Insolvency after the 2005 Bankruptcy Reform

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Introduction: Personal Bankruptcy

- Form of social insurance
  - Relief to individuals unable to repay previously contracted debt
  - Shocks: loss of income, medical bills, divorce, unplanned children (Chakravarty and Rhee 1999, Livschits, MacGee, and Tertilt 2007)
  - May generate moral hazard
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- Insurance/incentives trade-off raises normative and positive questions on the effects and optimal design of personal bankruptcy
- Approach
  - 2005 bankruptcy reform used as laboratory to inform theoretical and quantitative research
  - Study responses of many outcomes beyond bankruptcy
    - Rely on FRBNY CCP/Equifax credit file panel data (1999-2013)

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   - Exploit variation of rise in filing costs **across court districts**
   - Drop in Ch 7 grows with rise in filing cost, no relation for Ch 13

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3. Assess consequences insolvency:
   - Insolvency: lower access to credit than bankruptcy

Bankruptcy Law in the US: Pre-Reform

- Immediate relief from collections, wage garnishment, foreclosure
- Chapter 7 (70% of filings pre-reform): debt discharge
  - Full discharge in exchange for non-exempt assets
  - On record for 10 years, 6 year limit on refiling
- Chapter 13: debt restructuring
  - Future income used for 3-5 year repayment plan
  - Can include some credit card debt not dischargeable in Ch 7
  - On record for 7 years after discharge, no limit on refiling
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  - **All filing costs must be paid upfront**
- Chapter 13: debt restructuring
  - Future income used for 3-5 year repayment plan
  - Can include some credit card debt not dischargeable in Ch 7
  - On record for 7 years after discharge, no limit on refiling
  - **Costs included in repayment plan**
- Filer decides chapter

Bankruptcy Law in the US: BAPCPA

- Income test for Ch 7 eligibility: Income must be below state median
  Adjusted for household size; exception for business income
- Fixed 5 year repayment plan, limits to eligible debt for Ch 13
- New standards against fraud: attorney liable for accuracy of claims

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  - Refiling limit now 8 years for Ch 7 and 2 years for Ch 13
  - More stringent application of homestead exemptions
  - Increased paperwork and reporting requirements

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$\Longrightarrow$ **30% rise in attorney fees for both chapters** (75% of overall costs)

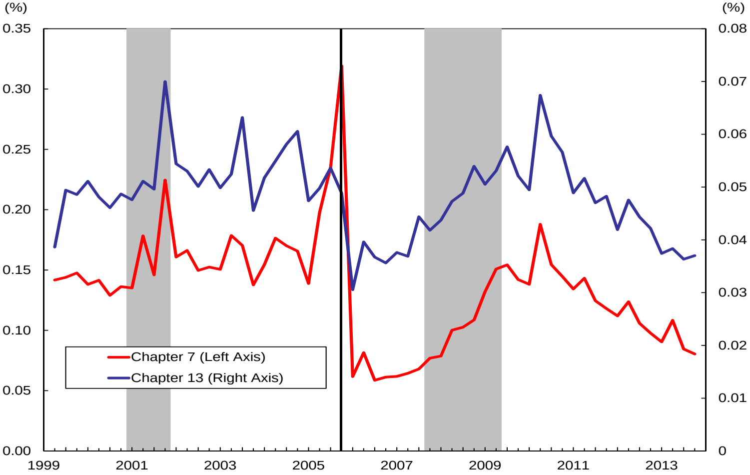
Court and other fees also rise

Data

- Federal Reserve Bank of New York Consumer Credit Panel/Equifax Data
  - Quarterly, 1999:Q1-2013:Q4
  - All individuals with an Equifax credit report (anonymous)
- Use 1% sample – about 2.5 million individuals each quarter
- Over 600 variables
  - All aspects of financial liabilities:
    by type of account, balances, numbers
  - Delinquent behavior: by severity, type of debt
  - Credit score, age, ZIP code
  - Public record items: court judgements, collections, etc.
- For 2009, matched to payroll data

Bankruptcy Filing Rates by Chapter

Fraction with new bankruptcy filing



Quarterly. Shaded areas denote NBER recessions.
Source: Authors' calculations based on FRBNY CCP/Equifax Data.

