Discussion of "Labor Market Upheaval, Default Regulations, and Consumer Debt" by Athreya, Sanchez, Tam, and Young

St. Louis Fed

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Question

How much did changes in labor market risk (as measured by job separation and finding rates), along with the Bankruptcy Abuse Protection and Consumer Protection Act (BAPCPA) enforced starting in October 2005, alter the paths of bankruptcy, delinquency, loan pricing, and unsecured credit over the Great Recession?

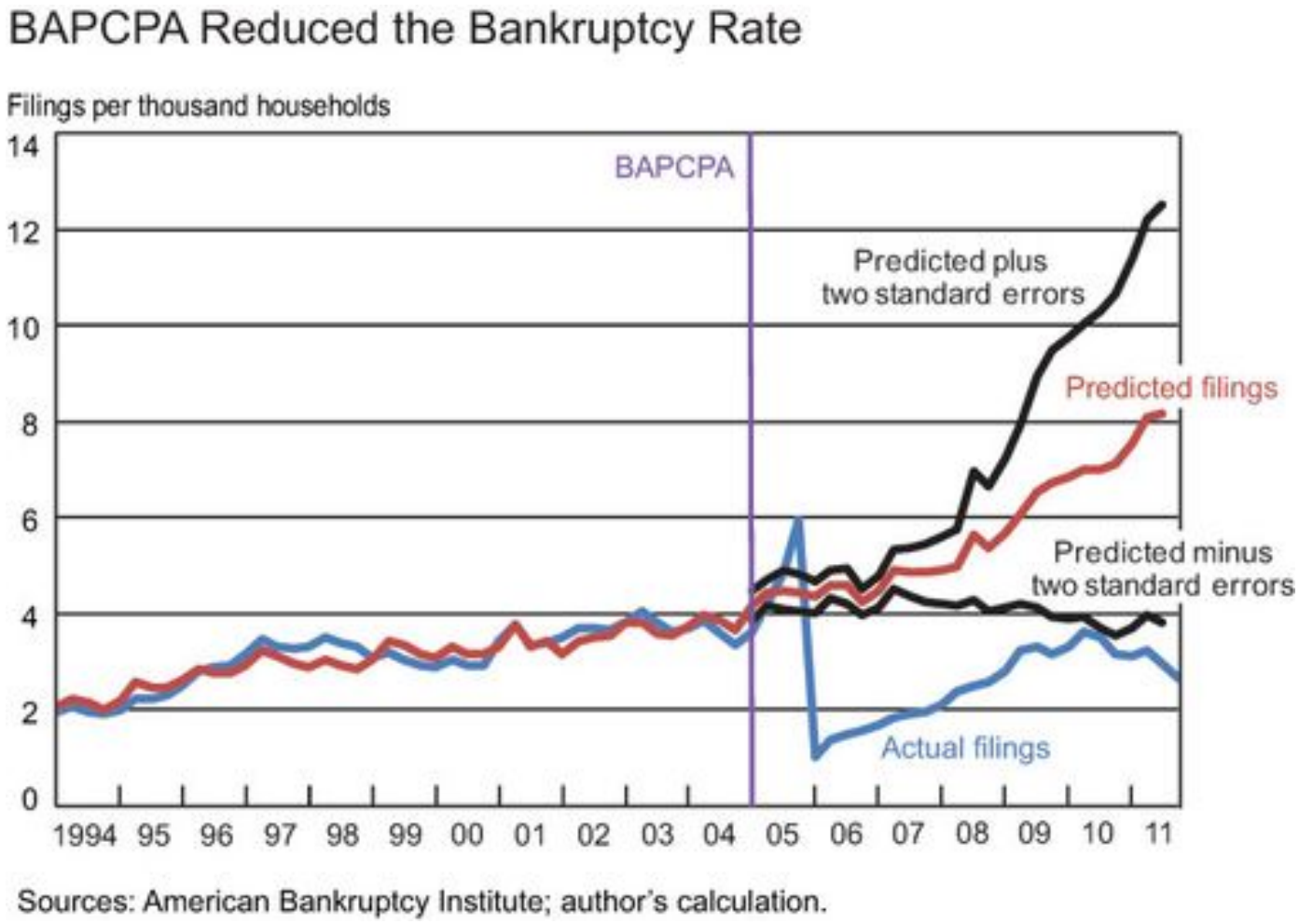
Reduced form approach

Morgan (2013) estimates an empirical model of aggregate bankruptcy filings pre-BAPCPA and then predicts filings post-BAPCPA bankruptcy rates using observed aggregate data.

Dependent Variable	Bankruptcy Rate
Independent Variables	
Income	-0.002***
Unemployement Rate	-0.123**
Debt Service Ratio	-0.324
Time Trend	0.002***
#Obs. (1994:Q1 to 2005:Q1)	45
R-squared	0.82

Reduced form approach - cont.

Observed filing rate is substantially lower than filing rate predicted by feeding the observed aggregates into the pre-BAPCPA regression.



ASTY Structural Approach

- This paper extends ASTY (2013a, a nice paper) OLG model with delinquency to a quarterly model with exogenous job finding (λ^N, λ^E) and separation rates δ.
- Wages depend on age (a), education (e), permanent shocks $(\Delta n \sim N(0, \sigma_\varsigma^2))$, and match quality $(m \sim N(0, \sigma_m^2))$.
- High frequency income loss is important for delinquency while low frequency is important for bankruptcy.

Costs and Benefits of Solvency, Delinquency, and Bankruptcy

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- Bankruptcy:
  - Cost: filing cost $\Delta(p)$ and utility loss ψ_B
