### 3.2 Impact on Filing Rates

We start by analyzing the aggregate response of transitions from a new spell of financial distress to Chapter 7 and Chapter 13 filings. Specifically, we estimate aggregate quarter dummies for the two normalized transitions in the data, focusing on one quarter-ahead transitions to precisely capture the timing of the responses.

The regression specification is given by:

$$y_{it} = \sum_{s(t) \neq 0} \beta_{s(t)} I_{s(t)} + \gamma_i + \phi X_{it} + \epsilon_t, \quad (1)$$

where  $y_{it}$  is the transition of interest in district  $i$  at quarter  $t$  rescaled by its pre-reform mean,  $\beta_{s(t)}$  capture time effects,  $I_{s(t)}$  is an indicator for quarter  $s$ ,  $\gamma_i$  denote district effects, and  $X_{it}$  contains district-level unemployment rate, personal disposable income and an index of house prices, as well as one year log changes in those variables, to capture local economic conditions.

The estimated  $\beta_{s(t)}$  coefficients capture the timing and magnitude of the potential response to the reform. They are also able to detect the presence of any pre-existing trends.

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<sup>15</sup>Such a borrower could have accounts up to 90 days past due in the last eight quarters. We choose the 120 day cutoff since the industry definition of default is 90 days or more past due, which implies that, given that our data is quarterly, a borrower will have been in default for one whole quarter.

<sup>16</sup>Some of the common circumstances leading to bankruptcy include loss of income due to unemployment or illness, medical bills, divorce, unplanned children. See Chakravarty and Rhee (1999) and Livshits, MacGee, and Tertilt (2007) for more detail.

The first observation in our sample is 2002Q1, and the corresponding value of  $\beta_{s(0)}$  is normalized to zero, so that all other estimates can be interpreted as changes from this initial value.

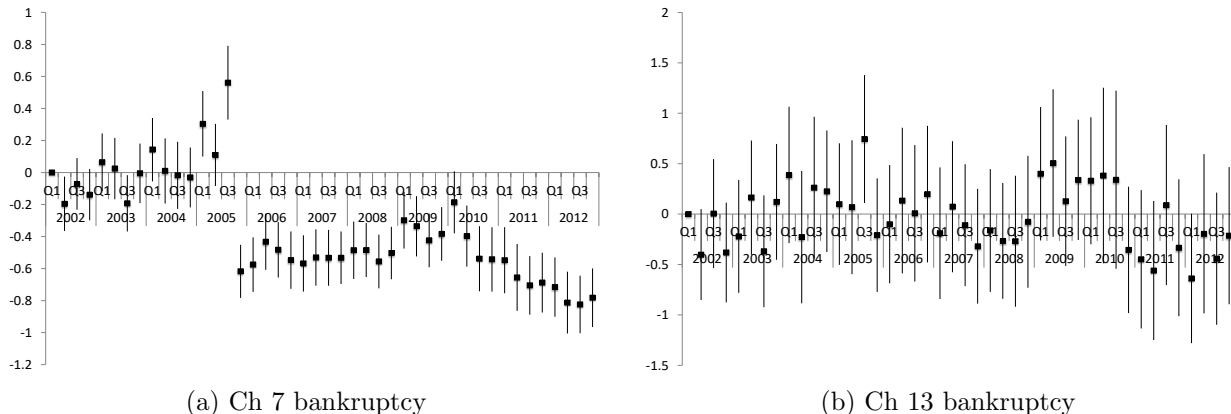


Figure 1:  $\beta_{s(t)}$  for 1 quarter ahead transition probability from a new spell of financial distress. Bars denote 90% confidence intervals. Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.

Figure 1 reports estimates of the one quarter-ahead time effects for the transitions from a new spell of financial distress to bankruptcy of each chapter. The transition into Chapter 7 bankruptcy in panel (a) displays a sizable and permanent drop of about 60% relative to the pre-reform mean for 2006-2009, which drops even further for 2010-2012. In the first half of 2005, an anticipation effect is clearly visible, as transitions into Chapter 7 filings rise by about 60% relative to 2002. There is no significant change in Chapter 13 filings associated with the introduction of the reform, as is evident from panel (b).

The findings in Figure 1 are consistent with the evidence that the ratio of Chapter 13 to Chapter 7 bankruptcies has risen post-reform (Han and Li (2011) and Zhu (2011)), and suggests that the effect on this ratio is driven by the response of Chapter 7 filings, not by Chapter 13 filings.

**Variation by Credit Score** We also estimate equation (1) for borrowers with different credit scores, reported in Appendix B.<sup>17</sup> Low credit score borrowers typically have limited access to credit (Albanesi and Vamossy (2019)). Additionally, as we document in Appendix C, credit scores are strongly positively related to income, conditional on age. This implies

<sup>17</sup>We use four quarter lagged credit score to stratify the sample, as contemporaneous credit scores are jointly endogenous with borrowing and default behavior.

that low credit score borrowers are likely liquidity constrained. We find that the decline in the rate of transition from a new spell of financial distress to Chapter 7 filing is concentrated among borrowers with credit score below the median. For borrowers with credit scores in the first quartile, the drop in the transition from a new spell of financial distress to Chapter 7 filing is 100% of the pre-reform mean, whereas it is 75% lower for borrowers in the second quartile. By contrast, for borrowers in the third and fourth quartile of the credit score distribution, we find no significant change. These results are consistent with liquidity constraints driving the response to BAPCPA, while they suggest that the income test provision of BAPCPA on Chapter 7 filing imposed by the reform is unlikely to be responsible for this drop, consistent with findings in Lawless et al. (2008).

### 3.3 Mechanism Behind the Response

We now examine the mechanism driving this response. Our hypothesis is that the differential response of Chapter 7 and Chapter 13 filing rates is driven by the rise in filing costs, and in particular the presence of binding liquidity constraints for Chapter 7 filers who need the funds to pay for the fees in advance. The rise in attorney fees associated with BAPCPA reduces the net benefit from filing for bankruptcy for both Chapter 7 and Chapter 13. However, only under Chapter 7 do the attorney fees need to be paid upfront, which implies that Chapter 7 borrowers need to have cash on hand for these fees. With binding liquidity constraints, even a small rise in attorney fees can generate a substantial reduction in filing rates for Chapter 7. However, such effect should not be present for Chapter 13 since fees can be paid in installments over the course of the repayment plan .