I. Quantifying the Response

Transitions into Bankruptcy, Foreclosure and Insolvency

Transitions

- Identify new spell of financial distress:

  New delinquency or New insolvency, after 8 quarters with a clean record

  - Delinquent: has accounts 30, 60 or 90 days late and not Insolvent
  - Insolvent: has accounts 120+ days late, charged-off

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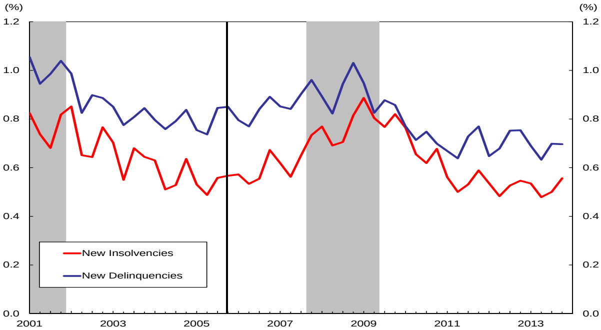
Fraction with new delinquency/insolvency



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- Estimate **transition probabilities**

  - Bankruptcy Ch 7 or Ch 13
  - Insolvency without foreclosure, Foreclosure
  - Current

- Estimates **at the district level** for

  - overall population, by credit score
  - entire post-reform period, only pre-recession or 2007-09 recession

Transitions

- Specification:

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

y_{it}: log transition in district i at quarter t, 1 and 4 quarters ahead

$\beta_{s(t)}$: time effect, relative to base period

$I_{s(t)}$: indicator for period s (year or quarter)

γ_i: district effects

X_{it}: log economic controls (PDI, UR, HPI)

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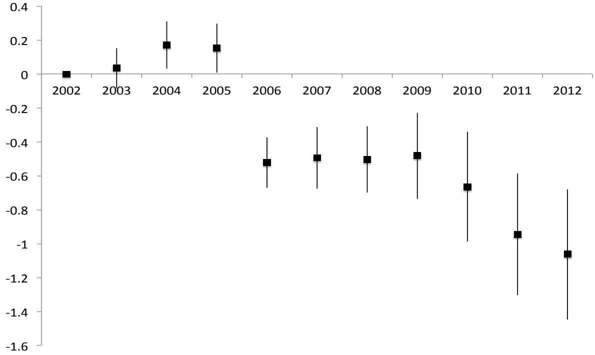
- Captures timing and magnitude of response relative to base period (2002) (Clemens and Gottlieb 2014)
- Reveals discontinuities at reform

Year $\beta_{s(t)}$ for 1Q Transitions to Bankruptcy

– Drop of transition **from new insolvency to Ch 7 bankruptcy**



Bars denote 90% confidence intervals. Source: FRBNY CCP Panel/Equifax Data.

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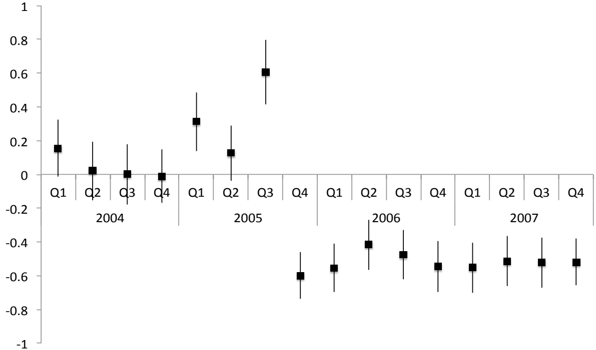
Timed exactly at reform (quarterly $\beta_{s(t)}$)



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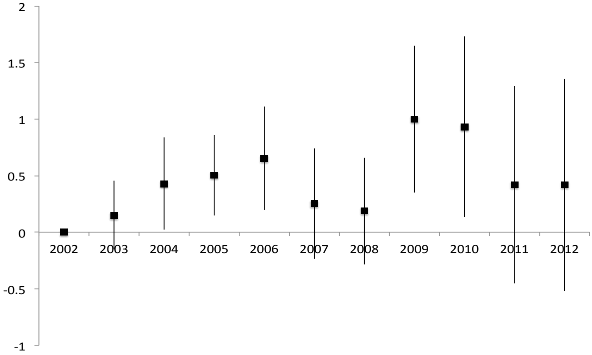

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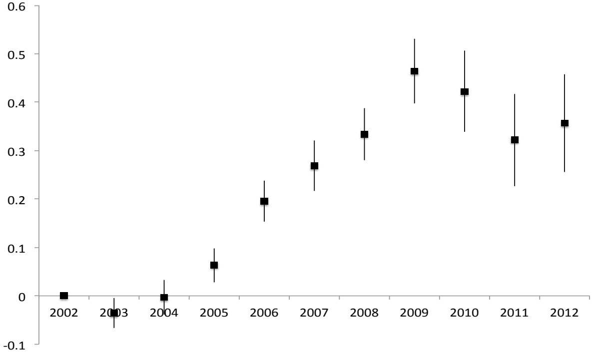
Year $\beta_{s(t)}$ for 1Q Transitions to Insolvency

– Rise in transition **from delinquency to new insolvency**
  Rise in severity of financial distress