  - Benefit: do not have to pay back b and start next period with $b' = 0$

Pricing Unsecured Credit

$$q(b', \Pi) = \frac{s \cdot \mathbb{Q}(b', \Pi)}{1 + r + \phi}$$

where

$$\mathbb{Q}(b', \Pi) = E_{\Pi'|\Pi} \left[\begin{array}{c} \mathbf{1}_{\{d(b', \Pi')=0\}} \cdot 1 \\ + \mathbf{1}_{\{d(b', \Pi')=1\}} \cdot \left(\eta(\Pi') + \frac{q(h(\Pi'), \Pi') h(\Pi')}{b'} \right) \\ + \mathbf{1}_{\{d(b', \Pi')=2\}} \cdot 0 \end{array} \right]$$

and $d(b', \Pi') \in \{0, 1, 2\}$ denotes the decision rule for solvency, delinquency, and bankruptcy, respectively.

Pricing Unsecured Credit - cont.

The market value of renegotiated debt per dollar lent

$$\frac{q(h(\Pi'),\Pi') \cdot h(\Pi')}{b'}$$

satisfies

$$h(\Pi) = \arg\max_{\widehat{b}} \left\{ q(\widehat{b},\Pi) \cdot \widehat{b} \right\}$$

- The lender makes a t-i-o-l-i offer to renegotiate debt to maximize the value of expected repayments (the top of the "Laffer" curve).
- Proposition 1 (ASTY, 2013a). A delinquent household borrows the amount of debt in delinquency until the next period at an implicit interest rate that can never be higher than the corresponding market rate.

SS (ASTY (2013a)) Results - Parameters

Calibrate the quarterly model to pre-2005 data.

Outside Model	
BK filing fee for employed $\Delta(1)$	\$1,200
BK filing fee for unemployed $\Delta(0)$	\$600
Inside Model	
Annual Discount factor β	0.85
BK utility cost ψ_B	1.786
DQ utility cost ψ_D	0.104

SS (ASTY (2013a)) Results - Fit

Moment	Data	Model
Mean Assets/Income	4.07%	3.09%
Bankruptcy rate	0.26%	0.26%
Share of debt in 90+DQ	8.9%	7.8%

- Key SS Result: Higher earners choose bankruptcy while lower earners choose delinquency since renegotiated debt is increasing in earnings.

