

Insolvency After the 2005 Bankruptcy Reform*

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Abstract

Using a comprehensive panel dataset on U.S. households, we study the effects of the 2005 bankruptcy reform on bankruptcy, insolvency and foreclosure. We find that the reform caused a permanent drop in the bankruptcy rate relative to pre-reform levels, due to the rise in filing costs associated with the reform, which can be interpreted as resulting from liquidity constraints. We find that the decline in bankruptcy filings resulted in a rise in the rate and persistence of insolvency, and a rise in the rate of foreclosure. We document that insolvency is associated with worse financial outcomes than bankruptcy, as individuals in this state accumulate collections, judgements, do not have access to new lines of credit, and their credit score bottoms out. Since bankruptcy filings have declined mostly for low income individuals, our findings suggest that the 2005 reform may have removed an important form of insurance against negative income shocks and increased financial distress for this group.

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1 Introduction

This paper studies the impact of the 2005 Bankruptcy Abuse Prevention and Consumer Protection Act on bankruptcy, insolvency and foreclosure behavior of U.S. households. The Act is the single most important piece of legislation regarding personal bankruptcy since the Bankruptcy Reform Act of 1978. It introduced more stringent eligibility requirements for individuals intending to file for bankruptcy protection, and substantially increased monetary and non-monetary costs of filing. One of the major consequences of the law's new requirements was a sizable rise in the filing cost, predominantly driven by increases in lawyer fees. Median attorney fees increased by 38% for Chapter 7 filers, from an average of \$663 dollars pre-reform to \$986 post-reform (Jones (2008), Lupica (2012), White (2007)). Given the extreme low incomes of filers pre-reform and the fact that bankrupt households are often cash poor (Mann and Porter (2009), Gross, Notowidigdo, and Wang (2012)), cost changes of this magnitude can significantly affect potential filers' options. Thus, the reform can be used to assess the impact of liquidity constraints on bankruptcy filing behavior.

The new law increased the cost of filing in a variety of ways. It raised the amount of paperwork required, mainly in connection with the income 'means test', which determines whether the filer is eligible for Chapter 7 bankruptcy.¹ It also introduced a new provision that attorneys can now be held personally liable for inaccuracies in the filing. Finally, it introduced mandatory credit counseling classes (at a cost to the filer) pre- and post-filing. In this paper, we focus on the impact of the new law through the change in attorney fees, which are the most important component of filing costs (as reported in Lupica (2012), they account for about 75% of total costs). Crucially for our study, even though the 2005 reform is a federal law, we find that both the initial level of filing costs and the size of their change associated with the reform exhibit sizable cross-district variation. We exploit this geographic variation to identify the impact of liquidity constraints on household behavior.

Our analysis is based on household-level data from a large, nationally representative panel of credit files for U.S. households from 1999 to 2013. These data allow us to observe the drop in bankruptcies and the changing characteristics of bankrupts, as well as the behavior of financially distressed individuals who post-2005 decide not to file for bankruptcy. Hence, we are the first to assess the financial situation of the individuals who no longer file for bankruptcy.² We provide three sets of empirical findings.

¹At the very least, it requires the potential filer to document the last 6 months of income to determine whether it is above or below state median.

²A large literature following the Act's introduction studies its effects on the characteristics of individuals who file for bankruptcy, based mainly on surveys of filers or bankruptcy courts data. In a leading study,

First, we estimate transition probabilities for a set of mutually exclusive states, including current on all accounts, delinquency, insolvency,³ bankruptcy and foreclosure. This exercise captures the timing and direction of the responses of the outcome of interest to the reform, and it motivates and guides the main regression analysis.⁴ We report transitions from a new delinquency and a new insolvency in order to capture the behavior of individuals who may be entering a spell of financial distress. We find a sizable and persistent drop in transitions into bankruptcy at all horizons, starting exactly in the quarter following the introduction of the Act. This drop is concentrated among individuals with low prior credit scores and non-homeowners, who are concentrated at the bottom of the labor income distribution.

We find that the transition into bankruptcy from a new delinquency drops by 60 log points and from a new insolvency by 80 log points, upon implementation of BAPCPA. Parallel to the drop of the transition into bankruptcy, we find that the transition into insolvency from a new delinquency rises by 20 log points after the reform, the transition into foreclosure (without bankruptcy) rises by 75 log points, while the transition to current declines by 10 log points. Similarly, the transition from a new insolvency to foreclosure rises by 40 log points after the reform. These findings suggest that individuals who would have filed for bankruptcy pre-2005 are now pushed into insolvency and foreclosure and find it more difficult to pay off their debts and return to being current. We interpret the rise of the transition into foreclosure from a new delinquency and a new insolvency as resulting from financially distressed individuals resorting to default on secured debt, having lost the option to default on their unsecured debt.⁵

Our second set of results are based on a difference-in-difference regression approach, and constitute the main contribution of the paper. We exploit the cross-district variation in the change in filing fees associated with the reform and estimate the response of bankruptcy, insolvency and foreclosure. Specifically, we first examine the quantitative response of bankruptcy rates to the reform through the change in the filing fees at the district

Lawless et al. (2008) use the 2007 Consumer Bankruptcy Project to document the changes in the characteristics of bankrupts when compared with data from similar studies in 1981, 1991 and 2001. They find that the the Act did not change the income composition of bankrupts but increased their in-bankruptcy debt and the length of time before filing. One limitation of these studies is that they focus solely on a small sample of bankrupt individuals from a selected number of states. These data, are not fully representative, and are also not able to investigate what happened to the ‘missing’ bankrupts, that is the households who would have filed for bankruptcy absent the reform.

³A delinquency is defined as being 30, 60 or 90 days late on a payment on any account. Insolvency is defined as being 120 days or more late on a payment on any account or having an account balance charged-off.

⁴We factor out business cycle effects by regressing these transitions on a number of economic covariates, such as unemployment, personal disposable income, house prices and their four quarter change.

⁵Given the homestead exemption, most bankrupt households can retain their main residence and continue to service real estate debt associated with that property.

level. Then we document the degree of substitution from bankruptcy to insolvency and foreclosure.

We find a statistically and economically significant impact of attorney fees on transitions into bankruptcy. Our estimates imply that moving from the 25th to the 75th percentile of the cost distribution increases the drop in bankruptcy by 18 log points. When we estimate the elasticity of the flow into bankruptcy separately pre- and post-reform, we find that the relationship is stable—implying that the overall increase in the costs post-reform will drive bigger variation in bankruptcy outcomes. We show that cost changes are not driven by differences in endogenous bankruptcy outcomes, economic variables or regulatory variables, which gives plausibility to the exogeneity of the cost changes across districts. As a robustness, we also provide instrumental variable analysis, where we instrument the cost change by the political preferences of the judges, or alternatively by the cost level prior to the reform. Our results are confirmed in that analysis as well.

We proceed to quantify the substitution from bankruptcy to foreclosure and insolvency post-reform. Specifically, for newly insolvent individuals, we construct the 4-quarter and 8-quarter-ahead transition probabilities to foreclosure, bankruptcy, remaining insolvent and turning current. For these variables, we find that a larger drop in the transition into bankruptcy for newly insolvent individuals is associated with a sizable increase in the persistence of insolvency and transition probability into foreclosure. At the 4 quarter horizon the median drop of the transition into bankruptcy (56%) increases the persistence of the insolvency state by 3% and the transition into foreclosure by 27%. Interestingly, we do not find a relation between the drop in the flows into bankruptcy and the flows into current.

Our third set of results uses the richness of our dataset to assess the degree of financial distress associated with being insolvent in comparison to bankruptcy. Our regression results indicate that the decline in bankruptcy due to the reform is associated with a rise in insolvency, with and without foreclosure. It is therefore important to determine whether this development is consequential for households. We adopt an event study approach and consider cohorts of individuals who become insolvent at a given quarter after a two year spell with no insolvency, bankruptcy or foreclosure, distinguishing those who go bankrupt in the 8 quarters after and those who don't. We then examine the behavior of several financial indicators for a 2 year window around that new insolvency. We find that the balances in collection and the fraction of individuals with court judgments grow after insolvency, whereas, by design, the bankruptcy filing immediately stays collection efforts and court judgments. Also, among individuals who become newly insolvent at the same date, those who go bankrupt open a larger number of new unsecured accounts post-bankruptcy than those who don't go

bankrupt. We find that the number of inquiries is very similar across the two groups, and conclude that this outcome is driven by difference in access to credit, not demand for credit. Turning to credit scores, we find that the individuals who will eventually go bankrupt, initially have lower credit scores. However, they experience a sharp boost in their credit score after bankruptcy, whereas credit scores recover at a much slower pace for individuals who remain insolvent.

Our analysis has wide-ranging implications for the design of policies for consumer credit and bankruptcy. First, we show that a sizable group of individuals exists that does not file for bankruptcy, but seems unable to pay off their debts. These individuals are concentrated in the lowest quintile of the credit score and income distribution, and therefore they are the ones who would be expected to benefit most from the relief offered by personal bankruptcy. Our analysis suggests that any policies affecting the financial cost of filing for bankruptcy will impact disproportionately these individuals. Second, we show that there is a strong substitution between Chapter 7 bankruptcy and foreclosure, and hence regulating either one of these institutions is likely to impact the other in significant ways. Finally, we provide a systematic analysis of the consequences of failure to file for bankruptcy for insolvent individuals, in terms of access to credit, perceived creditworthiness and overall financial hardship. We show that insolvent individuals who do not file for bankruptcy fare worse according to every indicator of financial distress in comparison to those who do file.

One of the main goals of personal bankruptcy is to provide an incentive compatible insurance scheme against streams of negative income shocks that make repayment of debts contracted in better times too onerous or impossible for the debtor. Our finding that bankruptcy filings have declined mostly for low income, possibly liquidity constrained individuals, resulting in a substantial rise in the rate and persistence of insolvency suggests that the 2005 reform may have removed this form of insurance for low income households. It also suggests that the income means test that was introduced to ameliorate moral hazard associated with personal bankruptcy was not effective. Further, the fact that the decline in bankruptcy filings was associated with a rise in the foreclosure rate implies that formal default on unsecured debt has been replaced to a substantial degree by default on secured debt, possibly exacerbating the housing crisis.

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 2.1 describes the credit file data used in the analysis. Section 3 reports our estimates of transition probabilities into various delinquency states. Section 4 describes our cross-district regression analysis. Section 6 examines the consequences of the substitution into insolvency

from bankruptcy. Section 7 concludes, and the Appendix presents additional set detailed results.

2 The 2005 Bankruptcy Reform

Households in financial distress in the U.S. can resolve their insolvency by filing for bankruptcy. Upon filing, debtors obtain immediate relief from all collection efforts, including direct communication, lawsuits and wage garnishment. Most unsecured debt is dischargeable, excluding taxes, alimony and child support obligations, student loans and debt obtained by fraud.

Chapter 7, usually called ‘straight bankruptcy’ or a ‘fresh start’ option, is the most commonly used bankruptcy procedure - up to 2005 a remarkably stable 70% of bankruptcies were Chapter 7 bankruptcies. Under Chapter 7, filers submit a list of all their assets to the courts. The part of the assets which exceeds certain exemption levels⁶ is then used to satisfy unsecured creditors. The rest of the debts are discharged, and debtors are not obliged to use future income for debt repayment (hence ‘fresh start’). Chapter 7 bankrupts are not allowed to re-file another Chapter 7 case for the next 6 years (increased to 8 by the 2005 Act), and have a bankruptcy flag on their credit report for 10 years after filing.

Under Chapter 13, bankrupts keep all of their assets, but must use their future income to repay part of their unsecured debt⁷. Debtors propose their own repayment plans (pre-2005, post-2005 they must use all of their law-defined disposable income to pay off debts) lasting 3-5 years, 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 is considered discharged after the debt repayment plan has been executed, and the Ch.13 bankruptcy flag stays on the credit record for 7 years after discharge.

Historically, ever since the introduction of the bankruptcy law as we know it, both unsecured debt levels and bankruptcy rates have been rapidly rising over time (the trend extending all the way back to 1978), which gave rise to numerous studies on the sources of the rise⁸, as well as active policy discussion on the efficiency of existing law. That discussion

⁶Asset 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 house up to a state-level specified limit.

⁷More debts are dischargeable under Chapter 13 than Chapter 7, including some car loans and debts incurred by fraud or cash advances shortly before filing (the so called ‘super discharge’).

⁸Including Athreya (2002), Domowitz and Eovaldi (1993), Domowitz and Sartain (1999), Gross and Souleles (2002), Fay, Hurst, and White (2002), Livshits, MacGee, and Tertilt (2007), Livshits, MacGee, and Tertilt (2010).

resulted in the 2005 bankruptcy reform.

The BAPCPA was signed by president George W. Bush on April 20, 2005 and applied to bankruptcy cases filed on or after October 17, 2005. It introduced several major changes to bankruptcy regulation which increased the burden, financial and otherwise, of filing for bankruptcy protection. Among the most notable new features are the introduction of an income ‘means test’ which determines eligibility for filing for Chapter 7 bankruptcy; the abolishment of the possibility of filers to propose their own Chapter 13 plans; a significant increase in the filing documentation burden. Filers must file detailed financial information with the bankruptcy court, essentially showing proof of sufficient indebtedness and inability to pay, as well as good faith attempts at paying back. Bankruptcy lawyers must certify the accuracy of the information, and are subject to strict fines in case inaccuracies are detected. In addition, the Act requires debtors to enroll in a credit counseling class before they file and a financial management course before their debts are discharged.

The cost change The sum of these provision resulted in a significant rise in the cost of filing for bankruptcy. The total out-of-pocket cost of filing for bankruptcy increased from \$600 and \$1600 for Chapters 7 and 13 to \$2500 and \$3500, respectively (White (2007), also consistent with findings in Lupica (2012)). In our study, we will focus on attorney fees and their increase associated with the reform. Attorney fees comprise 75% of the total financial cost of filing for bankruptcy (Lupica (2012)), and rose on average 50% after the reform (Jones (2008)).

2.1 Data Used in the Analysis

We use the Federal Reserve Bank of New York’s Consumer Credit Panel (CCP) data, which is a longitudinal panel of individuals with quarterly frequency, starting in 1999:Q1 and ending in 2013:Q3. The panel includes all individuals who have a credit report with Equifax. The data is described in detail in Lee and van der Klaauw (2010). In most of the analysis, we use a 5% sample from the database, including information on approximately 40 million individuals in each quarter.⁹

The data contains over 600 variables¹⁰, allowing us to track all aspects of individuals’ financial liabilities, including bankruptcy and foreclosure, mortgage status, detailed delinquencies, various types of debt, with number of accounts and balances. Apart from the

⁹The results presented here are based on a smaller 1% sample.