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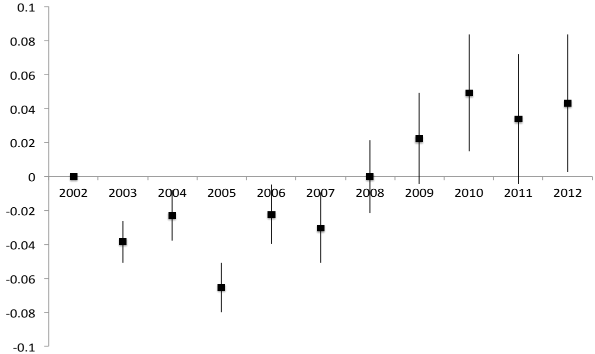
Year $\beta_{s(t)}$ for 1Q Transitions to Insolvency

- Rise in transition **from delinquency to new insolvency**
  Rise in severity of financial distress
- Rise in transition **from new insolvency to insolvency**
  Rise in the persistence of insolvency



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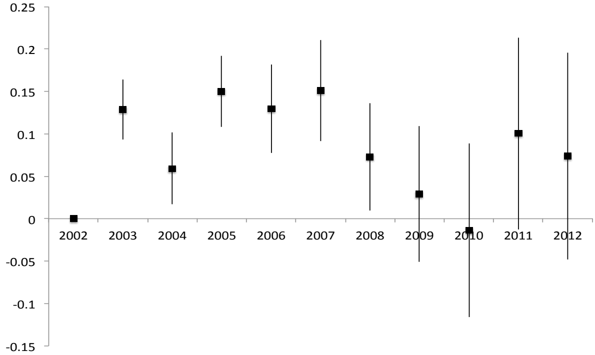
Year $\beta_{s(t)}$ for 1Q Transitions to Current

– No effect on transition **from new insolvency to current**
  No change in propensity to cure insolvency



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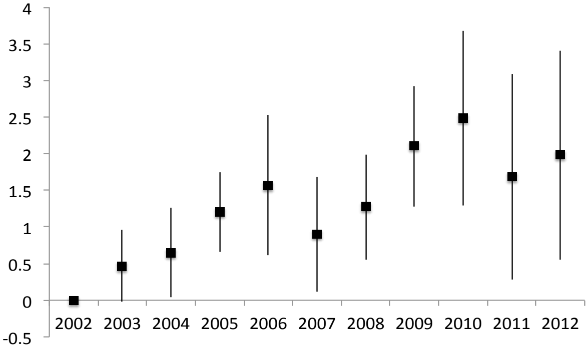
Year $\beta_{s(t)}$ for 1Q Transitions to Foreclosure

- Previous transitions **do not** involve foreclosure
- No effect on transition **from new insolvency to foreclosure**



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Transitions by Credit Score

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Distribution of Equifax Riskscore and labor income in 2009

Percentile	10%	25%	50%	75%	90%	Mean	St. Dev.
Riskscore	522	600	702	779	815	681	112
Income	16,640	22,880	39,520	64,100	99,840	49,728	35,057

Equifax Worknumber total annual income. Source: FRBNY CCP/Equifax Data

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    (conditional on age)
- Ch 7 income test typically **not binding** for below median credit scores

Transitions by Credit Score

- Rank individuals by their 4Q lagged Equifax Riskscore
  (related to income at time of borrowing)

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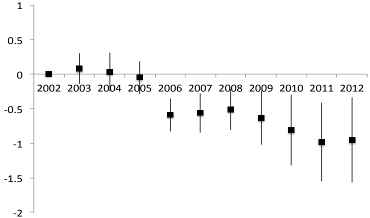
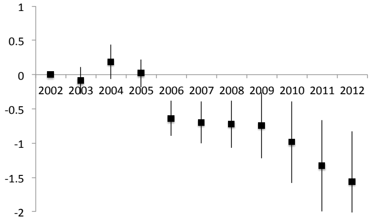
- 100-150% drop in transition from new insolvency to Ch 7 for **below median** credit scores

Quartile 1



Quartile 2



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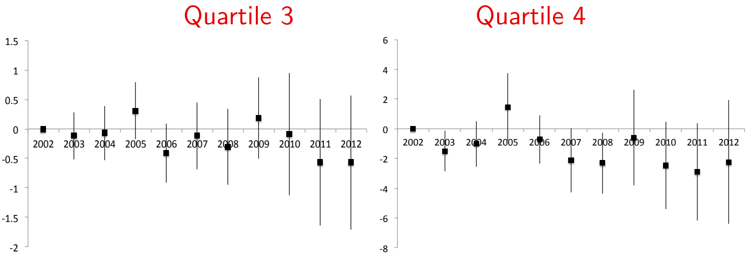
- No effect on above median credit scores



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Year $\beta_{s(t)}$: Summary