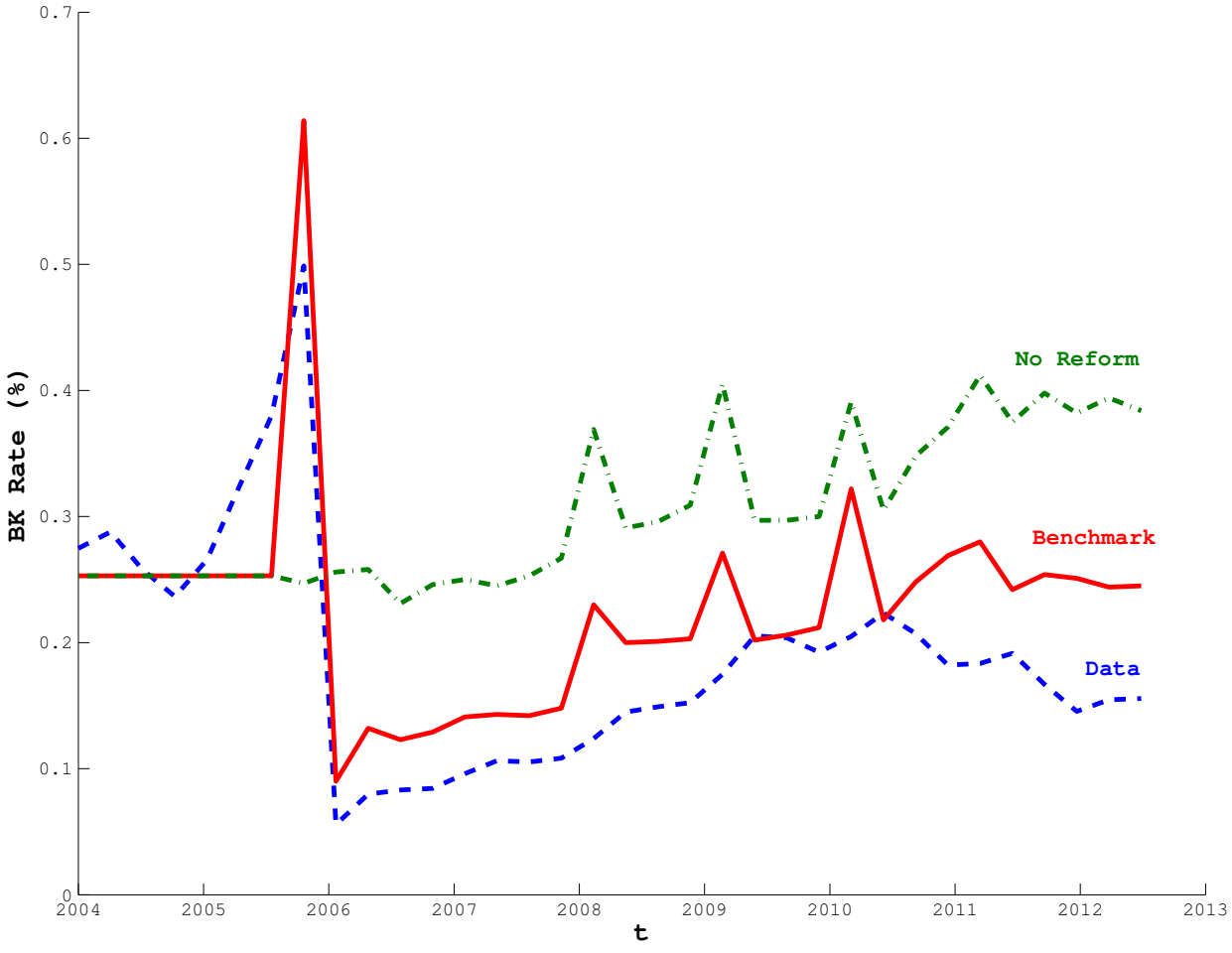
Transition (ASTY (2013b)) Experiment

- Choose unanticipated, permanent shocks to exogenous job finding (λ^N, λ^E) and separation rates δ five times to match post 2005 data on unemployment rates and durations.
- BAPCPA modeled as an anticipated 50% rise in bankruptcy filing costs $\Delta(p)$.
- The 'test' is how well the model matches credit market data (bankruptcy, delinquency, leverage).