To relate the effects of the change in attorney fees on filing behavior, we first estimate the district-level mean change in the transitions from a new spell of financial distress to Chapter 7 and 13, while using the same set of district-level economic controls  $X_i$  as in (1). The regression equation is:

$$f_{it}^{nfd \rightarrow y} = \gamma_i + \beta_i^{nfd \rightarrow y} I_R + \phi X_{it} + \epsilon_t, \quad (2)$$

where the dependent variable  $f_{it}^{nfd \rightarrow y}$  is the fraction of borrowers who transition from a new spell of financial distress (nfd) at  $t$  to an outcome  $y$ , such as bankruptcy filing, at quarter  $t + 4$  in district  $i$ . The main independent variable  $I_R$  is an indicator for the post reform period, so that  $\gamma_i$  is the pre-reform mean of this transition rate in district  $i$  and  $\beta_i^{nfd \rightarrow y}$  is the district-specific percentage change, relative to pre-reform mean, associated with the reform. The pre-reform period comprises 2001:Q1-2005:Q3, while the post-reform

period comprises 2005:Q4-2012:Q4. Informed by the results in figure 1, we exclude quarters  $2004Q1 < t < 2006Q4$  that feature an anticipation effect and the immediate aftermath, to exclude periods affected by potential changes in the timing of filing.

Next, we relate the estimated  $\beta^{nfd \rightarrow y}$  for outcome  $y$  to the change in attorney fees:

$$\beta^{nfd \rightarrow y} = \alpha_0 + \alpha_1 \Delta c_i + J_i + R_i + \xi G_i + \chi H_i + \mu_i, \quad (3)$$

where  $\Delta c_i$  is the percentage change in average attorney fee in district  $i$ . In this regression, we control for state level variation in regulations that can affect the net benefit from filing for bankruptcy. These include dummies for whether the state has a judicial or non-judicial foreclosure regime,  $J_i$ , and dummies for whether the state has a recourse or no-recourse foreclosure regime,  $R_i$ . Additionally, we include the upper limit on wage garnishment,  $G_i$ , measured in dollars, and the dollar value of the homestead exemption limit,  $H_i$ . These state level characteristics could influence the bankruptcy filing decision, as they affect the net benefit from filing (Miller (2019), Pattison and Hynes (2020)). For example, in judicial foreclosure states, a borrower can continue residing in their home while foreclosure procedures are processed by the courts, reducing the adverse consequences of mortgage default and the incentives of filing for bankruptcy. Similarly, in no-recourse states, underwater borrowers are not liable for residual mortgage debt after a foreclosure, also reducing the benefits from filing. By contrast, a higher limit of wage garnishment increases the benefits of filing for bankruptcy under any chapter, while a higher homestead exemption increases the benefits from filing for Chapter 7.

Our two step estimation strategy first obtains the average effect of the reform at the district level using panel data, then regresses that estimated mean effect in the cross-section on the district level average attorney fee change. This approach of using a subset of estimated effects in the second stage is relatively common in the literature, used for example in Feenstra and Hanson (1999), Gaston and Trefler (1995) or Haskel and Slaughter (2003). Our two step approach of equation (2) and (3) is a case of generated dependent variable (i.e. *regressand*), and introduces measurement error into the dependent variable. This implies an overstated standard error and biases hypothesis testing towards accepting the null that the coefficient in the second stage is zero, as noted in the papers above.

Table 13, panel A, reports the estimated coefficient  $\alpha_1$ , for transitions from new spell of financial distress to Chapter 7 and 13 and Figure 2 presents the corresponding bin scatterplots. The estimates for Chapter 7 indicate a strong negative relationship between the change in fees and the change in mean Chapter 7 flows from new spell of financial distress

across districts. The estimated coefficient implies that the mean change in Chapter 7 fees is associated with a reduction of Chapter 7 flows from a new spell of financial distress of 15.5 percent of the pre-reform mean. The estimate implies that moving from the 10th to the 90th percentile of the filing cost change increases the drop in transitions to Chapter 7 by 25.8 percent of the pre-reform mean.

The corresponding estimates for Chapter 13 suggests that there is no statistically significant relation between the rise in attorney fees and the change in the flows from new spell of financial distress to Chapter 13 filing associated with the reform. Since the fees for Chapter 13 increased by similar magnitudes in percentage terms as fees for Chapter 7, this is consistent with binding liquidity constraints due to the upfront nature of Chapter 7 attorney fees driving the response, consistent with the theoretical arguments in Section 2.1. This pattern is also consistent with the reduction of the flows from a new spell of financial distress to Chapter 7 filing being concentrated in the bottom half of the credit score distribution, as shown in Section 3.2.

Table 3: Effects of the Change in Attorney Fees

Panel A. Full Sample	New spell of financial distress to			
	Ch 7	Ch 13		
Change in Ch 7 Fees	-0.30 (-3.47)			
Change in Ch 13 Fees		-0.11 (-0.41)		
<i>N</i>	88	87		
Panel B. By credit score	New spell of financial distress to Ch 7			
	Quartile 1	Quartile 2	Quartile 3	Quartile 4
Change in Ch 7 Fees	-0.18 (-1.92)	-0.64 (-3.59)	0.62 (1.19)	-0.55 (-0.88)
<i>N</i>	88	88	88	77

Panel A reports estimates for the effect of the percentage change in attorney fees ( $\alpha_1$  in equation (3)), for the full sample. Panel B reports results from estimating (3) for quartiles of four quarters-lagged credit score. The dependent variable is the four-quarter transition from a new spell of financial distress to Chapter 7 in column 1 of panel A and all of panel B, and to Chapter 13 in column 2 of panel A. All regressions include regulatory controls: whether the district is subject to judicial or non-judicial foreclosure regime, dummies for recourse or non-recourse foreclosure, upper limit on wage garnishment in dollars, and the dollar value of homestead exemption. T-statistics in parentheses. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Table 3, panel B, reports estimates by quartile of the credit score distribution. There is



