

The Anatomy of U.S. Personal Bankruptcy under Chapter 13

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November 2008

Motivation

Bankruptcy Abuse Prevention and Consumer Protection Act of 2005

Key aspects: debtors with sufficient income must
file under Chapter 13 (means test)
complete a repayment plan out of future income over a 5 year
period

Motivation

In short, the bankruptcy system operates behind a veil of darkness created by the lack of reliable data about its operations. The lack of information about “what is going on” in the bankruptcy system leads to a distrust of its results—a belief by some that creditors, debtors and professionals within the system are all somehow taking advantage of one another and the public at large, and that the system suffers from widespread fraud, abuse and inefficiency.

1997 National Bankruptcy Commission

Questions

What debtor characteristics during bankruptcy explain the discharge of debt and creditor recovery rates?

What are the effects of more stringent policies on Chapter 13 outcomes?

Contributions

To quantify how key debtor characteristics—previous experience with bankruptcy, past due secured debt, and excess disposable income—affect the distribution of creditor recovery rates.

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To show that

changes in debtors' conditions during bankruptcy play a significant role in governing Chapter 13 outcomes

more stringent provisions of BAPCPA do not materially affect creditor recovery rates but potentially make discharge less likely

imposing a minimum recovery rate requirement would not help either

Related Literature

Empirical literature on consumer bankruptcy:

Factors that affect bankruptcy decision

Effect of personal bankruptcy law on demand for credit, consumption, labor supply and mobility

Most closely related: Norberg and Velkey (2007)

General equilibrium models

Contents

▶ Introduction

▶ Legal Background

▶ Data

▶ Model

▶ Estimation Methodology

▶ Results

▶ Policy Experiments

Legal Background

Outside bankruptcy:

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Secured: foreclose on assets

Unsecured: garnish wages following a court judgement against the debtor

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Chapter 7: "Liquidation"

Discharge upon surrendering assets above the state exemption level

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Secured: foreclose on assets

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U.S. Personal Bankruptcy Law

Chapter 7: "Liquidation"

Discharge upon surrendering assets above the state exemption level

Chapter 13: "Adjustment of Debts of Consumers with Regular Income"

Discharge upon successfully carrying out a repayment plan

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The plan may be modified if debtor's financial condition changes

If the trustee dismisses the case either before or after confirmation, the case ends (potentially by conversion to Chapter 7)

Summary of Data Collection

Source: Delaware Bankruptcy court and U.S. Party/Case Index
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All Chapter 13 bankruptcy filings between August 2001 and
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- Chronology of the dates of case events in the case record and claims registry

- (From imaged documents)

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Information on:

- Debtor characteristics: income, expenditures, assets, debt, employment status, demographics, previous bankruptcy filings

- Outcome of the case: plan length, confirmation, dismissal, discharge, creditor recovery rate

Data Summary (as of September 24, 2007)

Total Filings	948
Terminated	872
Discharged	385
Dismissed	428
Converted to Chapter 7	59
Open	76

▶ Demographics

▶ Financials

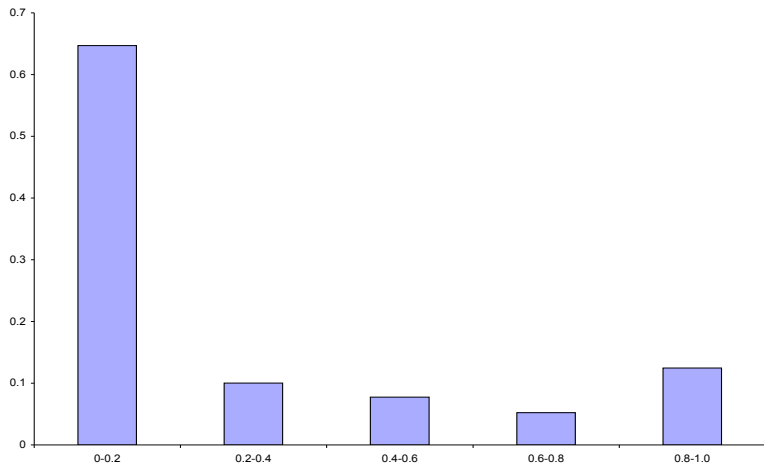
▶

Chapter 13 Outcomes (conditional on termination)