Transition (ASTY (2013b)) Results - Counterfactual

BK analogue to Morgan.

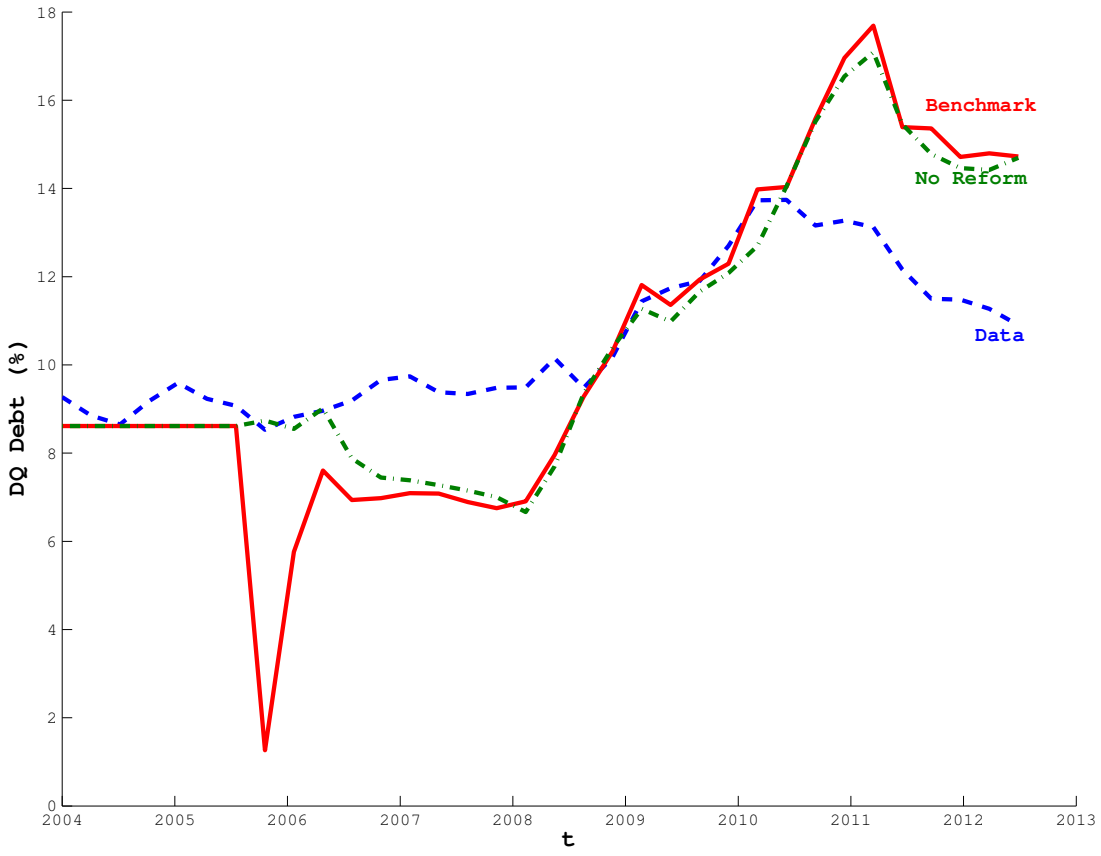
Figure 10: Percentage of Households Filing for Bankruptcy