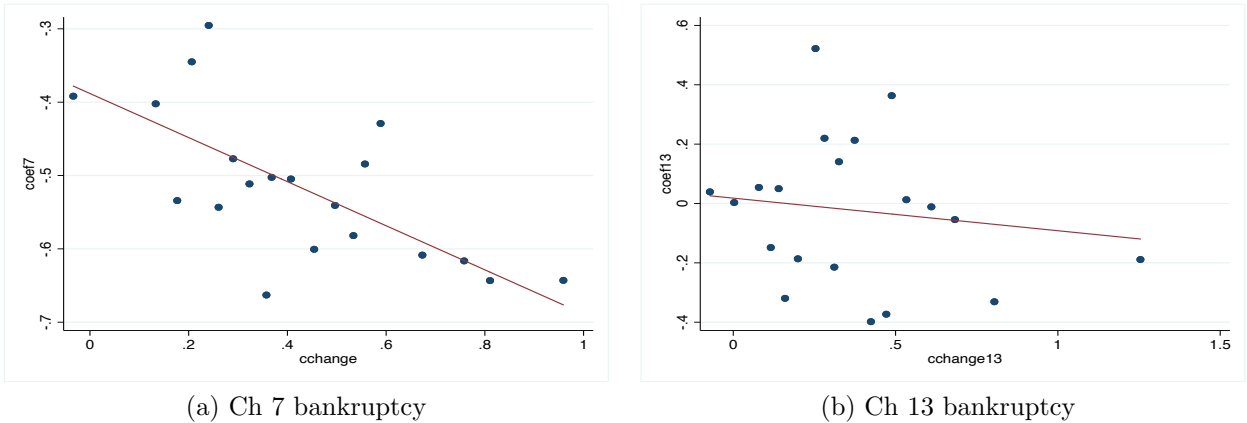


Figure 2: Bin scatter plot of estimated mean change in 4-quarter-ahead flows from spell of financial distress to bankruptcy normalized by pre-reform mean and the respective chapter’s percentage change in filing cost. Source: Authors’ calculation based on Federal Reserve Bank of New York’s Consumer Credit Panel/Equifax Data.

no significant relation between the change in attorney fees and the change in the transition rates to Chapter 7 filing for borrowers with credit score above the median. By contrast, the average increase in attorney fees reduces the transition from a new spell of financial distress to Chapter 7 filing by 7.5 percent for borrowers in the first quartile of the credit score distribution, and by 27 percent for borrowers in the second quartile. Moving from the 10th to the 90th percentile of the fee change increases the drop in Chapter 7 transition by 12.6 percent in quartile 1 and almost 45 percent in quartile 2. These findings reinforce the hypothesis that liquidity constraints are an important factor in driving the response to BAPCPA, as low credit score borrowers are most likely to be facing liquidity constraints.<sup>18</sup>

**Results by Time Period** Since the post-reform period features the 2007-2009 financial crisis and recession, we also examine the variation in the response to the reform before and during this economic downturn. The pre-recession period excludes quarters after 2007Q3, whereas the financial crisis period only includes quarters 2007Q4-2011Q1. We estimate both stages of our regression for each time period, with the results reported in Table 4. In both time periods, the relationship between the change in attorney fees and transitions to Chapter 7 bankruptcy is significant economically and statistically. Not surprisingly, the magnitude of the effect of the change in filing fees on Chapter 7 filings in the pre-recession period is smaller than during the financial crisis. In both time periods, the relation between the change in

<sup>18</sup>Littwin (2010) argues that as a result of BAPCPA there was an increase in pro-se cases from 2% in 2001 to 5.3% in 2007. However, even with this increase, pro-se cases are rare and feature low success rate.

Chapter 13 attorney fees and the the change in the transition into Chapter 13 filing is not statistically significant.

Table 4: Effects of the Change in Attorney Fees by Time Period

Sub-period	pre-recession	financial crisis
New spell of financial distress to Ch 7		
Change in Ch 7 Fees	-0.22 (-2.40)	-0.30 (-3.05)
Regulatory Controls	Y	Y
<i>N</i>	88	88
New spell of financial distress to Ch 13		
Change in Ch 13 Fees	-0.27 (-0.86)	0.13 (0.45)
Regulatory Controls	Y	Y
<i>N</i>	87	87

Estimates for the percentage change in attorney fees ( $\alpha_1$  in equation (3)). Dependent variables are the transition from a new spell of financial distress to either Chapter 7 or Chapter 13 filing at the 4Q ahead horizon. T-statistics in parentheses. Pre-recession excludes 2007Q4 onwards. Financial crisis uses 2007Q4-2011Q1. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

**Potential Endogeneity of Fee Changes** An important concern with using the filing fees as explanatory variables for the change in bankruptcy filing rates in response to BAPCPA is that the change in fees associated with the reform may be jointly endogenous with the bankruptcy rate or its change, or related to other state level characteristics. To address this concern, we examine the relation of the changes in filing fees with pre-reform economic indicators, pre-reform bankruptcy, and spells of new financial distress and foreclosure behavior at the district level, to detect possible endogeneity of the change in attorney fees.<sup>19</sup>

The results are presented in Table 12 in the Appendix. Column 1 reports estimates for the relation between attorney fee changes and the log difference between pre- and post-reform values of district-level economic indicators. We find no statistically significant relation between the change in attorney fees and changes in income, housing values, or unemployment rate at the district level. Column 2 considers the relation between pre-reform behavior and

<sup>19</sup>Lupica (2012) presents qualitative evidence that can shed some light on the determinants of the variation in attorney fees across court districts. Attorney fees in a particular district are mainly driven by the bankruptcy court's objective to enable bankruptcy attorneys to remain in the practice in the face of changing operating costs, as well as as to maintain filing affordable for borrowers. Judicial culture and custom may have very persistent effect on the level of permissible fees and the frequency with which they are adjusted over time.

the level and change in Chapter 7 filing fees. We find no statistically significant relation with district level pre-reform filing bankruptcy filing rates, spell of financial distress rates or foreclosure rates. While these findings do not categorically exclude endogeneity of attorney fees and their change in response to the reform, the estimates do not suggest that attorney fees increases are jointly endogenous with variables that could potentially influence filing decisions and filing costs. Based on these results, we maintain that the post-BAPCPA change in Chapter 7 attorney fees is plausibly exogenous.

### 3.4 Accounting for Missing Bankruptcies

We now investigate whether the decline in Chapter 7 filings after a new spell of financial distress is associated with increases in transitions to other outcomes, such as continuing financial distress, Chapter 13 filing or returning to current, which we refer to as substitution effects.