- Over 50% drop in transition to Ch 7 bankruptcy, no effect on transition to Ch 13 bankruptcy

  Ch 7 drop only for below median credit score/income individuals

- Possible role of liquidity constraints driving the response

  Ch 7 fees are paid upfront and Ch 13 fees in installments

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- No effect on propensity to cure insolvency

- No effect on foreclosure

II. Mechanism Behind The Response

Cross District Variation

Effect of Filing Fees on Bankruptcy

Substitution from Bankruptcy

Cross District Variation in Filing Costs

- Exploit cross-district variation in attorney fees **set by courts**
  Lupica (2012) (Map)

- Mean rise in Ch 7 attorney fees was 35% → upfront payment

Table: Distribution of attorney fees for Ch 7 bankruptcy

	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%

Cross District Variation in Filing Costs

- Exploit cross-district variation in attorney fees **set by courts** Lupica (2012) (Map)
- Mean rise in Ch 7 attorney fees was 35% → UPFRONT PAYMENT
- Mean rise in Ch 13 attorney fees was 29% → INSTALLMENTS

Table: Distribution of attorney fees for Ch 13 bankruptcy

	Pre-reform	Post-reform	Log Difference
Mean	$1910	$2531	29%
90th percentile	$2483	$3265	58%
75th percentile	$2245	$2832	43%
Median	$1847	$2515	25%
25th percentile	$1561	$2141	15%
10th percentile	$1246	$1839	3%

Regression to isolate effect of the cost change

- Step I: estimate mean post-reform change in transitions

$$y_{it} = \sum_i \beta_i I_{it}^{post} + \phi X_{it} + \gamma_i + \varepsilon_{it}$$

y_{it}: transition in district i at quarter t

I_{it}^{post}: district-specific post-reform dummies

γ_i: district means, X_{it}: economic controls (log)

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- Step II: estimate relation to change in attorney fees

$$\beta_i^{ins \to bank} = \alpha_0 + \alpha log(c_i^{post}/c_i^{pre}) + \nu_i$$

c_i^{pre}, c_i^{post}: attorney fee, pre- and post-reform

- Findings: Strong negative relation between change in attorney fees and transition to Ch 7, no relation for Ch 13

Attorney Fees and Bankruptcy

- Mean change in Ch 7 fees reduces 1Q transition from new insolvency to Ch 7 by 12%

  (Mean 58%, st. dev. 24%)

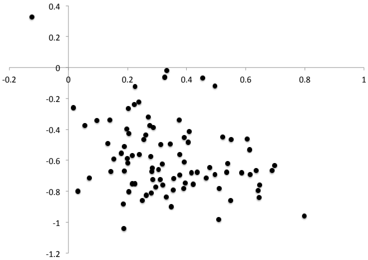
- No relation for Ch 13

Horizon	1Q	4Q
	New Insolvency to Ch 7	
Change in Ch 7 Fees	-0.423 (-3.03)	-0.281 (-2.81)
N	88	88
	New Insolvency to Ch 13	
Change in Ch 13 Fees	0.045 (0.07)	-0.138 (-0.37)
N	87	87

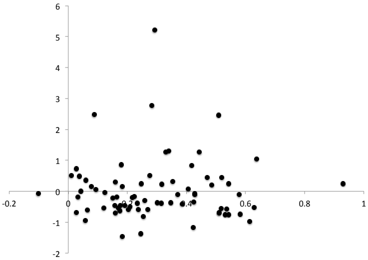
T-statistics in parenthesis. Robust to adjustment for generated regressors.
Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Attorney Fees and Bankruptcy

- Strong negative relation between change in Ch 7 attorney fees and transition from new insolvency to Ch 7; no relation for Ch 13



Chapter 7



Chapter 13

District-level change in transition from a new insolvency to filing (vertical axis) against district-level change in attorney fees (horizontal axis), by chapter. 1Q ahead transitions. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Attorney Fees and Bankruptcy: By Sub-Period

- Mean change in Ch 7 fees reduces 1Q transition from new insolvency to Ch 7 by **5% in pre-recession, 15% in credit slump**

  (Mean 54%, 53%; st. dev. 22%, 29% for pre-recession, credit slump)

Sub-period	pre-recession	credit slump
	New Insolvency to Ch 7	
Change in Ch 7 Fees	-0.177 (-1.81)	-0.512 (-3.01)
N	88	88
	New Insolvency to Ch 13	
Change in Ch 13 Fees	-0.032 (-0.08)	0.254 (0.36)
N	87	74

1Q ahead transitions. T-statistics in parenthesis. Robust to adjustment for generated regressors. Pre-recession: 2005Q4-2007Q3. Credit slump: 2007Q4-2011Q1. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Attorney Fees and Bankruptcy: By Credit Score