Transition Results - Counterfactual

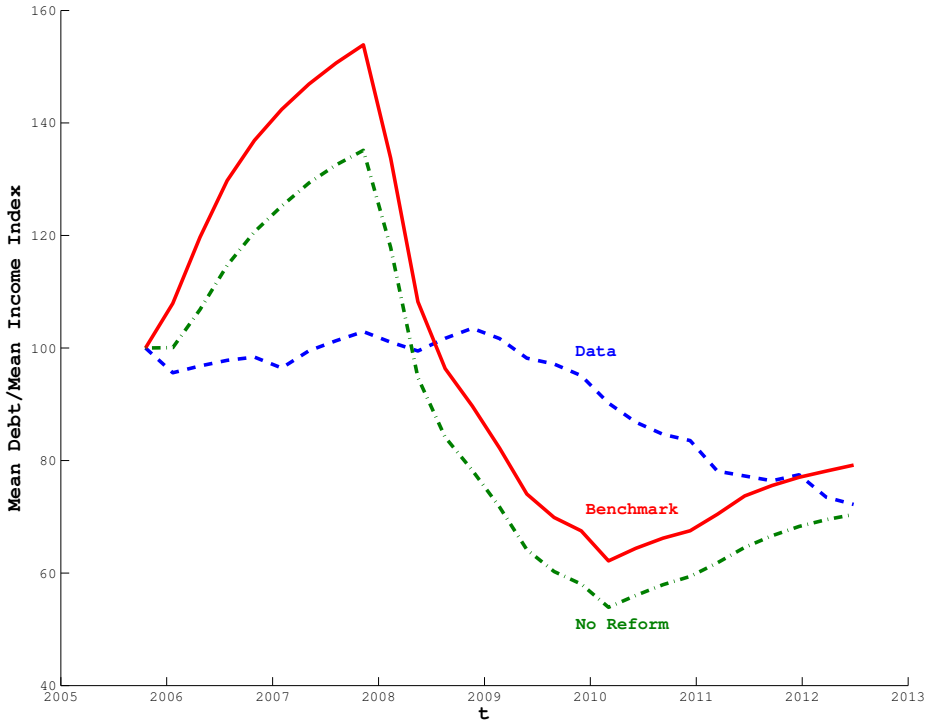
DQ analogue to Morgan. Model "substitution" between BK and DQ evident.

Figure 11: Percentage of Debt in Delinquency



Transition Results - Counterfactual

Figure 15: Debt-to-Income ratio during the great recession



Deleveraging mismatch because model interest rates are overly sensitive to the policy change.

Robustness

1. Costs and Benefits of Solvency, Delinquency, Bankruptcy

- Exogenous "stigma" - can declare chapter 7 and one quarter later borrow at same rate as a solvent borrower with identical characteristics.

- What is the consumption equivalent value of (ψ_B, ψ_D)?

$$
\begin{aligned}
U(c,1) - \psi_D &= U(\theta c, 1) \Longleftrightarrow \\
\frac{(c \cdot \exp(-\varphi))^{1-\gamma}}{1-\gamma} - \psi_D &= \frac{(\theta \cdot c \cdot \exp(-\varphi))^{1-\gamma}}{1-\gamma} \Longleftrightarrow \\
\theta &= \frac{1}{1 + 0.056 \cdot c}
\end{aligned}
$$

Robustness

1. Costs and Benefits of Solvency, Delinquency, Bankruptcy - cont.

- Primary change in BAPCPA is means test; above median earners cannot declare Chapter 7. Very different cost function (i.e. bankruptcy filing costs are infinite for above median earners).

- What are the deeper sources of costly delinquency and bankruptcy?
  - Legal restrictions (e.g. cannot file for Ch7 for 8 years after discharge).
  - Exogenous exclusion from future borrowing for a random amount of time (e.g. Athreya (2002), CCNR (2007)).
  - Impact on credit scores in an adverse selection environment (e.g. CCR (2012)).