¹⁰For data dictionary, go to http://www.newyorkfed.org/householdcredit/2013-q3/data/pdf/data_dictionary_HHDC.pdf.

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 a online Appendix A.

3 Transitions

To understand the dynamics of bankruptcy and delinquency behavior, we compute the paths of behavior of individuals in our dataset, given initial conditions. This gives rise to a set of Markov transition matrices (one for each quarter) which describe the evolution of our population over time. This approach uses to the full extent the panel nature of our data - we can track where each individual ends up at different horizons, given her initial financial state - and allows us to identify the timing and magnitude of the response to the reform.

We estimate transition probabilities based on frequency distributions of individuals, for a set of mutually exclusive delinquency states. In any given quarter, an individual's state is Current, if there are no delinquencies of any type in her record for that quarter, and no bankruptcy flags. An individual's state is Delinquent, if she has accounts that are 30, 60 or 90 days delinquent. An individual's state is Insolvent if she has any account that is 120 days plus delinquent or in charge-off. Or an individual can be Bankrupt, if she displays a bankruptcy flag. These states can occur with or without a foreclosure flag. The foreclosure flag is activated by a new foreclosure record on the individual's account, and lasts for 7 years from its first appearance. The bankruptcy flag is activated by a new bankruptcy filing (voluntary or involuntary, both Ch.7 and Ch. 13) and lasts for 10 years after its first appearance.

This yields the following set of mutually exclusive states: Current, Delinquent, Insolvent. These states can occur with no foreclosure (NF) or with foreclosure (YF) if an individual is not in bankruptcy (NB). Alternatively, an individual can be in Bankruptcy (YB), with or without a foreclosure flag, leading to a total of 8 possible states. We estimate the 4-quarter-ahead transition probabilities across these states for each quarter in the sample, starting from a new delinquency and a new insolvency. A new delinquency is defined as a state in which an individual is delinquent, after 8 quarters without insolvencies, bankruptcy or foreclosure. We focus on the transitions from a new delinquency to identify the possible start of a spell of financial distress. Approximately, 0.8% of the population becomes newly delinquent in each quarter in our sample. We also consider transitions from a new insolvency, defined as a state in which an individual becomes insolvent after 8 quarters of no insolvencies, with no bankruptcy or foreclosures. A new insolvency captures the start of a spell of more severe

financial distress. Approximately 0.6% of the overall population becomes newly insolvent in each quarter of our sample, and this percentage is stable over time.

To eliminate the effects of business cycles and other economic factors possibly driving the transitions from a new delinquency or insolvency to bankruptcy and other outcomes of interest, we estimate the following regression:

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

where y_{it} is the log transition in district i at quarter t , $\beta_{s(t)}$ capture time effects, relative to base period 0, $I_{s(t)}$ is an indicator for period s (year or quarter), γ_i denote district effects, and X_{it} denotes a set of economic controls, in logs.¹¹

The estimated $\beta_{s(t)}$ capture the timing and magnitude of the response to the reform. They are also able to detect the presence of any pre-existing trends in the transitions of interest. We report the estimates of the time effects for the yearly specification below, starting from the transitions from a new delinquency.¹²

Figure 1 reports the estimate for the time effects for the transitions from a new delinquency to Ch. 7 bankruptcy.

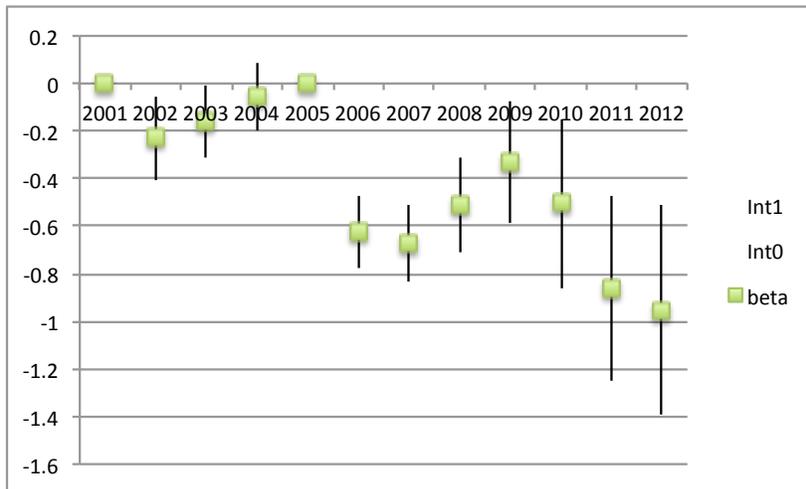


Figure 1: $\beta_{s(t)}$ for 4 quarter ahead transition probability from Newly Delinquent to Bankrupt. Bars denote 95% confidence intervals.

The figure clearly shows a sizable and permanent drop in the transition into bankruptcy.

¹¹These include district level personal income, unemployment rate and home price index, as well as the 4 quarter change in these variables.

¹²The estimates of the coefficients for the controls and for the quarterly specification do not change the conclusions of this section, and are available from the authors upon request.

The drop is approximately equal to 60 log points between 2005 and 2006-2008, and rises to 100 log points in 2011 and 2012, after abating somewhat during 2009 and 2010. Moreover, after controlling for economic controls and district effect, there appears to be no trend in the transition into bankruptcy after a new insolvency in the years prior to the reform. All the $\beta_{s(t)}$ coefficients are significant at least at the 5% level.

Figure 2 displays the transition from a new delinquency to insolvency, without foreclosure. In this case, there is a sharp and persistent rise in the transition to insolvency post reform, averaging approximately 20 log points.

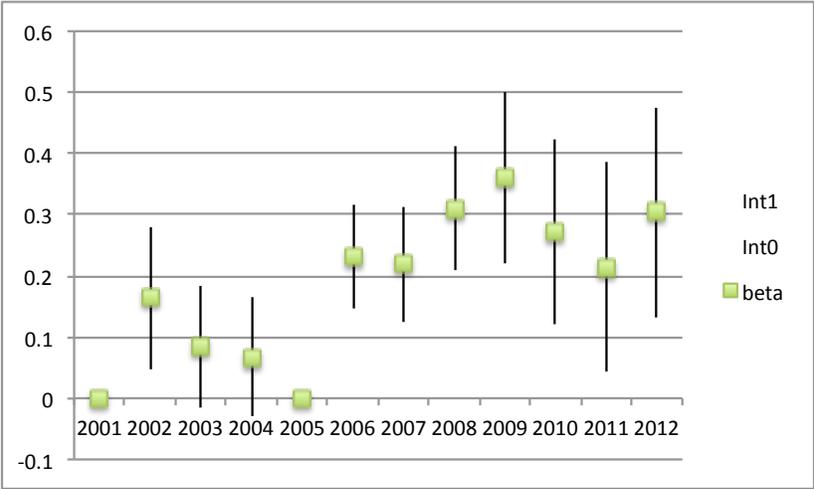


Figure 2: $\beta_{s(t)}$ for 4 quarter ahead transition probability from Newly Delinquent to Insolvent. Bars denote 95% confidence intervals.

Figure 3 displays the transition from a new delinquency to foreclosure. The transition from a new delinquency to foreclosure (without bankruptcy) rises by 80-100 log points post reform.

Figure 4 displays the transition probability from a new delinquency to Current (without bankruptcy). The probability declines by 5-15 log points post reform, suggesting that the decline in bankruptcy is not matched by a greater ability of newly delinquent individuals to repay their debt and return to being current.

Since individuals who eventually become bankrupt mostly transition to insolvency first, we also examine the transition probabilities from a new insolvency to bankruptcy and foreclosure. Figure 5 displays the estimates for the transition into bankruptcy. The drop ranges from 20 to 60 log points relative to the pre-reform average in this case, with the drop maximized in 2006-2008 and 2011-12.

Figure 6 displays the transitions into foreclosure. The rise of the transition into foreclosure

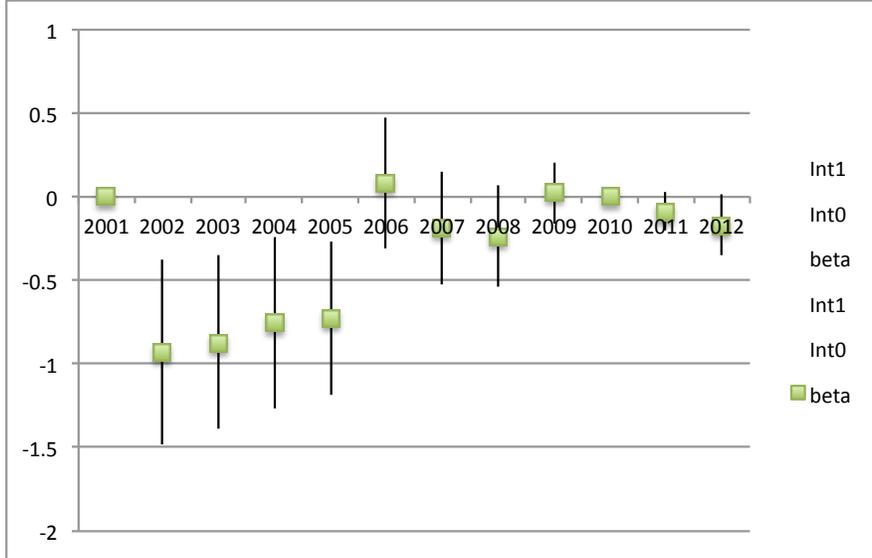


Figure 3: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Delinquent to Foreclosure. Bars denote 95% confidence intervals.

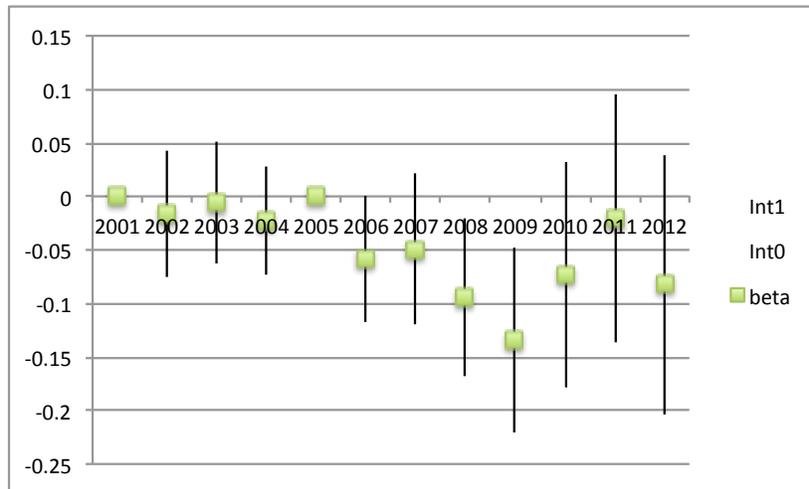


Figure 4: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Delinquent to Current. Bars denote 95% confidence intervals.

is approximately 40 log points in the post reform period.

3.1 Transitions by Income

One plausible explanation for the pre- and post-reform behavior is that the large rise in filing cost associated with the reform made it too expensive for certain individuals to file. Moreover, these individuals, if indeed liquidity constrained, would likely end up in insolvency,

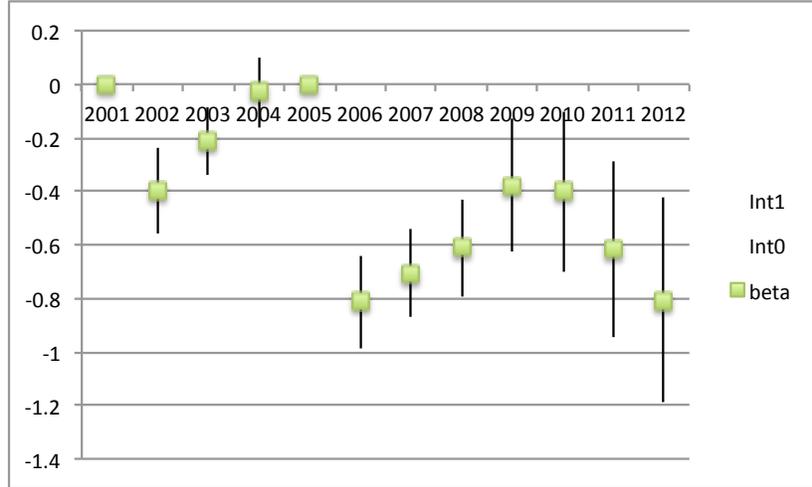


Figure 5: $\beta_{s(t)}$ for 4 quarter ahead transition probability from Newly Insolvent to Bankrupt. Bars denote 95% confidence intervals.

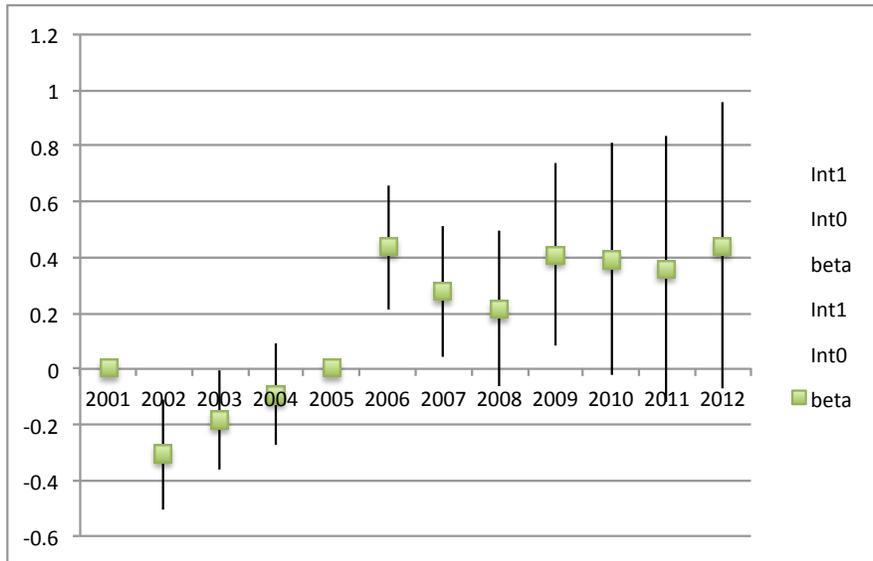


Figure 6: $\beta_{s(t)}$ for 4 quarter ahead transition probability from Newly Insolvent to Foreclosure. Bars denote 95% confidence intervals.

rather than paying off their debts and becoming current. This is consistent with the findings in Gross, Notowidigdo and Wang (2012), who find that bankruptcy filings rise for individuals who receive tax rebates. The Equifax data does not provide individual income. However, for 2009, we have access to payroll data, linked to Equifax, from a large income verification firm. As shown in Appendix B, for 2009, we can show that there is a strong correlation between an individual's position in the credit score distribution and her position in the income distribution. Individuals in the bottom quintile of the credit score distribution have

a 36% probability of being in the bottom quintile of the labor income distribution and a 56% probability of being in the lowest two quintiles of the labor income distribution. By contrast, individuals in the top quintile of the credit score distribution have at 42% probability of belonging to the top quintile of the income distribution.