We first estimate the district-level average effect of the reform on all outcomes, while, as in (1), we control for district-level income, unemployment rate and house price index and their changes. The regression equation we estimate is:

$$f_{it}^{nfd \rightarrow y} = \gamma_i + \beta_i^{nfd \rightarrow y} I_R + \phi X_{it} + \epsilon_t, \quad (4)$$

where the variables are as in (1) and  $\beta_i^{nfd \rightarrow y}$  is the district-specific post-reform effect on flows from new spell of financial distress to outcome  $y$ . The timing of the specification is the same as for (2).

Next, we relate these estimated changes to the estimated drop in transitions to Chapter 7 bankruptcy, controlling for state level variation in regulations that potentially affect the incentives to file for bankruptcy:

$$\beta_i^{ins \rightarrow y} = \delta_0 + \delta_1 \beta_i^{nfd \rightarrow bank7} + J_i + R_i + \xi G_i + \chi H_i + \nu_i, \quad (5)$$

where the regulatory controls are as before. The estimated coefficient  $\delta_1$  captures the direction and statistical strength of the relation between the change in the transition into Chapter 7 bankruptcy, and the other transitions of interest.

In this analysis, the first stage gives the mean response of the relevant outcomes to the reform, with the regression in 4 allowing us to use control in the panel regression as opposed to simple means. As such, it mimics the case of using the mean of residuals from the first stage regression. We then use generated regressors in equation 5 to measure the effect of a

reduction of bankruptcy filing on other outcomes. As analytically derived in Pagan (1984) as well as discussed in an overview in Chen, Hribar, and Melessa (2023), in such case, standard OLS estimation does not bias the t-statistics or standard errors. We additionally ran all of our results using just pre-post mean changes and one stage regression (as in (5)), and all of our conclusions hold in such specification as well. These results are reported in Appendix E.

**Continuing Financial Distress** In Table 5, we report the estimated substitution patterns from Chapter 7 filing to continuing financial distress. Estimates of (5), presented in panel A, imply that moving from 10th to 90th percentile of the estimated drop in the transition to Chapter 7 filing is associated with an increase in the transition to continuing financial distress of 5%. These effects are very large when compared to the cross sectional standard deviation of the estimated change in the transitions from a new spell of financial distress to continuing financial distress, equal to 5.6%. This suggests that the decline in the rate at which newly insolvent individuals file for Chapter 7 bankruptcy is associated with an increase in the persistence of financial distress.

Table 5: Substitution from Chapter 7 Bankruptcy Filing to Continuing Financial Distress

Panel A. Full Sample	All Periods	pre-recession	financial crisis	
New spell of financial distress to Ch 7	-0.11 (-4.66)	-0.16 (-4.10)	-0.116 (-4.75)	
<i>N</i>	89	89	89	
Panel B. By credit score quartile	Quartile 1	Quartile 2	Quartile 3	Quartile 4
New spell of financial distress to Ch 7	-0.06 (-4.31)	-0.045 (-3.12)	-0.023 (-1.62)	0.036 (0.58)
<i>N</i>	88	88	88	77

Estimates of the coefficient  $\delta_1$  in regression equation (5). Dependent variable is the transition from a New spell of financial distress to spell of financial distress at four quarter horizon. T-statistics in parentheses. Panel A includes all post-reform time periods. Panel B reports estimates for the 4 quarter ahead transition in different post-reform time periods. Pre-recession excludes 2007Q4 onwards. Credit slump uses 2007Q4-2011Q1. Panel B reports results from estimating (5) for quartiles of four quarters-lagged credit score. All regressions include regulatory controls: whether the district is subject to judicial or non-judicial foreclosure regime, dummies for recourse or non-recourse foreclosure, upper limit on wage garnishment in dollars, and the dollar value of homestead exemption. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

We also consider how the substitution from Chapter 7 to continuing financial distress

flows varies by credit score. As shown in Panel B of Table 5, the negative relation between Chapter 7 filing and continuing financial distress is significant and robust only for the bottom 2 quartiles of the credit score distribution. The estimates are large and statistically significant for these two quartiles, while we find small and insignificant effects in quartile 3 and 4 of the credit score distribution.

**Other Outcomes** We also consider how the decline in Chapter 7 filings may have affected transitions to outcomes other than continuing financial distress, including returning to current, foreclosure, and Chapter 13 filing. We report the corresponding estimates in Table 6. The estimates are statistically significant for all outcomes.

Moving from the 10th to the 90th percentile of the estimated drop in transition from a new spell of financial distress to Chapter 7 filing is associated with a 3.8% rise in the transition from a new spell of financial distress to current, which corresponds to approximately 50% of the cross-sectional standard deviations of the changes to these transitions, equal to 7.5%.

We also find a positive relation between the change in the transition to Chapter 7 filing and the change in the transition to Chapter 13 filing and foreclosure. The magnitude of the estimated coefficients is substantial. Moving from 10th to 90th percentile in the transition to Chapter 7 filing implies a drop in the transition to Chapter 13 of 52%, relative to the standard deviation of 75%. Importantly, this implies that we do not find a substitution pattern between Chapter 7 and 13 at the district level.<sup>20</sup> Additionally, moving from the 10th to the 90th percentile in the change in transition to Chapter 7 filing is associated to a 0.86 decline of the transition into foreclosure, which has a cross-sectional dispersion of 2.

Based on these results, BAPCPA does not seem to have steered potential Chapter 7 filers to Chapter 13, as found in Cornwell and Xu (2014). The difference in findings may be due to the fact that Cornwell and Xu (2014) rely on state-level variation in the homestead exemption as the main mechanism through which BAPCPA could have induced a shift from Chapter 7 to Chapter 13. Additionally, we do not find evidence that the decline in bankruptcy filings following BAPCPA is associated with a rise in foreclosures rates, as in Morgan, Iverson, and Botsch (2009), Li, White, and Zhu (2011b) and Mitman (2016). These studies focus on the differential impact of the bankruptcy reform on foreclosures across states as a function of the homestead exemption levels. Our analysis is disaggregated at the court district level and fully accounts for the state level variation in the homestead exemptions and other regulatory

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<sup>20</sup>Foohy et al. (2016) show that Chapter 7 filers and Chapter 13 filers who pay their attorney in installments have similar income and debt profiles, suggesting that the ability to postpone fee payments may be a driver for chapter choice.