- Mean change in Ch 7 fees reduces 1Q transition from new insolvency to Ch 7 by **9% for quartile 1, 11% for quartile 2**

  (Mean 68%, 54%; st. dev. 38%, 28% for quartile 1, 2)

- No effect for higher credit score quartiles

Credit score quartile	1	2	3	4
	New Insolvency to Ch 7			
Change in Ch 7 Fees	-0.331 (-2.00)	-0.364 (-2.13)	-0.610 (-1.24)	0.303 (0.49)
N	88	88	88	88

1Q ahead transitions by 4Q lagged Equifax Riskscore quartile. T-statistics in parenthesis. Robust to adjustment for generated regressors.
Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Attorney Fees and Bankruptcy: Summary

- Strong negative relation between change in Ch 7 attorney fees and transition from new insolvency to Ch 7

  Mean change in fees accounts for 50% of cross-district variation in Ch 7

  - Effects stronger in credit slump than pre-recession

    Mean change in fees accounts for 52% in credit slump, 23% in pre-recession of cross-district variation in Ch 7 change

  - Effects only for below median credit scores

- No relation between Ch 13 fees and transition to Ch 13
- No relation between Ch 7 (13) fees and Ch 13 (7) filing

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- No relation between Ch 13 fees and transition to Ch 13
- No relation between Ch 7 (13) fees and Ch 13 (7) filing

- Consistent with **liquidity constraints** driving response

  (Gross, Notowidigdo & Wang 2012, Mann & Porter 2009)

  Ch 7 fees paid up-front, Ch 13 paid over time

Substitution from Bankruptcy

- Possible consequences of the decline of transition into Ch 7 bankruptcy:
  Rise in transitions from new insolvency to insolvency, to current, to Ch 13, to foreclosure, from current to current

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- Approach:

  Estimate relation to mean effect of bankruptcy transitions

$$\beta_i^{x \to y} = \gamma_0 + \gamma \beta_i^{ins \to bank} + \nu_i.$$

$\beta_i^{x \to y}$ mean post-reform change on transition from state x to y

γ captures substitution from bankruptcy to other states

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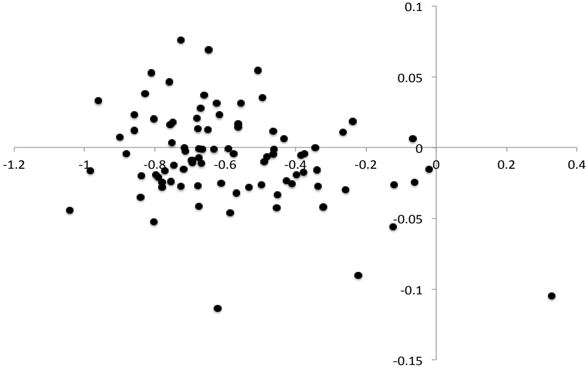
- Findings:

  Sizable substitution to insolvency, especially for low credit score individuals and during the credit slump

  No effect on transitions involving current

Substitution from Ch 7 Bankruptcy

- Strong substitution from transition to Ch 7 bankruptcy to insolvency



Post-reform change in transition from new insolvency to insolvency (vertical axis) against change in transition from new insolvency to Chapter 7 (horizontal axis). 1Q ahead transitions. Source: Authors' calculation based on FRBNY's CCP/Equifax Data.

Substitution from Ch 7 Bankruptcy

- Mean change in transition to Ch 7 (-58%) increases transition to insolvency by 3% (1Q) and 14% (4Q). (St. dev. 3.2% (1Q), 5.5% (4Q).)

New Insolvency to Insolvency		
	All periods	
Horizon	1Q	4Q
New Insolvency to Ch 7	-0.043 (-3.11)	-0.140 (-4.48)
N	88	88
	By sub-period	
4Q Horizon	Pre-recession	Credit slump
New Insolvency to Ch 7	-0.186 (-4.36)	-0.125 (-4.73)
N	88	88

T-statistics in parenthesis. Robust to adjustment for generated regressors. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Substitution from Ch 7 Bankruptcy

- Substitution to insolvency primarily for credit scores below median

New Insolvency to Insolvency				
Quartile	1	2	3	4
	All periods			
New Insolvency to Ch 7	-0.054 (-3.45)	-0.044 (-2.77)	-0.044 (-2.36)	0.066 (1.61)
	Pre-recession			
New Insolvency to Ch 7	-0.093 (-2.20)	-0.062 (-1.22)	-0.019 (0.18)	-0.093 (-1.13)
	Credit slump			
New Insolvency to Ch 7	-0.074 (-1.66)	-0.128 (-3.90)	-0.113 (-0.85)	-0.180 (-1.41)
N	88	88	87	79