Based on this evidence, we posit that liquidity constraints should be strongest for individuals at the bottom of the credit score distribution, and we repeat our transition analysis for individuals in the bottom 20% of the credit score distribution. To avoid joint endogeneity concerns, we rank individuals based on the credit score at $t - 4$ when estimating the transition probabilities between t and $t + 1$.¹³

The estimates indicate that the effects of the reform are more pronounced for individuals in the first quintile of the credit score distribution. Figure 7 displays the estimates for the transition from new insolvency to bankruptcy for the bottom quintile of the credit score distribution 4 quarters prior, and for the overall population. The drop in the transition into bankruptcy is deeper and more persistent for individuals in the lowest quintile of the credit score distribution.

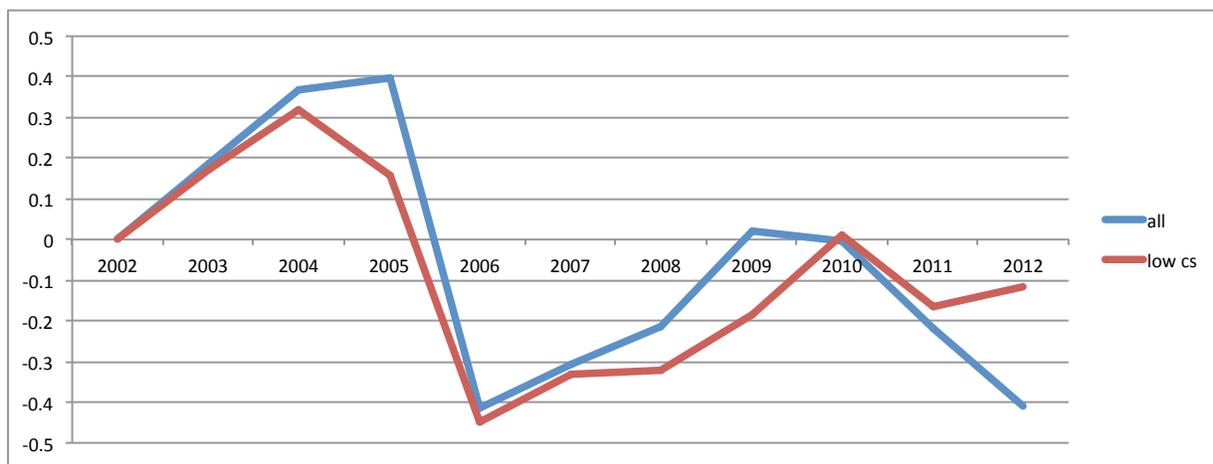


Figure 7: $\beta_{s(t)}$ for 4 quarter ahead transition probability from Newly Insolvent to Bankrupt by percentile of the credit score distribution 4 quarters prior.

Figure 8 displays the estimates for the transition from a new insolvency to insolvent. Here, we see a sizable and persistent rise for individuals at the lowest quintile of the credit score distribution, of approximately 15 log points in the post- relative to pre-reform period, whereas for the overall population we estimate a small and not significant decline for this transition.

¹³We also estimate versions in which the ranking by credit scores is performed at $t - 2$ and t for the transition between t and $t + 1$. The results are very robust to these alternative rankings.

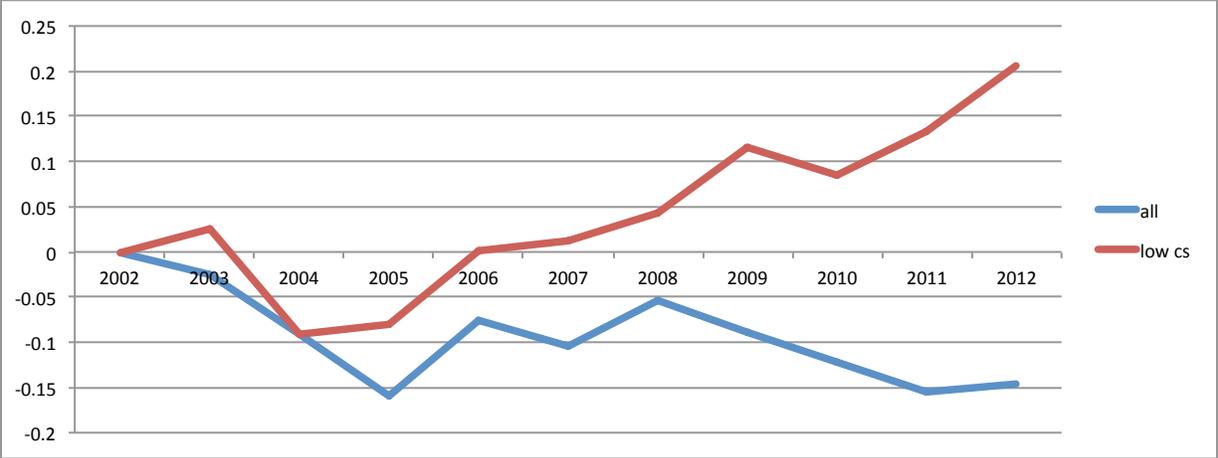


Figure 8: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Insolvent to Insolvent by percentile of the credit score distribution 4 quarters prior.

We also repeat the analysis distinguishing between homeowners and non-homeowners. As shown in Appendix B, labor income is significantly lower for non-homeowners in 2009, so this analysis provides more evidence in support of the notion that liquidity constraints drive the response to the reform. Additionally, non-homeowners will not be affected by the foreclosure crisis, and provide a sample for which it is easier to assess the substitution between bankruptcy and insolvency, without interference from this event. On the other hand, the transition into foreclosure can only be experienced by current homeowners, which makes it easier to assess the salience of the substitution between bankruptcy and foreclosure.

We identify homeowners in our sample by the presence of any outstanding real estate debt. Current Homeowners are individuals who display any type of real estate debt in the last 4 quarters, whereas Current Non-homeowners do not have any type of real estate debt on their records in the last four quarters. Real estate debt includes first mortgages and home equity lines of credit. Non-homeowners will be negatively selected, as this group will disproportionately include individuals whose credit history is too short or whose credit score is too low to qualify for a mortgage. However, given our definition of homeownership, it could include owners who did not need borrow to purchase a home or already payed off their real estate debt. For current homeowners, the probability of being in the lowest quintile of the labor income distribution is 10%, while it is 34% for non-homeowners. By contrast, current homeowners' probability of being in the top quintile of the labor income distribution is 31%, while it is 8% for current non-homeowners.¹⁴

Figure 9 presents the estimated time effects for the transition from a new delinquency to

¹⁴See Appendix B for more details.

bankruptcy for non homeowners in comparison with the overall population. The effects are deeper for non homeowners, whose transition into bankruptcy drops by an additional 20 log points relative to the overall population in 2006-2010, relative to the pre-reform period.

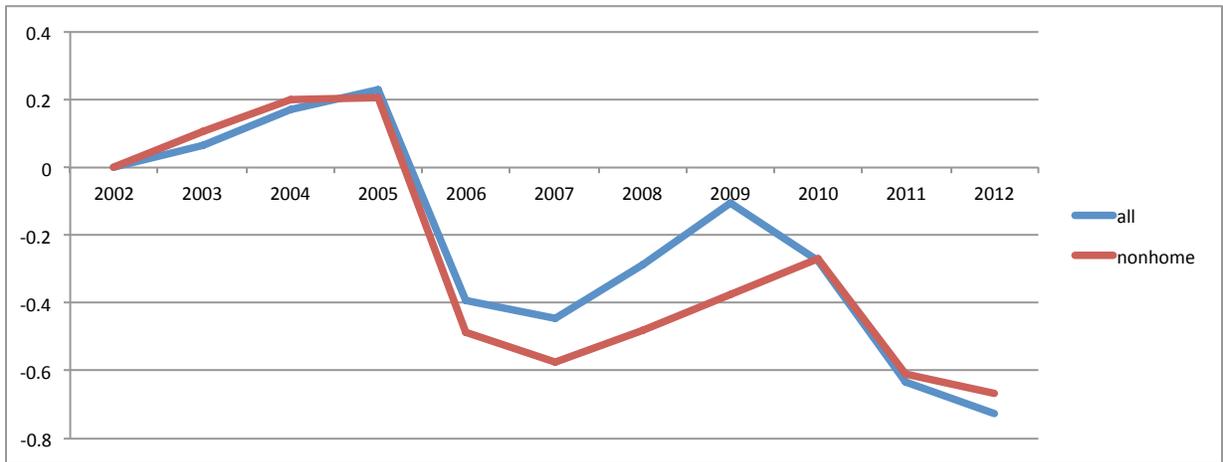


Figure 9: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Delinquent to Bankruptcy by homeownership status.

Figure 10 presents the estimated time effects for the transition from a new delinquency to insolvency for non homeowners in comparison with the overall population. The rise of the transition into insolvency is greater for non-homeowners, especially after 2009, when the change in the transition relative to the pre-reform period is approximately 20 log points larger than for the overall population.

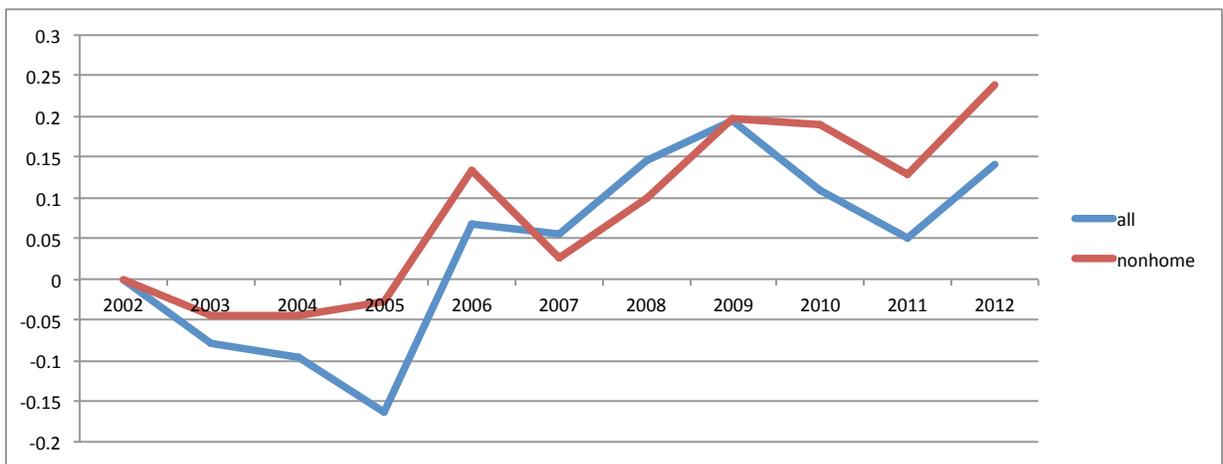


Figure 10: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Delinquent to Insolvency without foreclosure by homeownership status.

Taken together, these results suggest that the effects of the reform were stronger for

individuals at the bottom of the income distribution.

3.2 Event Study Approach

To further understand the effect of the bankruptcy reform, we examine the behavior of individuals around a new episode of financial distress. We select individuals who show any type of insolvent account after at least 8 quarters of no insolvencies (however, they may have had delinquent accounts), and then we track the behavior of several outcomes of interest for 8 quarters before and after the new insolvency for each cohort of newly insolvent individuals in the sample period. Conditioning on a new insolvency refines the analysis we presented in the previous section, which focussed on individuals with delinquencies, as a stable 80% of newly insolvent households show a delinquency 1 quarter prior a new insolvency, as shown in table 1.

Table 1: Fraction of Newly Insolvents with Delinquency

6 qtrs before	4 qtrs before	2 qtrs before	1 qtr before	At new insolvency
9.5%	13.7%	24.9%	80.0%	32.9%

Figures correspond to 1999-2012 averages.

For each cohort of newly insolvent individuals, we document two robust patterns. First, at all horizons after a new insolvency, the bankruptcy rate drops for all cohorts after the introduction of BAPCPA. Specifically, figure 11 presents the fraction of households with a Chapter 7 bankruptcy at different horizons among the newly insolvent individuals. The dates on the horizontal axis denote the date of the new insolvency, *not calendar time*, so they indicate cohorts of newly insolvent individuals. For all cohorts showing a new insolvency after 2005Q3 (the vertical line corresponding to the date of the implementation of the law), the bankruptcy rate falls at all horizons, with a large discontinuity at the time of the implementation of the law.¹⁵

The second pattern we document is the very sizable increase in foreclosure rates of the newly insolvent individuals, with the rise starting at the implementation date of the new law, as with the drop in bankruptcy. Figure 12 presents the fraction of each newly insolvent cohort with a foreclosure flat at up to 8 quarters after new insolvency. After being stable during the first part of our sample at all horizons, the fraction of newly insolvent individuals

¹⁵The ‘after’ lines (like ‘5 after’) begin to fall before the implementation of the reform, as ‘5 after’ for cohort 2005Q1 is 2006Q2, after the law change.

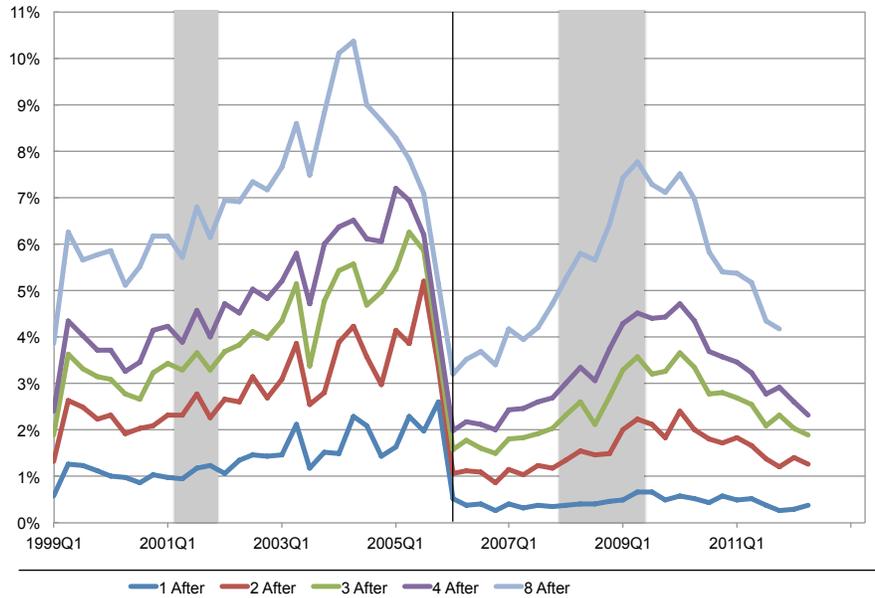


Figure 11: Fraction with Chapter 7 bankruptcy for Newly Insolvent households at different horizons. The vertical line corresponds to the date of implementation of the reform, and the shaded areas correspond to NBER recessions.

with a foreclosure flag exhibits a change in slope at the implementation of the law, and then again during the housing crisis.