Table 6: Substitution from Chapter 7 Bankruptcy Filing

Substitution to	Current	Foreclosure	Chapter 13
New spell of financial distress to Ch 7	-0.084 (-2.23)	1.86 (1.85)	1.15 (3.10)
$N$	88	88	87

Estimates of the coefficient  $\delta_1$  in regression equation 5. Dependent variables are the transition from a New Spell of Financial distress to Current, Foreclosure and Chapter 13 filing at four quarter horizon. All regressions include regulatory controls: whether the district is subject to judicial or non-judicial foreclosure regime, dummies for recourse or non-recourse foreclosure, upper limit on wage garnishment in dollars, and the dollar value of homestead exemption. T-statistics in parentheses. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

variables. Additionally, our results are not consistent with the notion that BAPCPA may have led to a rise in foreclosures, as argued by White and Zhu (2010).

In summary, we find that BAPCPA has two main effects for consumers entering a new spell of financial distress through the associated decline in Chapter 7 filings. The first is to increase the incidence of continuing financial distress and the second is to raise the incidence of returning to current. While the contribution to the rise in continuing financial distress is substantially greater than to the rise in returning to current, it may explain why the change in Chapter 13 filings and foreclosures are positively associated with the decline in Chapter 7.

## 4 Conclusion

One of the main goals of personal bankruptcy is to provide insurance against unplanned loss of income or large expenditure shocks. Our finding that bankruptcy filings have declined mostly for liquidity constrained consumers but resulted in a substantial rise in the rate and persistence of financial distress, suggests that BAPCPA may have curtailed access to this form of insurance for these households. It also suggests that the income means test that was introduced to ameliorate possible moral hazard associated with Chapter 7 bankruptcy is not the primary driver of the reduction in Chapter 7 filings. This consequence of BAPCPA is potentially welfare reducing for households. While the increase in documentation and reporting requirements that drove the rise in attorney fees associated with BAPCPA left distributions to unsecured creditors unchanged (Lupica (2012)), given that the recovery rates for creditors from delinquent loans should be higher, the decline in Chapter 7 filing could

have induced banks and credit card companies to expand access and improve conditions for personal loans. Simkovic (2009) finds that BAPCPA reduced credit card company losses and increased their profits. However, he finds little evidence that credit conditions for consumers improved, which is also confirmed in Gross et al. (2021).

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# A Consumer Credit Panel Data and Variables

## *Transition Matrices*

We calculate transition rates across several mutually exclusive states, which we describe below.

**New Spell of Financial Distress:** An individual is in this state if they have at least one loan in their CCP report in that quarter that is 120 or more days past due, severely derogatory, or bankrupt (crtr\_attr16, crtr\_attr17, or crtr\_attr18), while not having any loans in this state in the last 8 quarters. Also, at least one of crtr\_attr13, crtr\_attr14, or crtr\_attr15 must be non-missing, and the individual must not be in a state of bankruptcy.

**Continuing Financial Distress:** An individual is in this state if they have at least one loan in their CCP report in that quarter that is 120 or more days past due, severely derogatory (crtr\_attr16, crtr\_attr17, or crtr\_attr18). Also, at least one of crtr\_attr13, crtr\_attr14, or crtr\_attr15 must be non-missing, and the individual must not be in a state of bankruptcy.

**Current:** An individual is current if they are neither delinquent nor insolvent, that is if they have no loans that are 30, 60, 90 or 120+ days past due, severely derogatory, or bankrupt (crtr\_attr13, crtr\_attr14, crtr\_attr15, crtr\_attr16, crtr\_attr17, or crtr\_attr18). Also, at least one of crtr\_attr13, crtr\_attr14, or crtr\_attr15 and one of crtr\_attr16, crtr\_attr17, or crtr\_attr18 must be non-missing, and the individual must not be in a state of bankruptcy.

**Chapter 7 Bankruptcy:** There are two scenarios in which an individual is identified as being in the state of Chapter 7 bankruptcy. First, if the individual experiences Chapter 7 bankruptcy commencement (see below). Second, if the individual enters the dataset for the first time marked with the bankruptcy flag (cust\_attr290) coded "Chapter 7 discharged" (which almost exclusively occurs at the dataset's 1999 Q1 truncation), that individual is marked as being in the state of Chapter7 bankruptcy until the flag (which is supposed to stay on for ten years after the bankruptcy's commencement) turns off. We define the commencement of Chapter 7 bankruptcy as the following pattern in cust\_attr290: the individual is marked as having filed for Chapter 7 in the present quarter.

**Chapter 13 Bankruptcy:** There are two scenarios in which an individual is identified as being in the state of Chapter 13 bankruptcy. First, if the individual experiences Chapter 13 bankruptcy commencement (see below). Second, if the individual enters the dataset for the first time marked with the bankruptcy flag (cust\_attr291) coded "Chapter 13 discharged" (which almost exclusively occurs at the dataset's 1999 Q1 truncation), that individual is marked as being in the state of Chapter13 bankruptcy until the flag turns off. We define the commencement of Chapter 13 bankruptcy as the following pattern in cust\_attr291: the individual is marked as having filed for Chapter 13 in the present quarter.

**Foreclosure:** There are two scenarios in which an individual is marked as being in the state of foreclosure. First, if the individual forecloses on a home (that is, if cma\_attr3905 switches from off ("0") to on ("1" or "7")), then that individual is marked as being in a state

of foreclosure for seven years after the date of their foreclosure. Second, if the individual enters the dataset for the first time while under foreclosure (which almost exclusively occurs at the dataset's 1999 Q1 truncation), that individual is marked as being in the state of foreclosure until the flag (which is supposed to stay on for seven years after the date of the foreclosure) turns off.

Missing: An individual's debt status is missing if the number of loans in their CCP report in that quarter that are 30, 60, or 90 days past due (crtr\_attr13, crtr\_attr14, or crtr\_attr15) are all not reported, or the number of loans that are 120+ days past due, severely derogatory, or bankrupt (crtr\_attr16, crtr\_attr17, or crtr\_attr18) are all not reported. Non-reporting occurs when Equifax does not receive enough information from the respective financial institutions to generate its credit trend variables.