4Q ahead transitions. T-statistics in parenthesis. Robust to adjustment for generated regressors. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Substitution from Ch 7 Bankruptcy

- No effect on transitions to current. Consistent with no deterrence effects

Horizon	1Q	4Q
	New Insolvency to Current	
New Insolvency to Ch 7	-0.038 (-0.91)	-0.059 (-1.50)
N	88	88
	Current to Current	
New Insolvency to Ch 7	-0.004 (-1.15)	-0.001 (-0.49)
N	88	79

T-statistics in parenthesis. Robust to adjustment for generated regressors.
Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Substitution from Ch 7 Bankruptcy

- No effect on transitions to current. Consistent with no deterrence effects
- No relation between change in transitions to Ch 7 and transitions to foreclosure and Ch 13 bankruptcy

Horizon	1Q	4Q
	New Insolvency to Foreclosure	
Flow to Ch. 7 Bankruptcy	0.005 (1.34)	0.019 (2.06)
N	88	88
	New Insolvency to Chapter 13	
New Insolvency to Ch 7	0.775 (1.44)	0.520 (1.08)
N	74	87

T-statistics in parenthesis. Robust to adjustment for generated regressors.
Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Substitution from Bankruptcy: Summary

- Decline of transition from new insolvency to Ch 7 associated with:
  - Sizable increase in persistence of insolvency, primarily for below median credit scores
  - No effect on transition into current
  - No effect of transition into foreclosure

Substitution from Bankruptcy: Summary

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  - No effect on transition into current
  - No effect of transition into foreclosure
- No relation between change in Ch 7 and Ch 13 transitions
- No effect of change in Ch 13 transitions

III. Assessing consequences

Implications for Access to Credit and Credit Scores

Comparing Insolvency and Bankruptcy

- For cohorts of newly insolvent individuals, distinguish 3 groups:
  1. Those who will file for Ch 7 in the next 8 quarters
  2. Those who will file for Ch 13 in the next 8 quarters
  3. Those who will not file in the next 8 quarters

Comparing Insolvency and Bankruptcy

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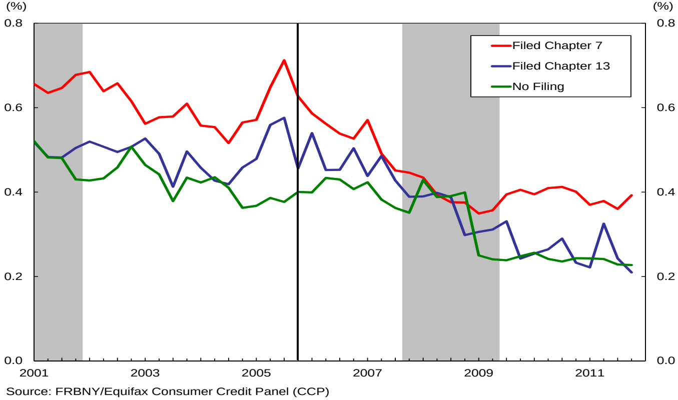
    2. Those who will file for Ch 13 in the next 8 quarters
    3. Those who will not file in the next 8 quarters
- Examine access to credit and credit scores for each group at comparable points in time
- Insolvency without bankruptcy associated with
    - Lower access to new loans, despite similar demand
    - Lower credit score
    - Especially for Ch 7 filers

Newly Insolvent: New Unsecured Credit

- More Ch 7 bankrupts open new unsecured accounts

  relative to non-filers and Ch 13 bankrupts

Fraction with new unsecured originations



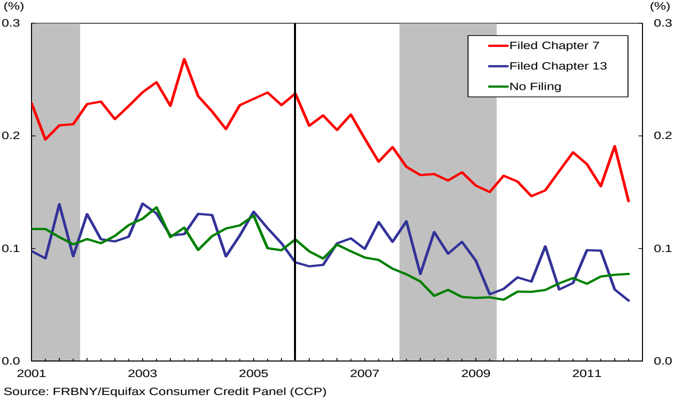
8 quarters after new insolvency for non-bankrupts, 4 quarters after filing for bankrupts.
Source: Authors' calculations based on FRBNY CCP/Equifax Data.