The evidence in this section uncovers a pattern of substitution from bankruptcy to foreclosure for newly insolvent individuals after BAPCPA, which suggests that the bankruptcy reform may have contributed to exacerbate the housing crisis. Since the analysis in this section is simply descriptive, we now turn to a regression approach which allows a more precise identification of the effects of the reform.

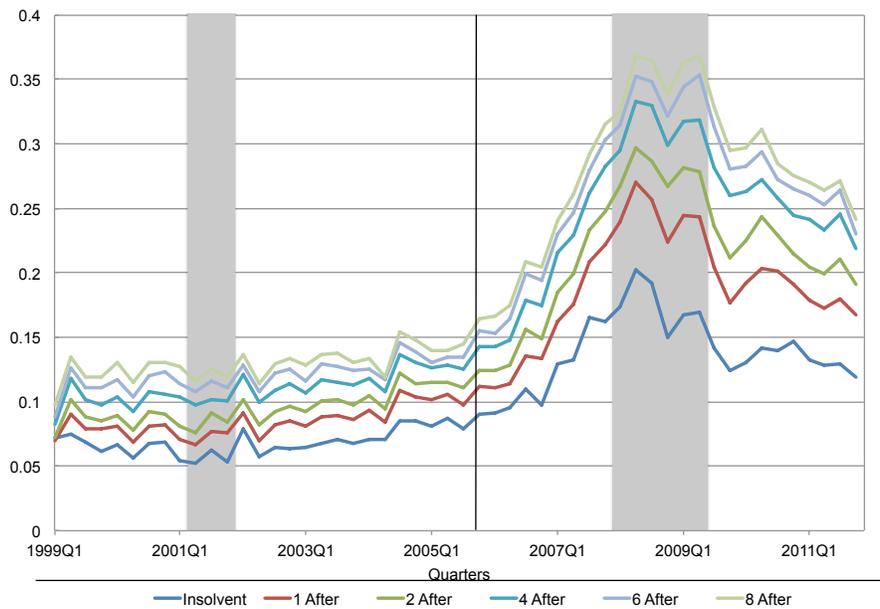


Figure 12: Fraction with foreclosure for Newly Insolvent households at different horizons. The vertical line corresponds to the date of implementation of the reform, and the shaded areas correspond to NBER recessions.

4 Variation by District

The introduction of the BAPCPA and the resulting increase in the filing requirements resulted in a significant increase in the filing costs for households (attorney fees, filing fee and debtor education expenses). A major component of bankruptcy costs are attorney fees, which account for roughly 75% of total direct access costs (both pre- and post-reform). Based on a comprehensive study of filing fees, Lupica (2012) reports an average increase in attorney fees of 37% for Chapter 7 filers.¹⁶ Behind these average increases, there is significant district-level variation: for example, for Chapter 7 filers, the cost changes vary from an increase of 122% (Southern District of Georgia) to a drop of 28% (Southern District of Florida). In this section, we take attorney fees as a proxy for bankruptcy costs and exploit their variation across court districts in order to provide further evidence of the effects of the law on bankruptcy decisions, and specifically on the role of liquidity constraints in shaping the response to the reform.

We proxy the change in monetary costs associated with bankruptcy filing with the change in attorney fees for no asset cases, which account for around 90% of all bankruptcy filings. Table 2 presents descriptive statistics on the distribution of costs and cost changes. These costs exhibit a large cross-district variation both prior and after the bankruptcy reform. The prior range was \$356 (Tennessee Middle) to \$1920 (Florida Southern), while the post range is \$543 (Illinois Central) to \$1530 (Arizona). As argued in Lupica (2012), even controlling for state characteristics and filers' characteristics, BAPCPA had a significant effect on attorney fees changes across districts. The district average attorney fee pre-reform was \$700 and went up to \$1000 post-reform.

Table 2: Bankruptcy filing costs.

	Pre-reform	Post-reform	Log Difference
Mean	\$697	\$975	35%
90th percentile	\$907	\$1293	61%
75th percentile	\$786	\$1123	50%
Median	\$663	\$986	33%
25th percentile	\$589	\$810	22%
10th percentile	\$473	\$686	17%

Figure 13 presents the pre- and post- reform levels of attorney fees for Ch. 7 bankruptcy

¹⁶There is also a sizable rise in Chapter 13 filing costs. In this version of the paper, we focus on Chapter 7 bankruptcy.

by district, as well as the percentage change in these costs associated with the reform.

High Ch. 7 attorney fees are concentrated in the North and South East, the Gulf districts, and in California and New Mexico. Most of these districts also exhibit high attorney fees post-reform. The biggest percentage increases in attorney fees occur for some of the districts with the lowest pre-reform fees.

Tables 3 and 4 present descriptive statistics for the bankruptcy rate by district, pre- and post-reform, for filings and discharged cases.

Table 3: Quarterly bankruptcy rates: Filings.

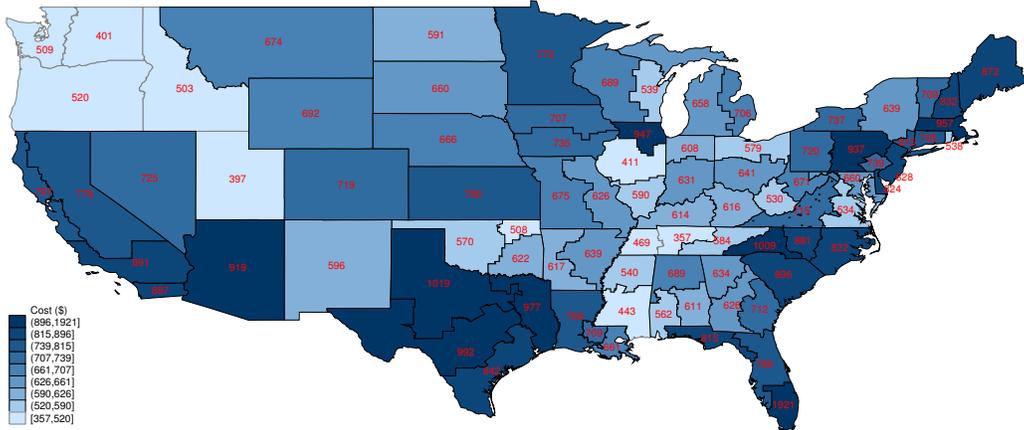
	Pre-reform	Post-reform	Log Difference
Mean	1.80	1.14	-52%
90th percentile	2.77	1.94	-11%
75th percentile	2.19	1.48	-33%
Median	1.70	1.04	-52%
25th percentile	1.23	0.68	-71%
10th percentile	0.94	0.47	-85%

Table 4: Quarterly bankruptcy rates: Discharged bankruptcy.

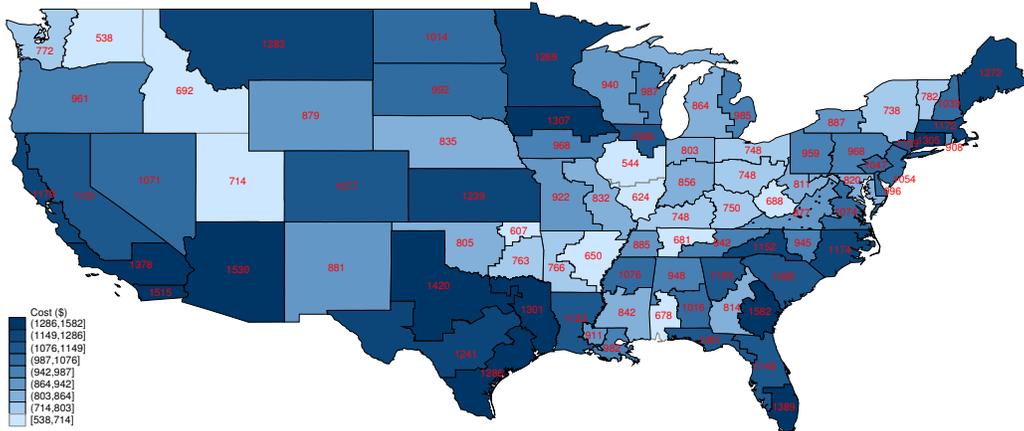
	Pre-reform	Post-reform	Log Difference
Mean	1.74	1.16	-37%
90th percentile	2.96	2.00	1%
75th percentile	2.17	1.51	-19%
Median	1.53	1.03	-37%
25th percentile	1.04	0.68	-54%
10th percentile	0.68	0.46	-75%

Our analysis proceeds in two steps. We first repeat our transitions analysis, grouping districts by their cost change, and comparing estimated transitions across districts with high and low changes in attorney fees associated with the reform. The second step consists in running a difference-in-difference exercise to obtain a quantitative assessment of the effect of the reform on bankruptcy, insolvency and foreclosure, taking into account variation in other variables that potentially influence these outcomes, such as economic conditions at the district level, or regulatory characteristics at the state level.

Pre-BAPCPA Bankruptcy Filing Costs
by United States Court District



Post-BAPCPA Bankruptcy Filing Costs
by United States Court District



Percent Change in Bankruptcy Filing Costs for Households
by United States Court District

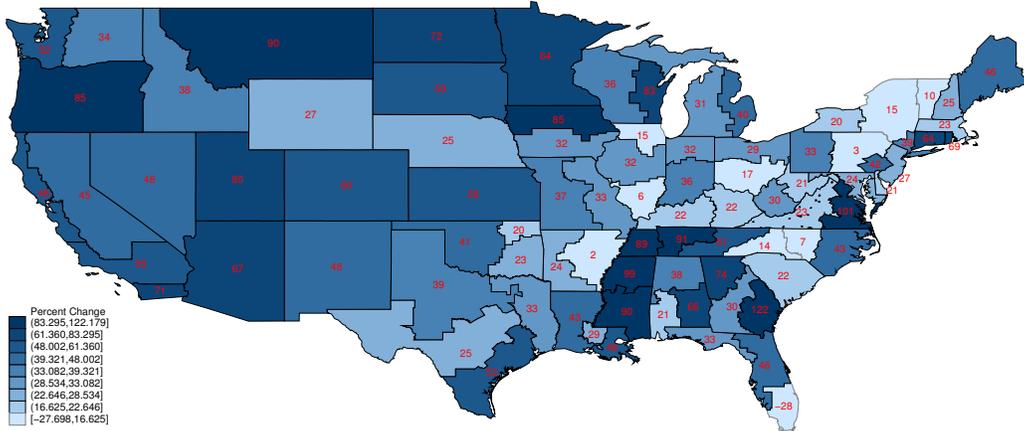


Figure 13: Attorney fees for Ch. 7 bankruptcy by district, pre- and post- reform, and percentage change associated with the reform.

4.1 Transitions by District

We use the attorney fees changes for Chapter 7 bankruptcy filings by court district, reported in Lupica (2012), and then group districts into top-30% ('high increase') and bottom-30% ('low increase') when ranked by filing cost percentage change.¹⁷ We then compute the transition matrices, as in Section 3, separately for the high-increase and low-increase districts.

Our main findings are reported in figures 14-16, where the blue line displays the estimated time effects from specification 1 transition probabilities for high cost change districts, while the red line reports this average for low cost change districts.

Figure 14 displays the time effects for the transition probability from a delinquency to insolvent. While there is virtually no time variation for the low cost change district, there is a sharp rise in the transition into insolvency for high cost change district starting with the reform. The change settles at 40 log points in 2008.

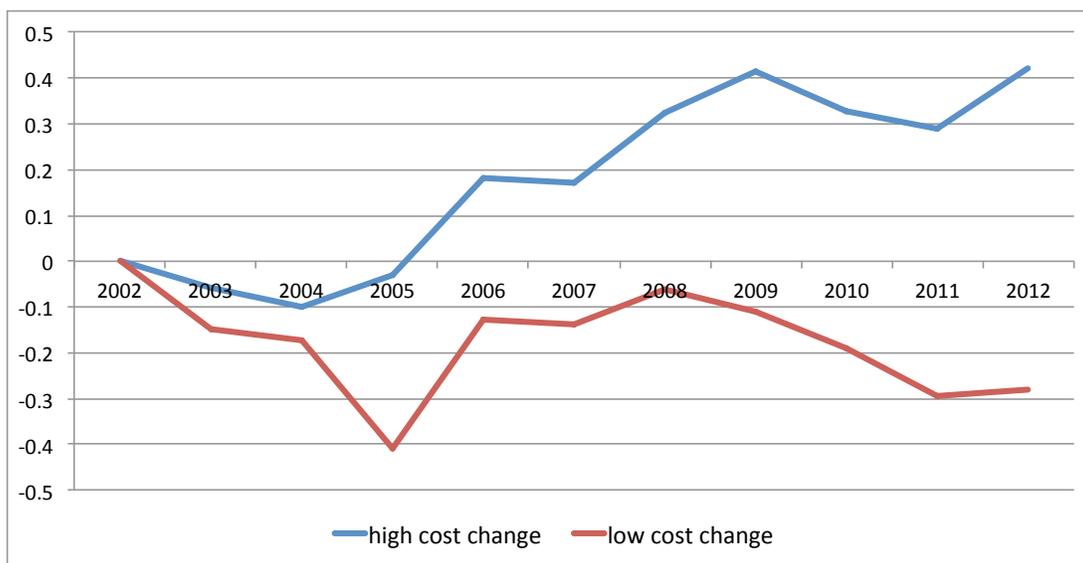


Figure 14: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Delinquent to Insolvent (without foreclosure) for districts in the top 30% (high cost change) and bottom 30% (low cost change) of the cost change distribution.

The transition probability into bankruptcy from newly insolvent, displayed in figure 15 drops more and more persistently in high cost change districts, consistent with the notion that liquidity constraints are the mechanism through which the reform affects the transitions into bankruptcy and severe delinquency.

¹⁷We focus here on Chapter 7, which is the dominant chapter of choice for US households - roughly 70% of observed filings are Chapter 7 filings. This chapter is also more suitable for filers with low assets, which are more likely to be cash-strapped, increasing the potential impact of filing costs changes.