### *Regressions*

The main explanatory variables in our regression analysis is the "average attorney fee by district for discharged no-asset Chapter 7 cases adjusted for inflation (including converted cases)," Table A-23 of Lupica (2012). For Chapter 13, we use average attorney fee by district for discharged Chapter 13 cases adjusted for inflation Table A - 18 in Lupica (2012).

The other covariates include:

1. Income: Annual county-level income data for 3,142 counties are drawn from the Internal Revenue Service's (IRS) Statistics of Income program, which annually aggregates household-level adjusted gross income as reported on US tax forms. We calculate income at the district level as the weighted average of the average income in counties covered by that district, using the CCP district populations as weights.

2. Unemployment Rate: Annual county-level unemployment data are drawn from the Bureau of Labor Statistics's (BLS) Local Area Unemployment Statistics program. The unemployment data are reported on a monthly basis, and they cover a total of 3,145 counties. We calculate the unemployment rate at the district level as the weighted average of the average unemployment rate in counties covered by that district, using the CCP district populations as weights.

3. House Price Index: House Price Index (HPI) values are drawn at the zip code level from the CoreLogic HPI. The CoreLogic HPI uses repeat sales transactions to track changes in sale prices for homes over time, with the January 2000 baseline receiving a value of 100, and it is the most comprehensive monthly house price index available. The CoreLogic data cover a total of 6739 zip codes (representing 58 percent of the total U.S. population) in all 50 states and the District of Columbia. We calculate the HPI at the district level as the weighted average of the average HPI in zip codes covered by that district, using the CCP district populations as weights.

4. Wage Garnishment: Wage garnishment laws specify the amount of an individual's wage that may not be garnished by judgment creditors to repay debt. States either adopt federal wage garnishment restrictions—the lesser of (a) 75 percent of the employee's disposable earnings or (b) 30 times the federal minimum wage—or adopt their own stricter restrictions.

We calculate our proxied wage garnishment covariate by estimating the wage level protected from wage garnishment under two scenarios, the minimum wage scenario and the average wage scenario. Under the minimum wage scenario, states are bound either by a multiple of the minimum wage or, in states that only designate a percentage of total income, by that percentage of estimated average income, where estimated average income is the 40-hour minimum wage over 0.298, the average ratio between 40-hour minimum wage and average income (drawn from the IRS's Statistics of Income program) across states. Under the average wage scenario, states are bound by either the designated percentage of their average wage or, in states that only specify a minimum wage, by the the designated multiple of estimated minimum wage, calculated as the average wage times 0.298. These methods rank states very similarly. We take the minimum of the two estimates as our wage garnishment covariate.

5. Judicial State Indicator: An indicator for whether the state requires that all foreclosures be judicial (where judicial states are coded as 1).

6. Recourse State Indicator: An indicator for whether the state is a recourse state regarding mortgages (where recourse states are coded as 1).

7. Homestead Exemption: Homestead exemption laws specify the maximum value of primary residences that are generally shielded from debt repayment to judgment creditors. We use homestead exemption values collected in Table 1 of Rohlin and Ross (2013), extrapolating the exemption from 1999 to 2005 Q2 as the 2004 exemption and the exemption from 2005Q3 to 2013 as the 2006 exemption.

## B Variation in Bankruptcy Filings by Credit Score

We provide further evidence of the effects of the reform by focusing on subsets of individuals according to their credit score four quarters prior to the observed new spell of financial distress. We then allocate individuals to credit score quartiles and estimate the time effects in (1) for each sub-population. The results are presented in figure 3. The effects of the reform are primarily driven by the response of individuals at the bottom of the credit score distribution 1 year prior to new insolvency (panels (a) and (b)), with no statistically significant effects for quartile 3 and very noisy effects for quartile 4 (panels (c) and (d)). In fact, the first two quartiles exhibit drops of 100 log points (Quartile 1) and 60 log points (Quartile 2) relative to pre-reform. For quartile 4, the base default rate is extremely low and hence the estimated effects are very noisy.

The variation in the response to the reform by recent credit score is important because the credit score is strongly positively related to income. We illustrate this connection using supplementary income data, merged with the Equifax panel, for 11 thousand individuals for the year 2009. For these borrowers, we observe their payroll income in 2009 and their credit record for their entire sample period. The sample for which income data is available is nationally representative. In Appendix C, we show that the income distribution in this payroll data set is very similar to CPS data on labor income by age.<sup>21</sup> To quantify the

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<sup>21</sup>We also compare the income distribution by state in our sample to data in the American Community