Robustness

2. Renegotiation in delinquency General Bargaining Problem

$$h(b,\Pi) = \arg\max_{\widehat{b}} S^L(\widehat{b};b,\Pi)^{\theta} S^B(\widehat{b};b,\Pi)^{1-\theta}$$

subject to

$$S^L(\widehat{b};b,\Pi) \geq 0, S^B(\widehat{b};b,\Pi) \geq 0$$

where

$$\begin{aligned} S^L(\widehat{b};b,\Pi) &= q(\widehat{b},\Pi)\cdot\widehat{b} \\ S^B(\widehat{b};b,\Pi) &= u(y(1-\eta),p) + \beta E\left[v(\widehat{b},\Pi')|\Pi\right] \\ &\quad - \max\{v^{d=0}(b,\Pi), v^{d=2}(b,\Pi)\} \end{aligned}$$

Robustness

3. Cross-sectional Implications

Higher earners choose bankruptcy while lower earners choose delinquency.

Table 5 SCF 2004 Statistics		Data	Model
Solvent	Age	43.6	41.4
	Income	64,052	69,240
Delinquent	Age	34.7	37.3
	Income	21,375	37,086
Bankrupt	Age	33.8	40.8
	Income	21,644	45,827

Robustness

3. Cross-sectional Implications - cont.

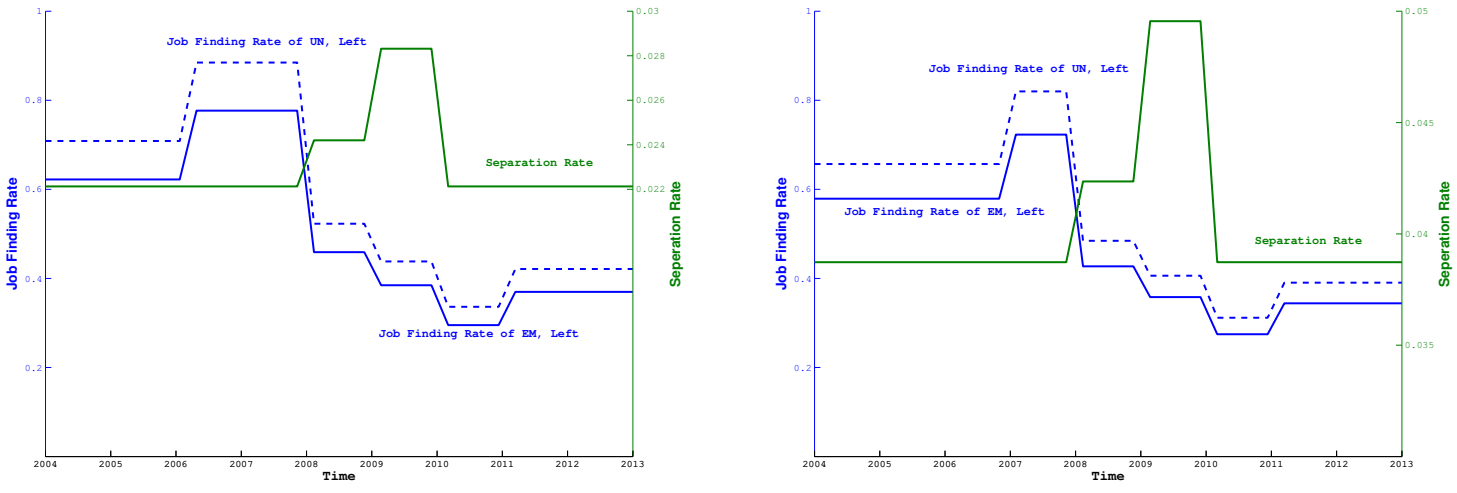
- Do delinquent borrowers receive rates that are identical to solvent borrowers with identical characteristics (Proposition 1)?

- After 3 missed credit card payments (1 model period), credit score drops 125 points with implications for borrowing rates. Signaling?

Robustness

4. Solution Methodology; Unanticipated Permanent Shocks

Figure 7: Shocks for High (left) and Low (right) Education Type



Robustness

5. Partial Equilibrium Model

- Job finding and separation is exogenous, no feedback from credit market to labor market (several papers in this conference consider such feedback).

- How different is this from Morgan's assumption that unemployment is "exogenous" in his regressions?