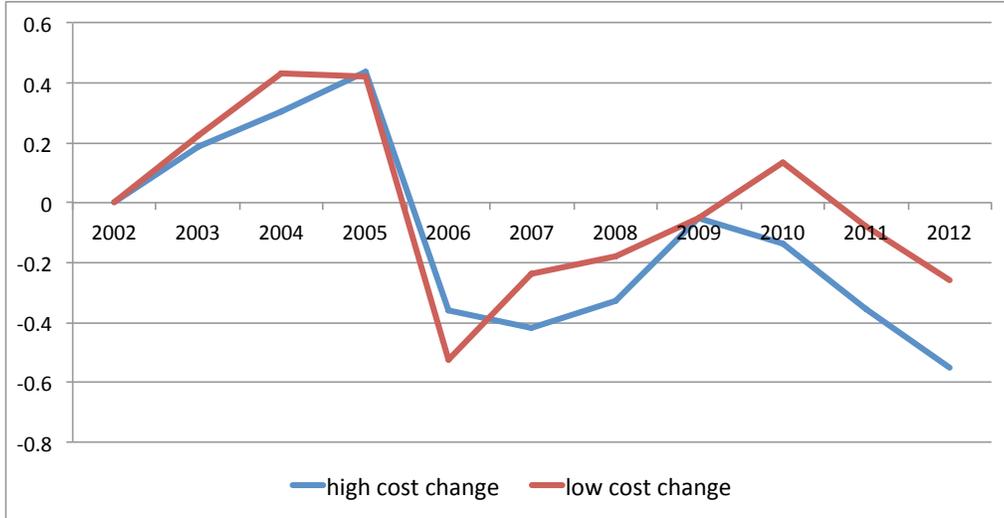


Figure 15: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Insolvent to Bankrupt for districts in the top 30% (high cost change) and bottom 30% (low cost change) of the cost change distribution.

Finally, figure 16 displays the transition probability from a new insolvency to foreclosure. The post reform rise in this probability is twice as large in high cost change districts relative to low cost change districts.

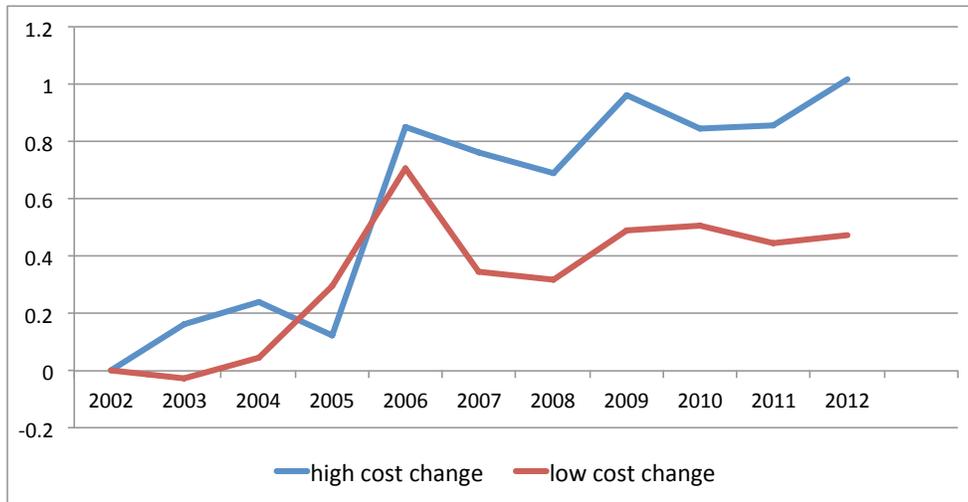


Figure 16: $\beta_s(t)$ for 4 quarter ahead transition probability from Newly Insolvent to Foreclosure (with no bankruptcy) for districts in the top 30% (high cost change) and bottom 30% (low cost change) of the cost change distribution.

Summarizing, the cross-district analysis confirms our hypothesis that the increase in filing costs has significant implications for household bankruptcy and delinquency behavior. Our

findings are consistent with the notion that higher increase in costs prevents a larger fraction of financially distressed individuals from filing for bankruptcy protection, pushing them into insolvency and foreclosure. Given evidence in Lupica (2012) that the cost increases are independent of business cycle or aggregate filing behavior, we view our findings as suggestive of direct effects of the law on these outcomes. In the next section, we provide further evidence by using a regression approach, where we control for business cycle and recession effects on the district level, and exploit the cross-district variation in filing cost.

5 Regression analysis

The purpose of this section is to assess the relation between the costs of filing for bankruptcy and bankruptcy decisions. To this end, we exploit the sizable cross-district variation in lawyer fees associated with filing for bankruptcy as well as the cross-district variation in the change in these costs following BAPCPA. Using a difference-in-difference approach, we establish that districts with higher change in filing costs exhibited a larger decline in bankruptcy rates, controlling for other district characteristics and district business cycle effects.

We adopt the following difference-in-difference specification:

$$y_{it} = \alpha + \beta c_{i,t} + \psi I_t^{post} + \phi X_{it} + \epsilon_{it}, \quad (2)$$

where y_{it} is the log of the outcome of interest, c_i the log of the bankruptcy filing cost, and X_{it} is a vector of district level controls, with i denoting districts and t quarters.

Our main variable of interest is the transition probability from a new insolvency to bankruptcy filing at the district level. The coefficient β captures the effect of the log change in the cost post-reform on the log of the transition from new insolvency to bankruptcy post-reform. To see this, we take the first difference, which corresponds to time:

$$y_{it'} - y_{it} = \psi + \beta \Delta c_i + \phi (X_{it'} - X_{it}), \quad (3)$$

where t and t' denotes quarter pre-and post reform, and Δc_i is the log change in the filing cost associated with the reform. Then, we take a second difference across districts:

$$\Delta y_{it} - \Delta y_{jt} = \beta (\Delta c_i - \Delta c_j) + \phi (\Delta X_{it} - \Delta X_{jt}), \quad (4)$$

where Δx_{it} denotes the change over time of a variable x in district i .

This specification assumes that the sensitivity of the transition into bankruptcy to the

cost level and to the economic controls is constant pre- and post- reform. We also consider less restrictive formulations, in which we relax these assumptions in turn. The results are displayed in Table 5. We include the same economic controls and state level regulatory controls in all formulations. The economic controls include logs of personal income, the unemployment rate, house price index and their 4 quarter changes. The state level regulatory controls include the wage garnishment limit, the homestead exemption level and indicators for judicial foreclosure states and for recourse states. These are intended capture the impact of state level regulation on the incentives to go bankrupt. For example, in a state with higher wage garnishment limit, delaying bankruptcy is more costly. Conversely, higher homestead exemptions may render bankruptcy more attractive for home owners. Since these variables are time invariant, we do not include district fixed effects for this specification.

Column (1) corresponds to the baseline specification. Based on the estimated value of the coefficient on the filing cost, the median decline in lawyer fees post-reform (52%) reduces the transition from a new insolvency into bankruptcy by 18 log points, in addition to the 80 log point decline of the transition into bankruptcy estimated by the coefficient on the reform dummy.¹⁸ The transition into bankruptcy is positively related to the change in unemployment in the 4 quarters prior, and negatively related to the change in the house price index 4 quarters prior.

Column (2) reports a version of the baseline specification in which the sensitivity of the transition into bankruptcy is allowed to differ pre- and post-reform. Instead of the cost level, we include two regressors, the cost level pre-reform interacted with the pre-reform dummy, and the cost level post-reform interacted with the post-reform dummy. Notably, only the coefficient on the post-reform is consistently negative, suggesting that moving from the 25th to the 75th percentile of the filing cost post-reform reduces the transition into bankruptcy by 17 log points.

Columns (3) and (4) report estimates for the baseline specification estimated only on pre- and post-reform data, respectively. This allows us to detect a change of the sensitivity to the economic controls of the transition into bankruptcy. Both in the pre- and post-reform period, we find a sizable and significant negative relation between the filing costs and the transition into bankruptcy. Moving from the 25th to the 75th percentile of the filing cost distribution reduces the transition into bankruptcy by 13 log points in the pre- and 14.5 log points in the post-reform periods. However, the sensitivity of the transition into bankruptcy to the economic controls varies noticeably pre- and post-reform. None of the controls are

¹⁸We exclude from the sample the period 2005.Q1 to 2006.Q1 to exclude the effects of reform anticipation that simply shift the timing of bankruptcies.

significant in the pre-reform period, while post-reform, the transition into bankruptcy is significantly positively related to the 4 quarter change in income and unemployment, and significantly negatively related to the 4 quarter change in house prices.

Column (5) reports a version of the specification (2), in which we include separately a dummy for districts in the first and third tercile of the cost level distribution, for pre- and post-reform, where we use the tercile dummy to proxy for the filing cost. While the estimated coefficient for the first decile of the cost distribution is not significant either pre- or post-reform, the coefficients for the third decile are negative and highly significant in both periods, and similar in magnitude to the estimated coefficient for column (2). This suggests that most of the aggregate response to the filing cost is driven by districts with high values of these costs. The coefficients imply that moving from the median to the top tercile of the cost distribution (a 25% increase in cost level) implies an 11 and 12 log point drop in transitions to bankruptcy.

Table 5: Transition from New Insolvency to Bankruptcy: OLS Estimates

	(1)	(2)	(3)	(4)	(5)
Filing Cost	-0.34 (1.96)				
Filing Cost Pre		-0.13 (0.72)	-0.49 (2.62)		
Filing Cost Post		-0.52 (3.06)		-0.42 (2.52)	
1 st Cost Tercile Pre					0.10 (0.73)
3 rd Cost Tercile Pre					-0.44 (3.22)
1 st Cost Tercile Post					-0.16 (0.80)
3 rd Cost Tercile Post					-0.49 (3.24)
Reform Dummy	-0.80 (6.49)	1.83 (1.70)			2.54 (1.09)
Income	0.32 (1.18)	-0.32 (1.2)	0.00 (0.02)	0.46 (1.71)	0.28 (1.23)
Δ Income	0.59 (1.61)	0.60 (1.82)	0.12 (0.23)	1.56 (4.06)	0.35 (1.08)
Unemployment	0.17 (1.03)	0.16 (0.97)	0.12 (0.69)	0.06 (0.31)	0.24 (1.65)
Δ Unemployment	0.33 (3.27)	0.33 (3.39)	-0.26 (1.65)	0.46 (4.11)	0.34 (3.49)
House Price Index	-0.10 (0.36)	-0.11 (0.39)	-0.08 (0.23)	-0.31 (1.00)	0.01 (0.04)
Δ HPI	-1.01 (3.82)	-1.10 (4.32)	0.79 (0.76)	-1.55 (4.69)	-0.96 (4.01)
Regulation	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.42	0.42	0.18	0.33	0.47
N	2327	2327	1815	1512	2327

All variables (except indicators) in logs. All observations are weighted by district level population. Standard errors are clustered at the district level. Absolute values of the t-statistics are reported in parentheses. We are dropping observations from 2005.Q1 to 2006.Q1 to exclude anticipation effects. Here Δ denotes the 4 quarter change from the current quarter.

5.1 Exogeneity of the cost change

One concern with using the filing fees as explanatory variables is that the change in fees associated with the reform may be jointly endogenous with the bankruptcy rate or its change. Table 6 examines the relation between the filing costs and their changes post-reform with prior economic indicators, state level regulation and prior bankruptcy, insolvency and foreclosure behaviors. Our results suggests that the filing costs and their changes do not display evidence of joint endogeneity. In particular, neither the cost post-reform or the cost change are related to prior bankruptcy, foreclosure or insolvency rates. In fact, the only variable in table 6 which seems to be statistically related to the cost change is the indicator for judicial foreclosure. Our conclusion is that we can reasonably assume that the joint endogeneity issues do not arise in our specification. However, for robustness, we also conduct an instrumental variable analysis in the next subsection.

5.2 Instrumental Variable Approach

We instrument the cost change in two ways. First, we construct a new instrument for the change in fees that exploits the appointment process for bankruptcy judges. Second, we use the cost level pre-reform to instrument for the change.

In terms of the instrument that exploits the appointment process of bankruptcy judges, we posit that the change in fees associated with the reform is driven by the political preference of the bankruptcy judges in office in each district at the time of the implementation of reform. Bankruptcy judges are appointed by the Court of Appeals, in the Circuit to which each district belongs, to renewable 14 year terms. Therefore, we assume that the political affiliation of the bankruptcy judges will reflect the affiliation of the magistrates on the Court of Appeals at the year of first appointment of each bankruptcy judge. Magistrates on appellate courts also serve renewable 14 year terms and are appointed by the President of the United States. We therefore proxy the political affiliation of each magistrate on the Court of Appeals with the party of the President who appointed that magistrate. We then aggregate the preferences across sitting appellate magistrates to obtain a unique measure, corresponding to the fraction of magistrates appointed by Republican presidents, for each bankruptcy judge. Since each court district has several bankruptcy judges, to obtain a measure of political affiliation at the district level, we compute the weighted average of the political affiliation of the bankruptcy judges in the district, with weights given by their tenure in the bankruptcy court.¹⁹

¹⁹We also experiment with unweighted averages. The results we will present are not sensitive to the

As shown in Appendix C, the evolution over time of the political affiliation of the Court of Appeals in each circuit depends on the party of the sitting President. Moreover, our instrument is not correlated with local preferences at the district level, which could drive both the attorney fee change and bankruptcy outcomes via their influence on local culture or judicial norms. These properties speak to the exogeneity of the instrument. The instrument is also economically salient. We expect that the political preferences of the bankruptcy judges comprised in each court would matter in shaping their recommendation for reasonable lawyer fees, given that they understand that the structure of those fees affects filing patterns. As shown in Table 7, column (1), the first stage regressions suggest that the instrument (denoted with Judge Preference) is significantly negatively related to the cost change, though it is somewhat weak.

In terms of using the pre-reform cost to instrument the post-reform cost, the pre-reform cost is clearly exogenous relative to the bankruptcy behavior in the post reform period, and it is significantly negatively related with the cost change, as shown in Table 7, column (2).

We estimate the version of specification (2) in table 5 that allows for different coefficients on the filing costs pre- and post-reform. The results are displayed in Table 7. Column (1) displays the estimates when the cost post-reform is instrumented by a variable obtained by summing the pre-reform cost and the first stage projection of the cost change associated with the reform. Column (2) displays estimates for a version in which the cost post-reform is instrumented with the cost pre-reform.

The increase of the filing cost post-reform is strongly negatively related to the bankruptcy filing rate in the post-reform period. Moving from the 25th to the 75th percentile of the post-reform cost distribution reduces the transition from a new insolvency to bankruptcy by 11 log points for the specification in column (1), and by 21 log points for the specification in column (2). Additionally, the transition into bankruptcy is significantly positively related to the change in unemployment, and significantly negatively related to the change home price index for both specifications.

To rule out that these results are driven by pre-existing trends, we also run an event study specification in which a coefficient for the response to the reform to the cost change, via the instrument, is estimated in each quarter of the sample. The details of our approach are described in Appendix C. We find no evidence of pre-existing trends for both specification (2) and (3).

aggregation scheme.

Table 6: Exogeneity of the filing costs and filing cost changes.