Newly Insolvent: New Auto Loans

- More Ch 7 bankrupts open new auto loans

  relative to non-filers and Ch 13 bankrupts

Fraction with new auto originations



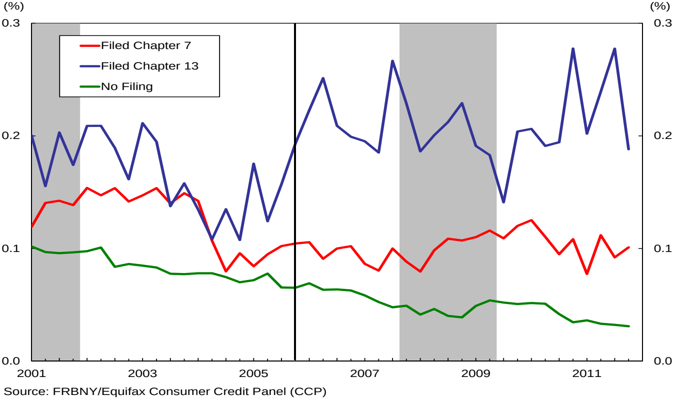
8 quarters after new insolvency for non-bankrupts, 4 quarters after filing for bankrupts.
Source: Authors' calculations based on FRBNY CCP/Equifax Data.

Newly Insolvent: New Mortgages

- More Ch 13 and Ch 7 bankrupts open new mortgages

  relative to non-filers

Fraction with new mortgage originations



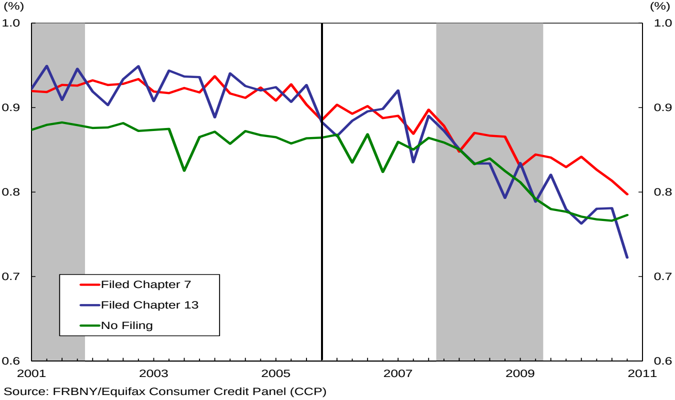
8 quarters after new insolvency for non-bankrupts, 4 quarters after filing for bankrupts.
Source: Authors' calculations based on FRBNY CCP/Equifax Data.

Newly Insolvent: Inquiries

- Inquiries (*credit demand*) essentially the same

  Suggests supply factors drive lower originations for non-filers

Fraction with new inquiries

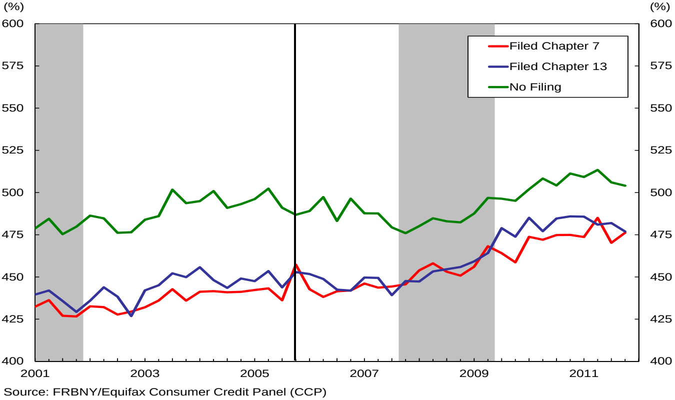


8 quarters after new insolvency for non-bankrupts, 4 quarters after filing for bankrupts.
Source: Authors' calculations based on FRBNY CCP/Equifax Data.

Newly Insolvent: Credit Scores

- At insolvency, credit score of future filers lower than non-filers

Credit score at new insolvency

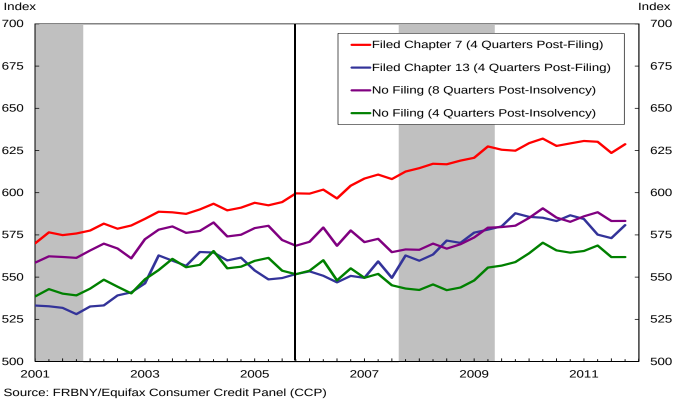


Source: Authors' calculations based on FRBNY CCP/Equifax Data.