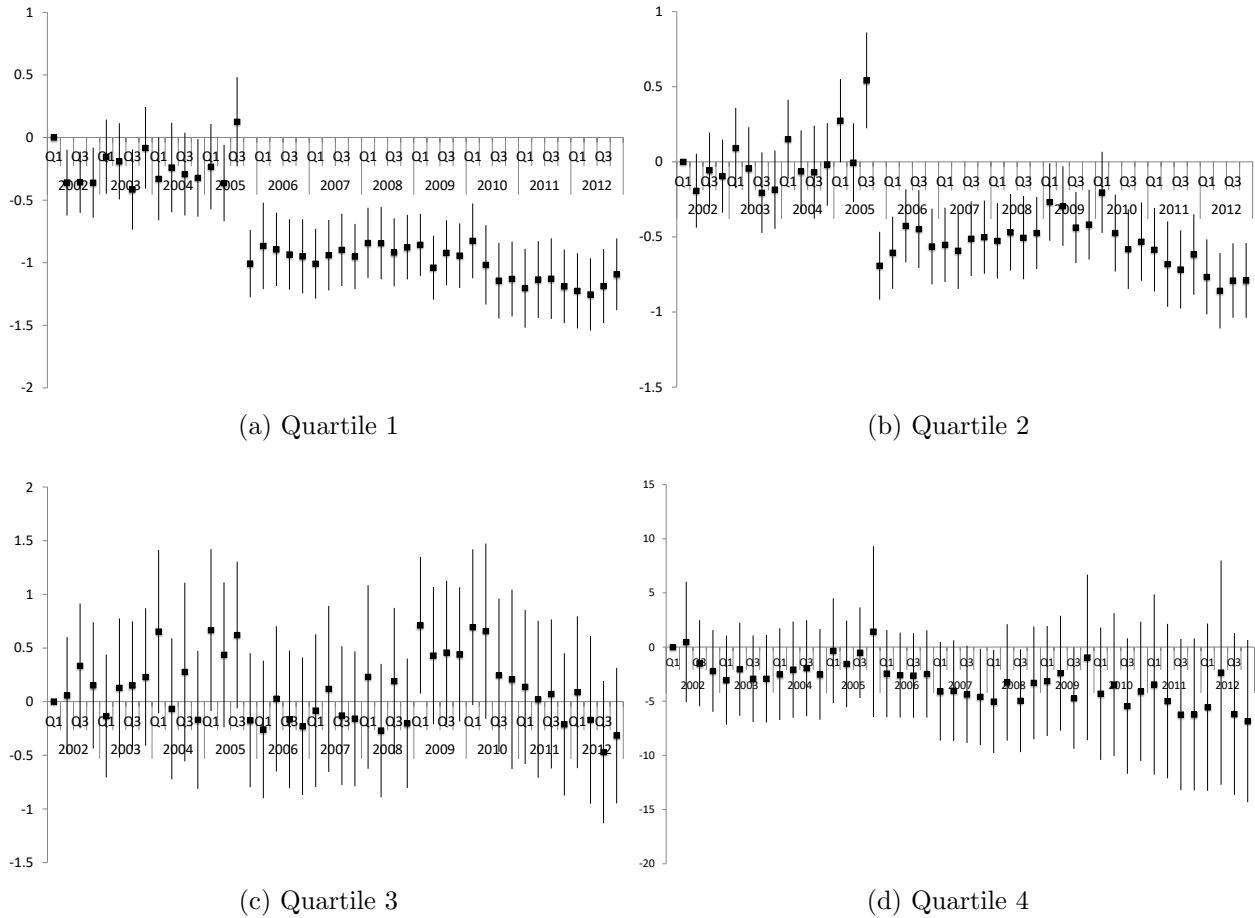


Figure 3:  $\beta_s(t)$  for 1-quarter transition from New Insolvency to Chapter 7 bankruptcy, by risk score quartile measured 1 year prior to new insolvency. Bars denote 90% confidence intervals. Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.

relation between credit score and income, we regress the Equifax Risk Score on income and age, their interaction and state fixed effects. More details on the specification are described in Appendix C. The estimation results are summarized graphically in figure ???. There is a positive relation between credit score and income at all ages, but the relation is steeper for younger borrowers. For 25 year olds, an increase in income from \$35,000 to \$50,000 is associated with an increase in the credit score from 640 to 659. For a 40 year old, an increase in income from \$50,000 to \$75,000 is associated with an increase in the credit score from 674 to 702. The positive relation between income and credit score suggests that individuals at the bottom half of the credit score distribution will most likely have also incomes below the sample median. Since these borrowers are likely to pass the income test for Chapter 7 filing introduced by BAPCPA, the reduction in Chapter 7 filings for borrowers with credit scores

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Survey and find that the distributions match quite closely.

Table 7: Income Distribution Comparison by Quintile

Calculation	Dataset	1	2	3	4	5
Mean	CPS	11058.67	24791.32	36584.61	51872.45	110192.2
	TALX	17078.07	26565.46	39589.76	58510.22	117260.1
Median	CPS	12000	25000	36000	50000	85000
	TALX	16640	27040	39520	57512	99990

Source: IPUMS, TALX. Worknumber income calculations made using proxied income from pay periods and pay rate. CPS income calculations made using total wage and salary income.

below the median displayed in figure 3 is likely to be driven by a different mechanism. In Section 3.3, we explore the role of liquidity constraints associated with the rising monetary costs of filing as a potential factor.

## C Income Data

In this section, we describe the supplementary payroll data used in our analysis. This data is merged with our credit panel data, allowing us to map individuals' incomes for 2009 to their credit files.

The Equifax Workforce Solutions data provided by Equifax is a nationally-representative random sample of individuals containing employment and payroll verification information provided directly from the employers. The information provided for each employee includes the last three years of total income, the date of first hire, tenure, and for the current year status (part time/full time), weekly hours, pay rate and pay frequency.

**Income Measure Description** There are various income measures provided in the Worknumber data. For each year of data available variables are given for the total 12-month base, bonus, overtime, and commission compensation in year  $t$ ,  $t - 1$ , and  $t - 2$ . This information however is only available for a little over  $\frac{1}{3}$  of the sample. The other measure of income, which is widely available across the sample, is rate of pay and pay frequency. We therefore impute total income using a simple  $rate \times frequency$  approach to account for the lack of representation found in the sample regarding the total 12-month income variables. This yields about 11,000 observations for 2009. The sample of records is nationally representative, both in terms of geographical and age distribution.

**Comparison with the CPS** To gauge the accuracy of the income measure in our data, we performed a simple comparison with the income levels reported in the Consumer Population Survey. We present results based on income quintiles in Table 7.



## C.1 Relationship between credit score and income

To quantify the relation between credit score and income, we regress the Equifax Risk Score on income and age, their interaction and state fixed effects:

$$s_{i,2009} = \omega + \alpha y_{i,2009} + \beta y_{i,2009}^2 + \gamma a_{i,2009} + \delta a_{i,2009}^2 + \eta y_{i,2009} \times a_{i,2009} + \nu y_{i,2009}^2 \times a_{i,2009}^2 + I_{i,state} + \varepsilon_i,$$

where  $i$  denotes individual borrowers,  $s$  denotes the credit score,  $y$  denotes labor income,  $a$  denotes age and  $I_{i,state}$  is a state fixed effect. The estimation results are reported in Table 8.

Table 8: Relation Between Credit Score and Income

	Equifax Risk Score
Income	0.00101 (0.000353)
Age	-2.63 (0.668)
IncomeXAge	2.91E-05 (1.48e-05)
IncomeXAge Squared	-5.42E-07 (1.53e-07)
Income SquaredXAge	0 (0)
Income Squared	-1.37E-09 (3.90e-10)
Age Squared	0.0603 (0.00740)
Income SquaredXAge Squared	0 (0)
Constant	620.5 (14.30)
Observations	10,511
R-squared	0.203

Dependent variable is average Equifax Risk Score in 2009. All other variables measured in 2009. Specification also includes state fixed effects. T-statistics in parenthesis, robust standard errors clustered at the state level. Source: Authors' calculations based on the Federal Reserve Bank of New York Consumer Credit Panel/Equifax Data.