Panel I: Economic Indicators				
	Income	Unemployment	HPI	
Filing Cost Post	0.43 (3.38)	-0.02 (0.18)	0.64 (2.93)	
<i>R</i> squared	0.11	0	0.08	
Log Change	-0.03 (0.31)	-0.04 (0.53)	-0.08 (0.44)	
<i>R</i> squared	0	0	0	
N	89	89	85	
Panel II: Regulatory Variables				
	Homestead	Garnishment	Recourse	Judicial
Filing Cost Post	0.04 (2.64)	0.0002 (1.91)	-0.17 (2.96)	-0.04 (0.81)
<i>R</i> squared	0.08	0.04	0.09	0.008
Log Change	-0.005 (0.42)	-0.0002 (2.40)	-0.04 (0.93)	-0.12 (3.30)
<i>R</i> squared	0.002	0.06	0.01	0.11
N	89	89	89	89
Panel III: Prior Behavior				
	Bankruptcy	Foreclosure	Insolvency	
Filing Cost Post	- 0.01 (0.93)	-0.05 (0.76)	-0.008 (0.09)	
<i>R</i> squared	0.01	0.007	0	
Log Change	0.005 (0.46)	-0.003 (0.06)	-0.02 (0.28)	
<i>R</i> squared	0.002	0	0	
N	89	89	89	

Numbers in parentheses are the absolute values of t-statistics. Bankruptcy, Foreclosure and Insolvency are average pre-BAPCPA Chapter 7 filing rate, foreclosure rate and insolvency 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.

Table 7: Transition from New Insolvency to Bankruptcy: IV Estimates

	(1)	(2)
IV Filing Cost Post	-0.33 (2.07)	-0.65 (2.41)
Filing Cost Pre	-0.13 (0.62)	-0.20 (0.98)
Reform Dummy	0.56 (0.83)	2.26 (2.65)
Income	0.28 (1.00)	0.31 (1.11)
Δ Income	0.41 (1.11)	0.56 (1.68)
Unemployment	0.19 (1.08)	0.20 (1.19)
Δ Unemployment	0.33 (2.97)	0.31 (2.92)
House Price Index	-0.13 (0.44)	-0.06 (0.20)
Δ HPI	-0.99 (3.10)	-1.13 (4.00)
Regulation	Yes	Yes
Adjusted R^2	0.42	0.43
N	2266	2327
First Stage Regressions		
Judge Preference	-0.16 (1.70)	
Filing Cost Pre		-0.35 (5.07)
Regulation	Yes	No
F-stat	4.67	25.74
Weak Identification F	2.9	
N	85	89

All observations are weighted by district level population. Standard errors are clustered at the district level. Absolute values of the t-statistics are reported in parentheses. We are dropping observations from 2005.Q1 to 2006.Q1 to exclude anticipation effects. We use the Craig-Donald-Wald F statistic to detect weak identification. Δ denotes 4 quarter changes.

5.3 Substitution from Bankruptcy

In Section 3, we showed that the reduction in transition to bankruptcy associated with the reform was accompanied by a sizable rise in insolvency and foreclosure. In this section, we explore this substitution effect with regression analysis. This allows us to control for district-specific and overall economic conditions to isolate the impact of the reform.

As before in the regression analysis, we focus on the population of newly insolvent individuals—individuals who show a first insolvency of any kind after no insolvencies (and no bankruptcy or foreclosure flags) for the previous 8 quarters. We then compute the rate at which individuals in each quarter transition into various states at a 4 and 8 quarter horizons. The states we are interested in are insolvency (without foreclosure), bankruptcy (without foreclosure) and foreclosure. These transitions are intended to capture the flow into various states for a new spell of financial distress, and therefore they differ from the transition rates estimated in Section 3, which are unconditional.

Mechanically, the decreased transition to bankruptcy documented earlier must be accompanied by increases in transitions into other possible outcomes—the question is which ones. Below, we document the substitution pattern and show that the outcomes which exhibit increased inflows related to drops in flows to bankruptcy are insolvency (the persistence of insolvency) and foreclosures. In particular, we find no effect on transitioning into ‘current’.

In the analysis below, we aim to capture the effect of within-district persistent drop in flows to bankruptcy on flows to other credit states. To that end, we adopt a two step procedure. We first obtain the average changes in flows to insolvency, foreclosure and current states, driven by the reform, controlling for economic factors. Formally, we estimate:

$$y_{it} = \sum_i \gamma_i I_{it}^{post} + \phi X_{it} + I_t + D_i, \quad (5)$$

where I_{it}^{post} is a set of district-specific post-reform dummies, D_i are district effects, I_t are time-effects, and X_{it} is a vector of district-level economic controls. X_{it} includes logs of income, unemployment rate and house price index, as well as 4-quarter changes in log house price index and the log unemployment rate. The output of interest from this step is the set of district dummies γ_i , which capture the log change in average flows not explained by our other controls.

In the second step of our estimation procedure, we regress the district dummies $\{\gamma_i\}$ estimated in the first stage on the district-specific log change in the average flow from insolvency

to Chapter 7 bankruptcy:

$$\gamma_i = \alpha + \beta \Delta F_{ins \rightarrow bank}.$$

The estimated coefficient β will capture the direction and statistical strength of the relation between the drop in flows to bankruptcy and the other flows of interest.

We report the estimates for flows into insolvency (persistence of insolvency), into foreclosure and into current in table 8. At the 4 quarter horizon, the median bankruptcy flow drop (56%) increases the persistence of the insolvency state by 3% (the median change is 1.3%). Shifting from the 10th to the 90th percentile of the bankruptcy flow distribution (60 percentage point drop) results in an change of the increase of the persistence of the insolvency state by an additional 3.2%. For the flows into foreclosure, the results are much more dramatic. At the 4-quarter horizon, the median drop in flows into bankruptcy results in a 27% percent increase in flows into foreclosure (relative to a median increase of these flows of 78%). There is no evidence that the law had any effect on transitions to current—which suggests lack of a ‘disciplining’ effect of the law in which people discouraged from filing pay off their debts.

Table 8: Evidence on the effects of the reform: Substitution from Bankruptcy.

Horizon	4Q	8Q
	Flow to Insolvency	
Flow to Bankruptcy	-0.05 (1.94)	-0.08 (2.21)
R^2	0.05	0.07
	Flow to Foreclosure	
Flow to Bankruptcy	-0.49 (2.05)	-0.37 (1.87)
R^2	0.06	0.05
	Flow to Current	
Flow to Bankruptcy	0.03 (0.61)	-0.004 (0.12)
R^2	n.a.	n.a.

Horizon denotes the horizon of the outcome variable—flows to bankruptcy are kept at the 4 quarter horizon.

Substitution for initial state Current We also provide evidence on the flows conditional on individuals being initially Current: on time on all accounts and no bankruptcy or foreclosure for the past 8 quarters. The transition of interest is the persistence of the

Current state, which gives some indication of whether the reform served as any kind of deterrent to delinquent behavior.²⁰ Table 9 reports the analog of the analysis in the previous paragraph for this initial state. We find that indeed in districts which exhibited larger drops in transitions to bankruptcy, the persistence of the Current state went up. Quantitatively, for the median drop in flows into bankruptcy, the persistence of the Current state increased by 0.65% percent at the 4 quarter horizon and 1.5% percent at the 8 quarter horizon.

Table 9: Evidence on the effects of the reform: Substitution from Bankruptcy.

Horizon	4Q	8Q
	Current to Current	
Flow to Bankruptcy	-0.009 (3.97)	-0.021 (4.86)
R^2	0.23	0.32

Horizon denotes the horizon of the outcome variable—flows to bankruptcy are kept at the 4 quarter horizon.

²⁰The estimated effects of the reform on the transitions to bankruptcy, analogous to the ones in table ?? imply a quantitative change in the flow to bankruptcy similar in magnitude to the overall effects in table ?? (not reported here).

6 Bankruptcy versus Insolvency: Does It Matter?

Our transitions and regression analyses show a sizable substitution from bankruptcy to insolvency, with and without foreclosure, and a rise of the persistence of insolvency. We now examine which of these states is more beneficial to individuals. We focus on Ch. 7 bankruptcy, therefore, the tradeoff is having a bankruptcy flag on one's credit record without any delinquent or insolvent debt,²¹ versus no bankruptcy flag with an accumulation of delinquent and insolvent balances, with possibly additional denigratory items.

We adopt an event study approach, and, in each quarter, we examine two groups of individuals: (i) those who show a new insolvency on any type of debt after 8 quarters without insolvency (Newly Insolvent) or (ii) individuals who experience a new Chapter 7 bankruptcy (Bankrupt). Among the Newly Insolvent, we further distinguish between individuals who do not file for bankruptcy in the 8 quarters after the new insolvency (Non-Bankrupts), and those who do (Future Bankrupts).

As shown in Section 3.2, figure 11, there is large drop in the fraction of newly insolvent that become bankrupt within 8 quarters, after the reform, consistent with the overall decline in bankruptcy filings documented in the previous sections. We compare several measures of financial distress and credit access across the Future Bankrupts and the Non-Bankrupts.

We consider two measures of financial distress, the level of balances in collection and the fraction of newly insolvents who display court judgements on their credit file. Balances in collections typically arise due to charged off unsecured debt, especially credit card debt, installment debt and medical debt. Court judgements can be on file for unpaid alimony, wage garnishment orders or other unpaid debt, such as medical bills. Bankruptcy filing provides immediate relief from all collection efforts and stays all court judgements. Therefore, we report the behavior of these two variables only for the newly insolvent who do not go bankrupt in the following 8 quarters.

Figure 17 plots the average balances in collections, conditional on having non-zero balances, for newly insolvent individuals who will not go bankrupt in the next 8 quarters, at different horizons. Approximately 55% of households have items in collection when they become newly insolvent. This fraction grows by 40% after 8 quarters, as long as they don't file for bankruptcy, and both fractions are stable over time. There is a positive trend in the value of dollar balances in collection at a new insolvency, and these balances more than double 6 quarters after the new insolvency, with this growth somewhat greater for individuals who become insolvent during the 2007-2009 recession and subsequent recovery.

²¹Student debt is not dischargeable in bankruptcy, and is excluded from the analysis.

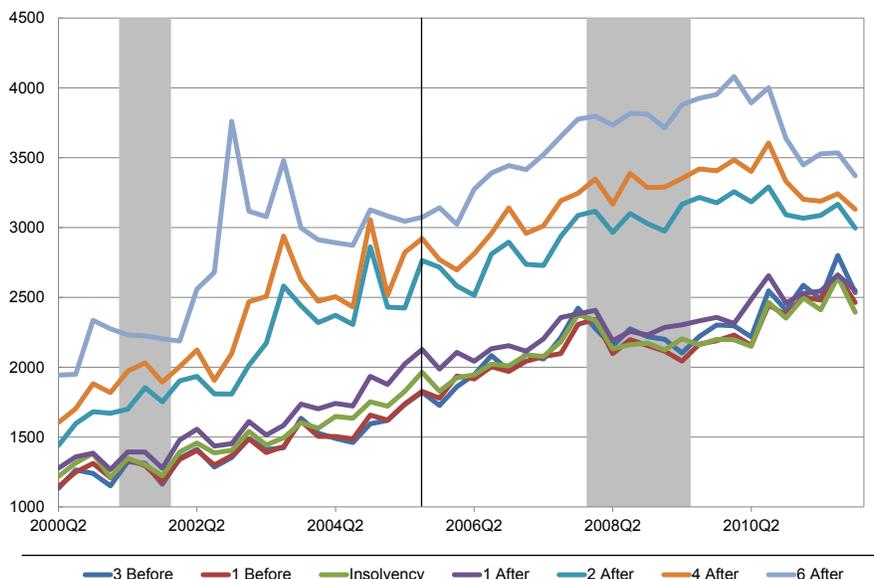


Figure 17: Average balances in collections for Newly Insolvent individuals without bankruptcy in the next 8 quarters.

Figure 18 shows the fraction of newly insolvent individuals that do not go bankrupt in the next 8 quarters, who have at least one court judgement. We display the ratio of this variable to its value at the time of the new insolvency for several horizons after that insolvency. The fraction of individuals who have judgements at the time of a new insolvency is on average 7% in the sample, and is stable over time. This fraction grows gradually by 60% by 8 quarters after the new insolvency pre- reform, and almost doubles after 8 quarters post-reform. The difference in the rate of accumulation of judgements for the newly insolvent pre- and post-reform is consistent with positive selection into bankruptcy post-reform relative to pre-reform, reaffirming the notion of binding liquidity constraints.

We now consider the differences in access to credit between individuals who become newly insolvent in a given quarter without bankruptcy in the next 8 quarters, and individuals who go bankrupt in that quarter. Figure 19 displays the fraction of individuals with at least one new unsecured line of credit opened in the last year, four quarters after the new insolvency or bankruptcy. We interpret this as a measure of credit supply. In figure 20 we report the fraction of individuals with inquiries among these groups, also 4 quarters after insolvency or bankruptcy, an indicator of credit demand.

Clearly, bankrupt households have are more successful opening new unsecured lines of credit, even if, until 2009, they submit inquiries at a similar rate as individuals who will not go bankrupt. Even with the considerable time variation in both series, the percentage

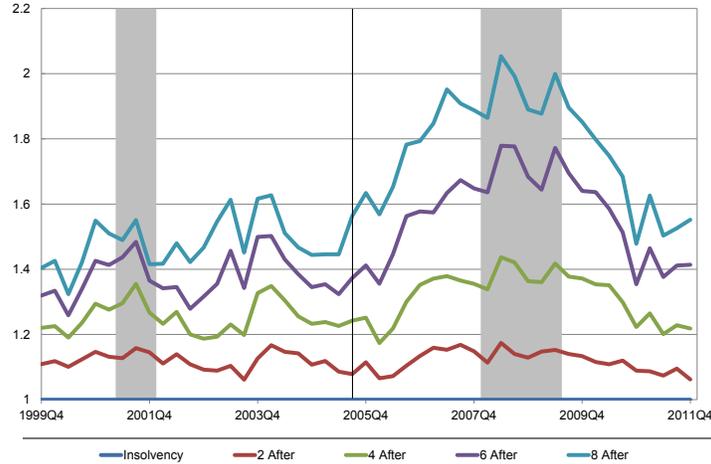


Figure 18: Fraction of Newly Insolvent without bankruptcy in the next 8 quarters with at least one judgement. Normalized to 1 at time of new insolvency.

difference in the fraction with new lines of credit between bankrupts and newly insolvent who do not go bankrupt is roughly stationary 19% .²²

We conclude by describing the behavior of credit scores. Figure 21 compares credit scores for the newly insolvents conditional on whether they go bankrupt in the next 8 quarters. At insolvency, those who will go bankrupt display a lower credit score, which suggests that they are negatively selected. Four quarters after the new insolvency, this ranking still prevails, even if credit scores have increased for both groups.