Newly Insolvent: Credit Scores

- Ch 7 filers: credit score post-filing much higher than other groups
- Non-filers: credit score recovers more slowly and less than for Ch 7 filers
- Ch 13 bankrupts: credit score recovers to same level as non-filers

Credit score after new insolvency



Source: Authors' calculations based on FRBNY CCP/Equifax Data.

Lessons

- Effects of BAPCPA

  Decline in Ch 7 filing only for low credit score/income individuals

  Sharp rise in incidence and persistence of insolvency

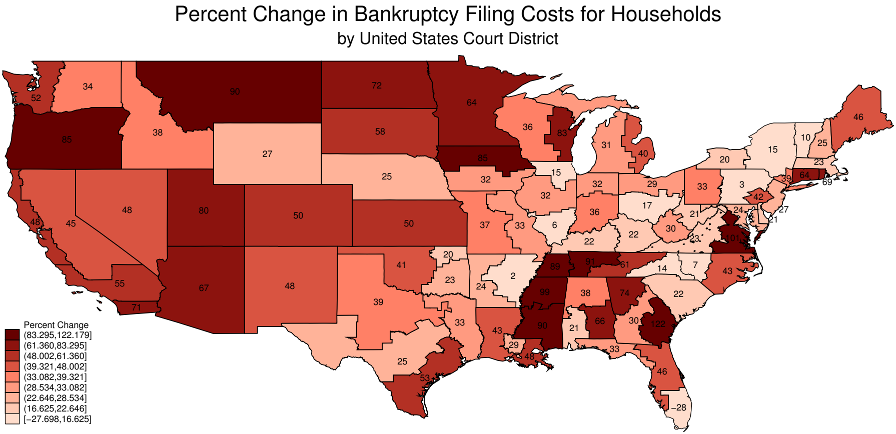
  No deterrence effect on delinquency

  Little evidence of improved borrowing conditions for households (Simkovic, 2009)

Lessons

- Effects of BAPCPA
  - Decline in Ch 7 filing only for low credit score/income individuals
  - Sharp rise in incidence and persistence of insolvency
  - No deterrence effect on delinquency
  - Little evidence of improved borrowing conditions for households (Simkovic, 2009)
- Suggests standard way of modeling personal default inadequate
  - Formal default (Ch 7 bankruptcy) subject to liquidity constraints, associated with short lived punishment
  - Informal default (insolvency) associated with severe financial distress
- Calls for new positive and normative theories of personal bankruptcy viewed from a broader social insurance perspective
- Ongoing agenda

Percentage Change in Attorney Fees



(Table)

Pre-Reform District Specific Means: Summary Statistics

	New Insolvency To Ch 7	New Insolvency To Ch 13	New Insolvency To Foreclosure	New Insolvency To Insolvency	New Insolvency To Current	Current To Current
Mean	0.022	0.004	0.008	0.699	0.199	0.976
Median	0.021	0.003	0.008	0.701	0.199	0.977
St. Dev.	0.008	0.003	0.004	0.020	0.014	0.005
Min	0.007	0	0.002	0.648	0.171	0.965
Max	0.042	0.016	0.019	0.749	0.238	0.986

1Q ahead transitions, estimated pre-reform means. District level distribution summary statistics.
Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Estimated Mean Response to the Reform

- Sizable estimated mean drop in Ch 7 and current to current transitions

	Post-reform	Pre-recession	Credit slump
		New Insolvency to Ch 7	
Mean	-0.58	-0.54	-0.53
St. Dev.	0.24	0.22	0.29
		New Insolvency to Insolvency	
Mean	-0.007	-0.047	0.017
St. Dev.	0.032	0.043	0.033
		New Insolvency to Current	
Mean	-0.004	0.114	-0.099
St. Dev.	0.092	0.122	0.096
		Current to Current	
Mean	-0.021	-0.015	-0.017
St. Dev.	0.009	0.005	0.008

1Q ahead transitions, estimated β_i. District level summary statistics.
Pre-recession: 2005Q4-2007Q3. Credit slump: 2007Q4-2011Q1.
Source: Authors' calculations based on FRBNY's CCP/Equifax Data.

Estimated Mean Response to the Reform: By Credit Score

- Drop in transition to Ch 7 stronger for credit scores below median

Quartile	1	2	3	4
	New Insolvency to Ch 7			
Mean	-0.72	-0.54	-0.38	-0.48
St. Dev.	0.28	0.28	0.79	1.00

1Q ahead transitions, estimated β_i by credit score. District level distribution summary statistics. Source: Authors' calculations based on FRBNY's CCP/Equifax Data.