## D Additional Results

Table 9: Effect of the Change in Attorney Fees by Credit Score

Credit score quartile	1	2	3	4
	New Insolvency to Ch 7			
Change in Ch 7 Fees	-0.25 (-2.03)	-0.33 (-2.41)	-0.42 (-1.12)	0.89 (3.55)
Regulatory Controls	Y	Y	Y	Y
<i>N</i>	88	88	87	86

Estimates for the coefficient  $\alpha_1$  for regression equation 3. Dependent variable is the transition from a new insolvency to Chapter 7 filing at the 1Q ahead horizon by 4Q lagged Equifax Risk Score quartile. T-statistics in parentheses. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Table 10: Effects of the Change in Attorney Fees by Time Period

Sub-period	pre-recession	credit slump
	New Insolvency to Ch 7	
Change in Ch 7 Fees	-0.20 (-1.47)	-0.33 (-2.56)
Regulatory Controls	Y	Y
<i>N</i>	88	88
	New Insolvency to Ch 13	
Change in Ch 13 Fees	-1.08 (-1.64)	-0.07 (-0.14)
Regulatory Controls	Y	Y
<i>N</i>	75	75

Estimates for the coefficient  $\alpha_1$  for regression equation 3. Dependent variables are the transition from a new insolvency to either Chapter 7 or Chapter 13 filing at the 1Q ahead horizon. T-statistics in parentheses. Pre-recession: 2005Q4-2007Q3. Credit slump: 2007Q4-2011Q1. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Table 11: Effects of the Change in Attorney Fees: unconditional results

	Ch 7 Filings
Change in Ch 7 Fees	0.25 (1.40)
Square of Change in Ch 7 Fees	-0.29 (-1.67)
Regulatory Controls	Y
<i>N</i>	88
	Ch 13 Filings
Change in Ch 13 Fees	-0.50 (-1.67)
Square of Change in Ch 7 Fees	0.41 (1.61)
Regulatory Controls	Y
<i>N</i>	88

Estimates for the coefficient  $\alpha_1$  for regression equation 3. T-statistics in parentheses. Since the null is that the coefficients are zero, as in Pagan (1984), our estimates are robust to using generated regressors. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

## D.1 Exogeneity of Change in Attorney Fees

Table 12: Relation of the change in attorney fees and other variables.

	(1) Economic Indicators	(2) Pre-BAPCPA Behavior
$\Delta \log(\text{Income})$	0.017 (0.03)	
$\Delta \log(\text{Unemployment})$	0.38 (-1.59)	
$\Delta \log(\text{HPI})$	0.18 (1.43)	
Bankruptcy		70.7 (0.71)
Foreclosure		-34.8 (-0.30)
Spell of financial distress		-6.03 (-0.26)
Adj. $R$ squared	0.0057	-0.027
N	89	89

Numbers in parentheses are t-statistics. Bankruptcy, Foreclosure and spell of financial distress are average pre-BAPCPA Chapter 7 filing rate, foreclosure rate and spell of financial distress rate at the district level. Homestead and Garnishment are log homestead exemption and wage garnishment. Judicial and Recourse are indicators for judicial foreclosure state and recourse state. Income, Unemployment and HPI are district level pre-BAPCPA means of the logs of those variables. Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.

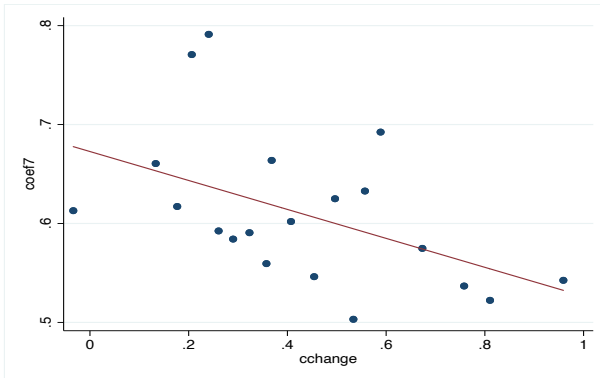
## E Estimation using mean changes

Below, we provide the estimated effects of the change in lawyer fees on mean changes in the flows to Chapter 7 and 13 bankruptcy. Here, we do not do a 2 step estimation, but just use the simple mean flow pre- and post-reform.

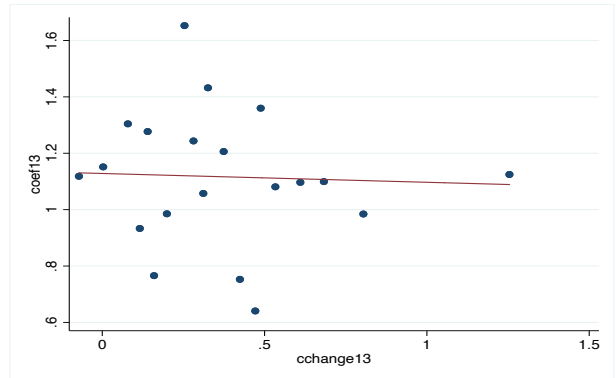
Table 13: Effects of the Change in Attorney Fees

	New spell of financial distress to	
	Ch 7	Ch 13
Change in Ch 7 Fees	-0.15 (-2.16)	
Change in Ch 13 Fees		-0.03 (-0.13)
$N$	88	87

The table reports estimates for the coefficient  $\alpha_1$  for regression equation (3), where the dependent variable is the four-quarter transition from a new spell of financial distress to Chapter 7 in column 1, and to Chapter 13 in column 2. All regressions include regulatory controls: whether the district is subject to judicial or non-judicial foreclosure regime, dummies for recourse or non-recourse foreclosure, upper limit on wage garnishment in dollars, and the dollar value of homestead exemption. T-statistics in parentheses. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.



(a) Ch 7 bankruptcy



(b) Ch 13 bankruptcy

Figure 4: Bin scatter plot of estimated mean change in 4-quarter-ahead flows from spell of financial distress to bankruptcy normalized by pre-reform mean and the respective chapter's percentage change in filing cost. Source: Authors' calculation based on Federal Reserve Bank of New York's Consumer Credit Panel/Equifax Data.