Figure 22 compares credit scores for the individuals who become newly insolvent in a given quarter who do not go bankrupt in the next 8 quarters, and individuals who go bankrupt in that quarter. Both one and four quarters after bankruptcy, the credit scores of the individuals who go bankrupt are considerably higher than those of the newly insolvent who do not go bankrupt. Moreover, this difference grows after the implementation of the reform, suggesting positive selection of bankrupt individuals in the post-reform period compared to bankrupt individuals in the pre-reform period. This change in the difference in credit score across bankrupt individuals and newly insolvent who will no go bankrupt is consistent with binding liquidity constraints prevent the newly insolvents from filing for bankruptcy.

²²The discontinuity in behavior may be due to the Credit Card Accountability Responsibility and Disclosure Act of 2009, which introduced improved standards of transparency and accountability for credit cards companies.

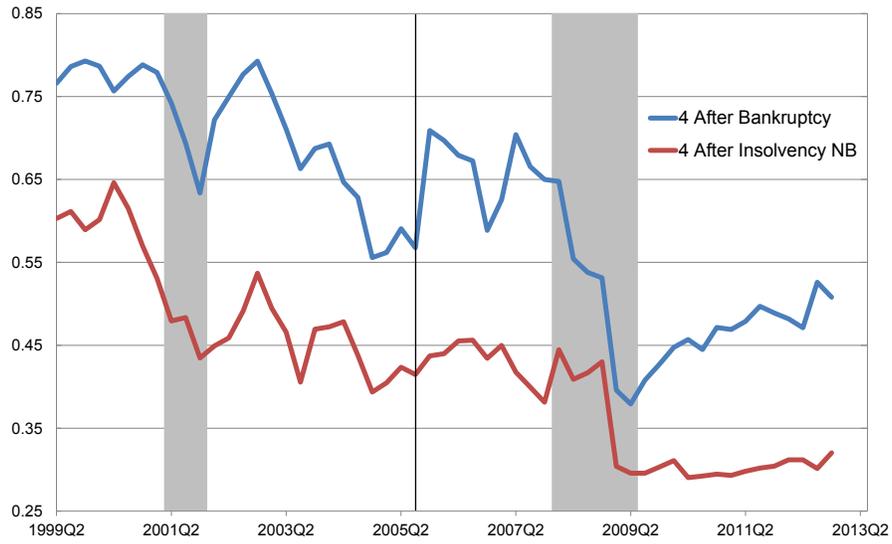


Figure 19: Fraction of Newly Insolvent without bankruptcy in the next 8 quarters and fraction of Bankrupts who opened at least one new unsecured line within the prior year.

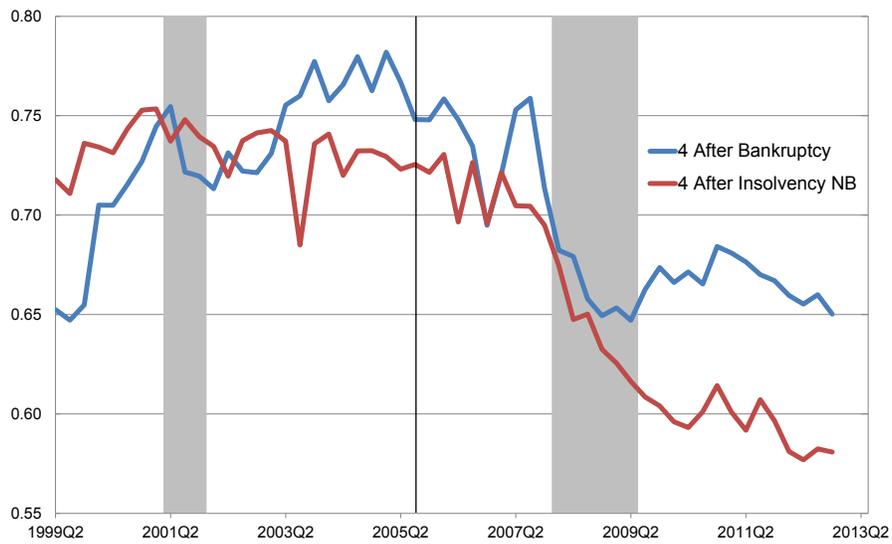


Figure 20: Fraction of Newly Insolvent without bankruptcy in the next 8 quarters and fraction of Bankrupts with at least one inquiry.

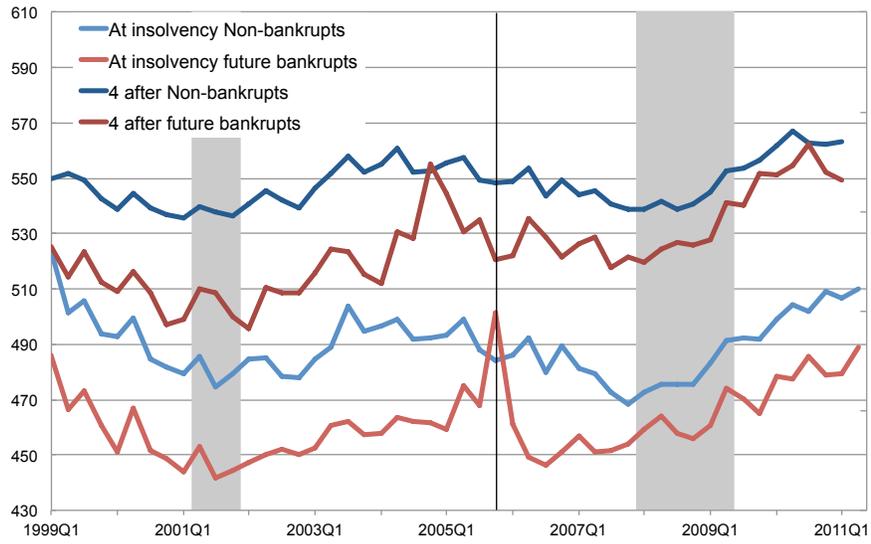


Figure 21: Credit scores of newly insolvent by future bankruptcy status, at various horizons.

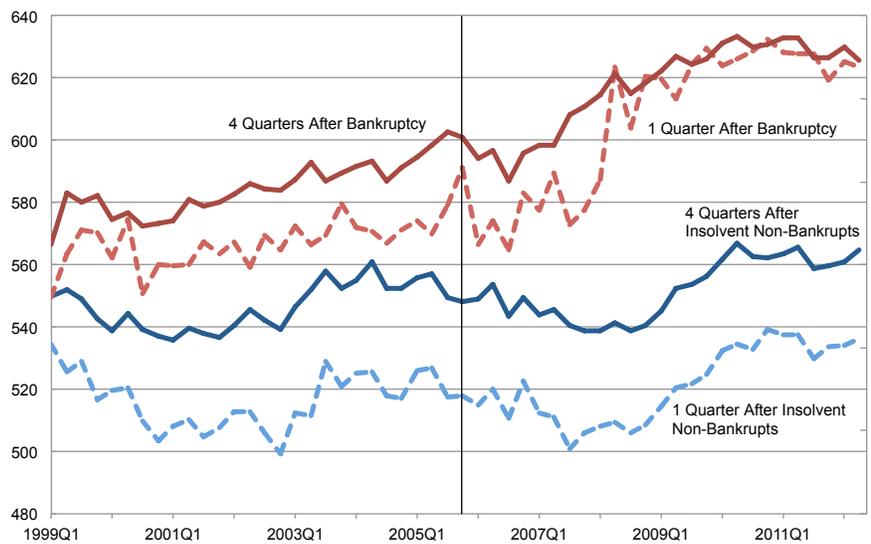


Figure 22: Credit score for newly insolvent without bankruptcy in the following 8 quarters and for bankrupts, at various horizons.

7 Conclusions

Our analysis suggests that the 2005 bankruptcy reform caused a decline in bankruptcy filings, which were replaced by a sizable rise in insolvency and foreclosure. We show that insolvency is a state associated with a high degree of financial distress in comparison to bankruptcy. This consequence of BAPCPA is potentially welfare reducing for households. However, since the recovery rates for creditors from insolvent loans are higher than on bankrupt loans, this could have induced banks and credit card companies to expand access and improve conditions for personal loans. Indeed, Simkovic (2009) finds that BAPCPA reduced credit card company losses and increased their profits. However, there is little evidence that credit conditions for consumers improved. Taken together, these findings suggest the main effect of the 2005 bankruptcy reform was to shift financially stressed individuals from bankruptcy to insolvency.

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A Consumer Credit Panel Data and Variables

Transition Matrices

Our transition matrices include 14 possible states: seven debt states for individuals who are not in foreclosure, and seven debt states for individuals who are in foreclosure. We define the seven debt states and foreclosure as follows:

1. **Delinquent:** An individual is delinquent if they have at least one loan in their CCP report in that quarter that is 30, 60, or 90 days past due (crtr_attr13, crtr_attr14, or crtr_attr15), while not having any loans that are 120+ days past due, severely derogatory, or bankrupt (crtr_attr16, crtr_attr17, or crtr_attr18). Also, at least one of crtr_attr16, crtr_attr17, or crtr_attr18 must be non-missing, and the individual must not be in a state of bankruptcy.

2. **Insolvent:** An individual is insolvent if they have at least one loan in their CCP report in that quarter that is 120+ days past due, severely derogatory, or bankrupt (crtr_attr16, crtr_attr17, or crtr_attr18), while not having any loans that are 30, 60, or 90 days past due (crtr_attr13, crtr_attr14, or crtr_attr15). 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.

3. **Both:** An individual is both delinquent and insolvent if they both have at least one loan in their CCP report in that quarter that is 30, 60, or 90 days past due (crtr_attr13, crtr_attr14, or crtr_attr15) and have at least one loan in their CCP report in that quarter that is 120+ days past due, severely derogatory, or bankrupt (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.

4. **Neither:** An individual is neither delinquent nor insolvent 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.

5. **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.

6. **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), then that individual is marked as being in a state of Chapter 7 bankruptcy for ten years after the date of their foreclosure. 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 datasets 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 Chapter 7 discharged in the present quarter, Chapter 7 voluntary or Chapter 7 involuntary in the most recent past quarter, and Chapter 7 discharged in the next quarter.

7. 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), then that individual is marked as being in a state of Chapter 13 bankruptcy for ten years after the date of their foreclosure. 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 datasets 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 Chapter 13 discharged in the present quarter, Chapter 13 filed in the most recent past quarter, and chapter 13 discharged in the next 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 datasets 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.

We condition transition matrices on credit score quintile using the CCP Equifax risk score, which is similar to the FICO score, in that both model 24 month default risk as a function of credit report measures (see Lee and van der Klaauw (2010)). It varies between 280 and 840 and represents an assessment of the individuals credit-worthiness. We also condition transition matrices using four different definitions of homeownership:

- Less-Restrictive Current Homeownership: The individual has at least one home-secured loan in the given quarter (using `crtr_attr6`, `crtr_attr7`, and `crtr_attr8`).

- More-Restrictive Current Homeownership: The individual has at least one mortgage loan in the given quarter (using `crtr_attr6`).

- Less-Restrictive Overall Homeownership: The individual has at least one home-secured loan at any time between 1999 and 2013 in the CCP dataset (using `crtr_attr6`, `crtr_attr7`, and `crtr_attr8`).

- More-Restrictive Overall Homeownership: The individual has at least one mortgage loan at any time between 1999 and 2013 in the CCP dataset (using `crtr_attr6`).

Regressions

Our regression analysis models three variables of interest:

1. Bankruptcy Rate: The fraction of CCP-covered individuals who commence Chapter 7 bankruptcy, by judicial district and quarter. We define the commencement of Chapter 7 bankruptcy as the following pattern in `cust_attr290`: the individual is marked as Chapter 7 discharged in the present quarter, Chapter 7 voluntary or Chapter 7 involuntary in the most recent past quarter, and Chapter 7 discharged in the next quarter. We exclude districts in which the average number of bankruptcies per quarter in the CCP is fewer than 5.

2. Foreclosure Rate: The fraction of CCP-covered individuals who enter the state of foreclosure, by judicial district and quarter. We define the state of foreclosure as a quarter in which the indicator `cma_attr3905` is on ("1" or "7").

3. Insolvency Rate: The fraction of CCP-covered individuals who enter the broad state of insolvency, by judicial district and quarter. An individual is broadly insolvent if they have at least one loan in their CCP report in that quarter that is 120+ days past due, severely derogatory, or bankrupt (`crtr_attr16`, `crtr_attr17`, or `crtr_attr18`).

The variable of interest 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 (2011). The other covariates include:

1. Income: Annual county-level income data for 3,142 counties are drawn from the Internal Revenue Services (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 (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.

Event Studies

Our event studies, in addition to the states described above (bankruptcy, insolvency, etc.), measure the following debt characteristics of covered individuals:

1. New secured (unsecured) debt: We calculate the total number of originated secured (unsecured) loans by differencing one’s current number of loans by type with the number of loans of that type had in the previous quarter, with a minimum value of 0, using `crtr_attr2`, `crtr_attr3`, `crtr_attr6`, `crtr_attr7`, and `crtr_attr8` (`crtr_attr4`, `crtr_attr5`, `crtr_attr9`). We then sum the number of loan originations over the current quarter and the past three quarters.

2. Has Collection: An indicator for whether an individual currently has at least one collection account (generated using `cma_attr3909`).

3. Collections Balance: The total balance of an individuals’ collection accounts, conditional on their having at least one collection account (generated using `cma_attr13`).

4. Has Judgment: An indicator for whether an individual has experienced a ”judgment public record item” within the past 7 years (generated using `cma_attr3813`).

5. Age Judgment: The number of months since an individual’s most recent ”judgment public record item”, conditional on their having had at least one such judgment in the past seven years (generated using `cma_attr3813`).

6. Has Inquiry: An indicator for whether an individual has made at least one loan inquiry (a "hard pull" of one's credit report) in the past 12 months (generated using `cma_attr3001`).

B Evidence on Negative Selection: Payroll Data

So far, we have assumed that low credit score individuals and non-homeowners are more likely to be liquidity constrained, based on the notion that they have lower income. In this section, we use supplementary payroll data from a large income verification firm for 2009 to provide support for this notion. This data is merged with our credit panel data, allowing us to map individuals' incomes for 2009 to their credit files.

The data is derived from a large nationally representative income verification firm. 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. The data is described in more detail in Appendix ???. To measure income, we use an imputed measure of total income obtained by computing pay rate times pay frequency, expressed in annual terms, yielding about 11,000 observations for 2009.²³ The sample of records is nationally representative, both in terms of geographical and age distribution. The resulting income measure is comparable in distribution to the CPS and the American Community Survey, as described in more detail in Appendix ???.

We compare individuals' incomes by credit score distribution, as well as the distribution of income distributions by homeownership status. Our evidence shows that low credit scores and non-homeownership are strong predictors of low income.

Table 10 provides information on the income distribution by credit score quintile. Each entry display the probability of being in a given income quintile, given that an individual belongs to a give credit score quintile. Individuals in the first credit score quintile have a 36% probability of being in the first income quintile, and a 62% probability of being in the first two quintiles of the income distribution. By contrast, individuals in the top quintile of the income distribution have a 42% probability of being in the top income quintile.

Table 10: Distribution of Income by Credit Score Quintile

Income Quintile	1	2	3	4	5	Count
CS Quintile						
1	0.36	0.26	0.20	0.12	0.05	1707
2	0.31	0.25	0.24	0.15	0.05	1949
3	0.27	0.20	0.21	0.20	0.12	2158
4	0.13	0.15	0.21	0.24	0.26	2300
5	0.08	0.09	0.17	0.23	0.42	2483

²³For the observations that have both reported total income and pay rate and frequency, our imputed measure matches total income very well. For details, see Appendix ???.

Table 11 provides information on the income distribution by homeownership status. Current homeowners' probability of being in the lowest income quintile is 10%, while it is 34% for current non-homeowners. By contrast, current homeowners' probability of being in the top two income quintiles is 57%, while it is only 21% for non-homeowners.

Table 11: Distribution of Income by Current Homeownership Status

Income Quintile	1	2	3	4	5	Count
Current Homeowner						
0	0.34	0.24	0.20	0.13	0.08	5153
1	0.1	0.12	0.21	0.26	0.31	5444

The payroll data is strongly suggestive that low credit scores and no owning a home are good proxies of low income. This evidence provides further support that liquidity constraints are driving the response to the bankruptcy reform.

The construction of these variables is described in detail in an appendix available from the authors upon request.

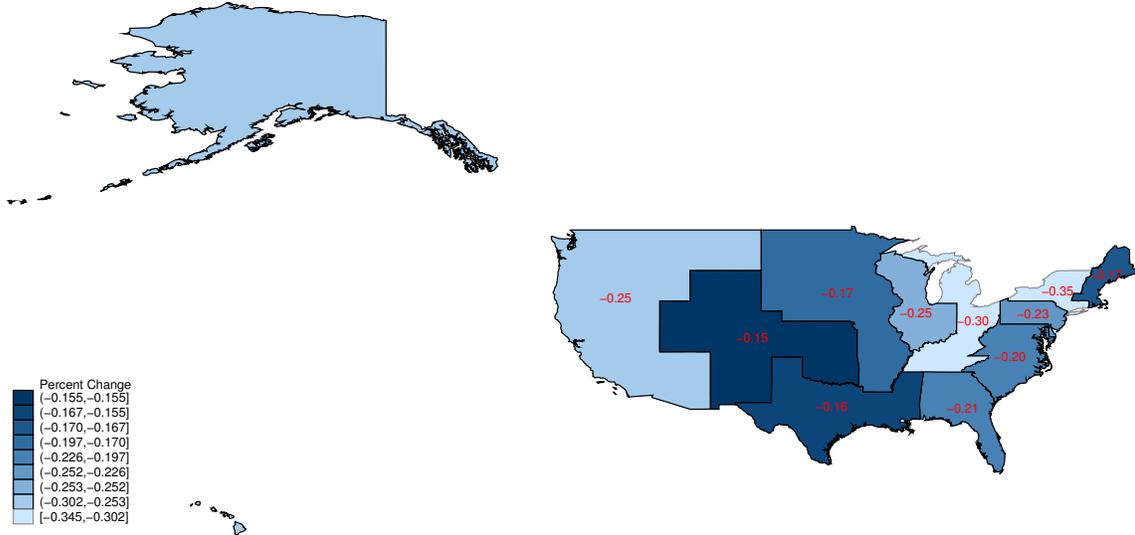
C IV Regressions

C.1 Judge Preference Instrument

We report some properties of the Judge Preference instrument. We start with exogeneity, by reporting in figure 23 the percentage change in the fraction of appellate court magistrates appointed by a republican president between 1993 and 2001 (the eight year Clinton presidency) and between 2001 and 2009 (the eight year presidency of G.W. Bush). As can be clearly seen from figure 23 the percentage of republican appointed judges falls under President Clinton in all circuits (by -35% to -15%) and rises under President Bush in all circuits (from 14% to 32%).

We also show that our instrument is not correlated with local preferences at the district level, which could drive both the attorney fee change and bankruptcy outcomes via their influence on local culture or judicial norms. This is illustrated in figure 24, where we report the distribution of our instrument across court districts (top panel) and the proportion of the popular vote for the republican candidate in the 2004 presidential election (bottom panel). The correlation between these two variables is -0.03 and not significantly different from zero.

Percent Change in the Proportion of Circuit Judges Holding a Seat in 2001
Appointed by a Republican President, by United States Appellate Court



Percent Change in the Proportion of Circuit Judges Holding a Seat in 2009
Appointed by a Republican President, by United States Appellate Court

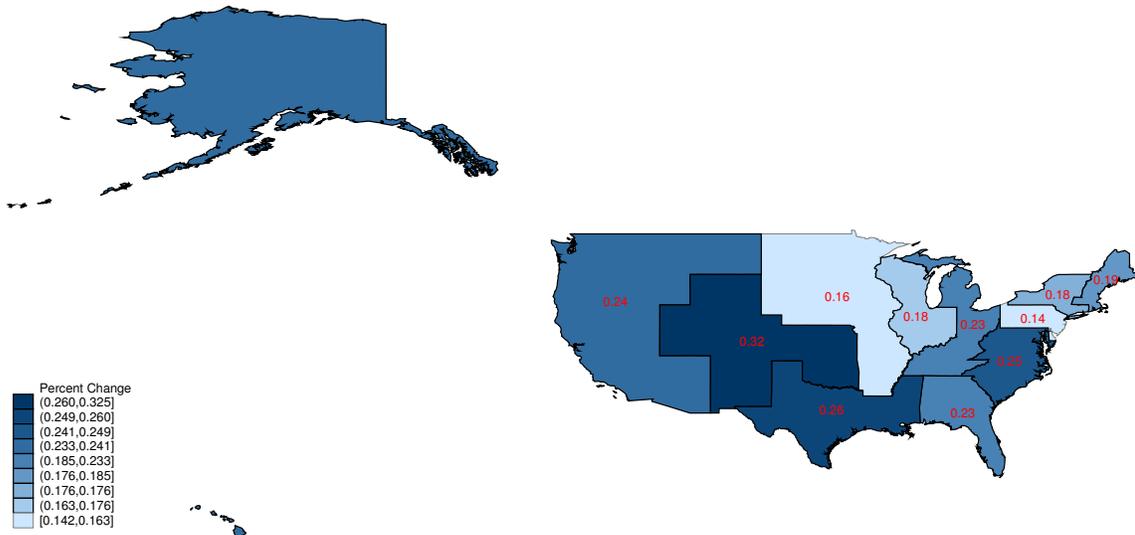
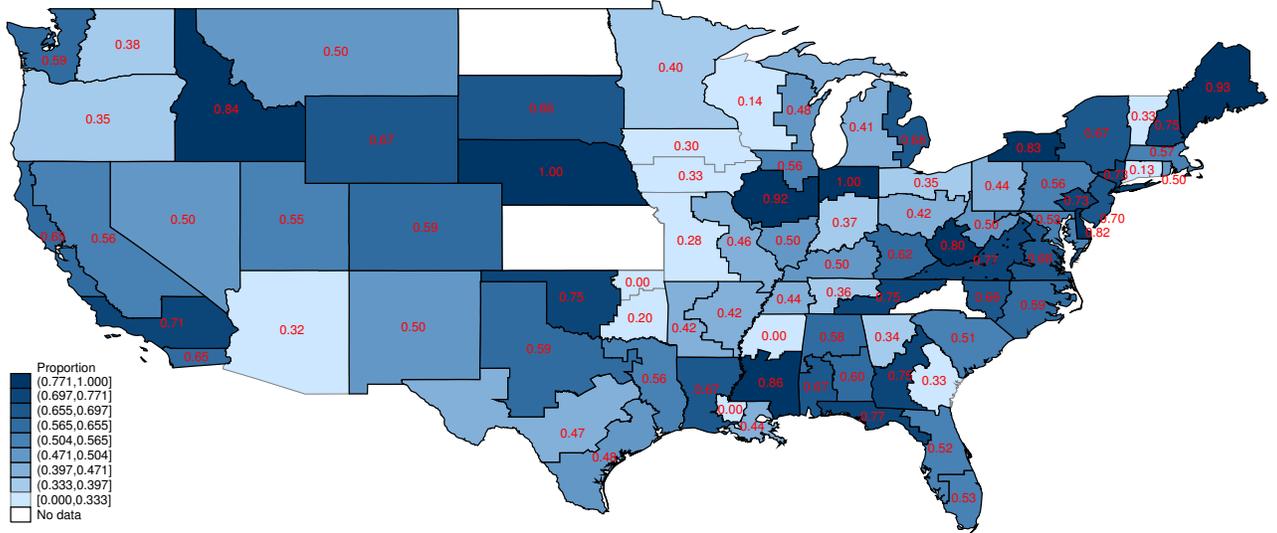


Figure 23: Change in the percentage of magistrates on the Court of Appeals appointed by Republican presidents during the Clinton (1993-2001, top panel) and G.W. Bush (2001-2009, bottom panel) administrations, in each Circuit.

Proportion of Bankruptcy Judges Appointed by Republican-Nominated Circuit Judges
by United States Court District



Proportion of Popular Votes for Republican President
in the 2004 Presidential Election by State

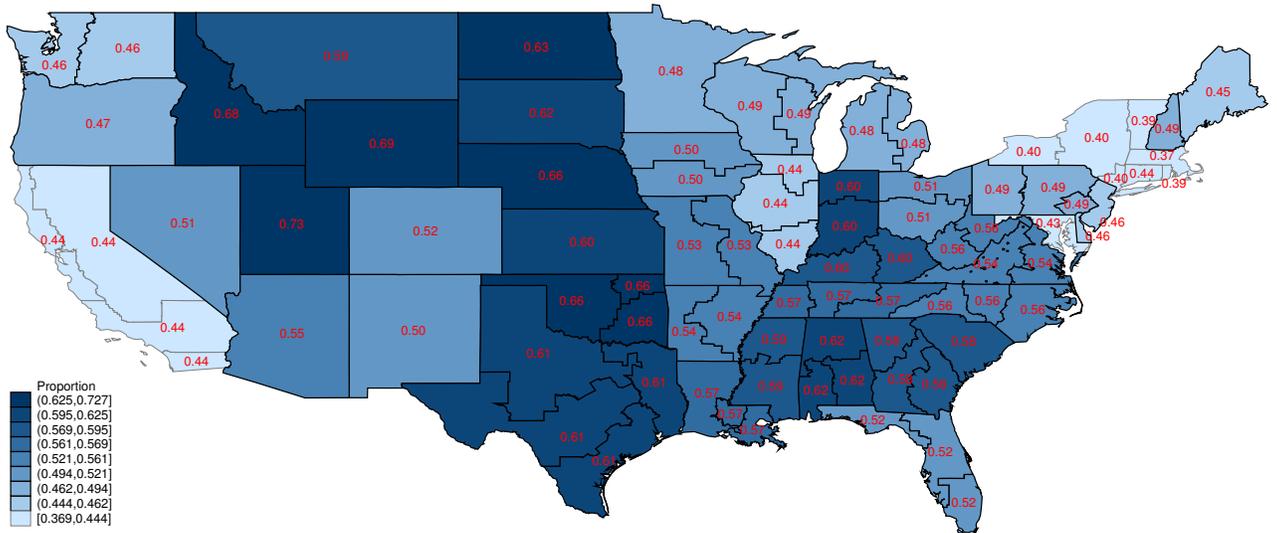


Figure 24: Political preference of bankruptcy courts in 2004 (top panel) and proportion of the popular vote for the republican candidate in the 2004 presidential elections (bottom panel). Source for bottom panel: Federal Election Commission.

C.2 Pre-existing Trends

We also test for the presence of pre-existing trends. Following Clemens and Gottlieb (2014), we estimate the following specification:

$$y_{it} = \alpha + \sum_{s \neq 0} \beta_s \Delta c_i \times I_s + \psi I_t^{post} + \phi X_{it} + \epsilon_{it}, \quad (6)$$

where I_s is an indicator equal to 1 in quarter s , zero otherwise, and β_s are coefficients capturing the response to the cost change in each quarter, relative to the omitted quarter, which is 2005:Q3. We implement this estimation for specifications (2) and (3). The estimated values of the β_s , with standard error bands, are plotted in figure 25. The estimates point to a change in mean between the pre- and post-reform periods, and the fact that, prior to the anticipation period between the second and third quarter and of 2005, there are no trends in the β_s estimates for the pre-reform period.

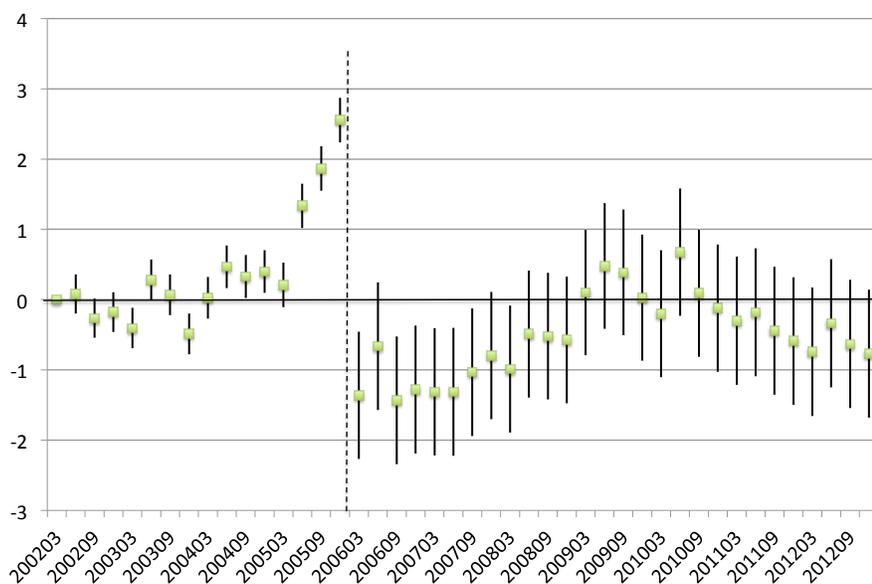


Figure 25: Estimated coefficients on equation 6, for specification (2).

We also estimate equation 6 for specification (3). The results are very similar to those for specification (2), with the pre-reform mean of β_s equal to 3.08, and the post-reform equal to 1.29.