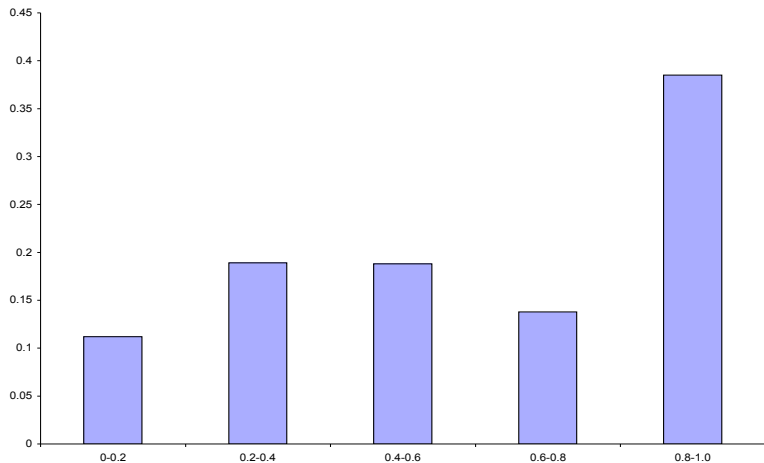
DESCRIPTIVE STATISTICS

Fraction of 3 Year Plans	0.24
Confirmation Rate	0.81
Discharge Rate	0.44
Recovery Rate of Total Debt	
Mean	0.28
Standard Deviation	0.33
Median	0.12

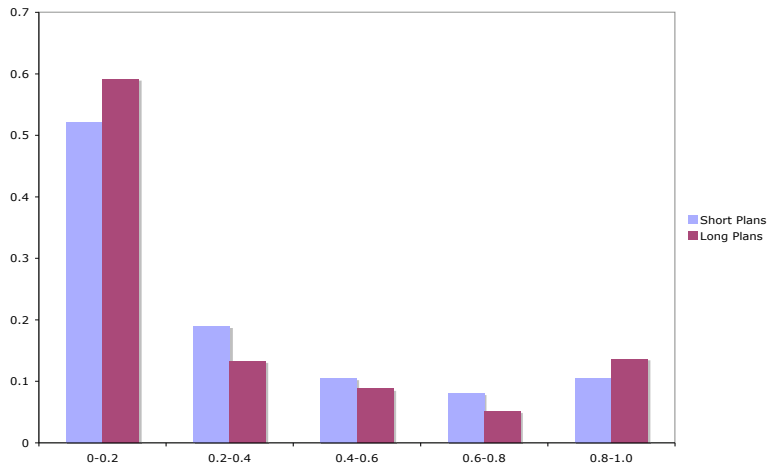
Recovery Rates: Actual



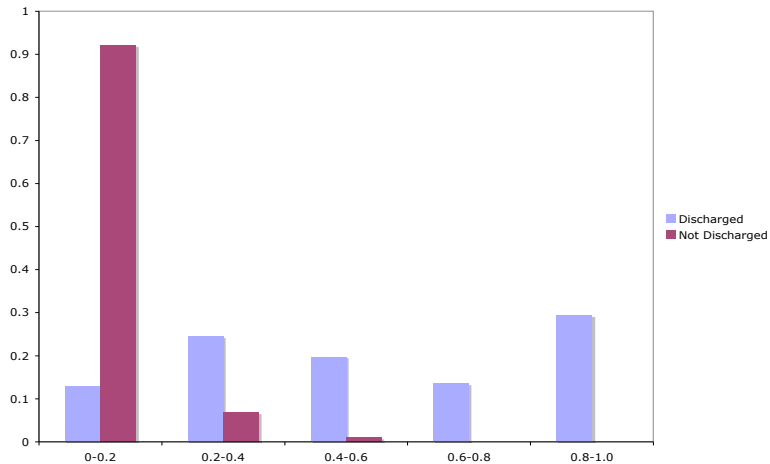
Recovery Rate: Originally Proposed



Recovery Rate by Plan Length



Recovery Rate by Discharge



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Payoff outside Chapter 13 $\bar{V}(Z)$ where Z is a set of predetermined debtor characteristics (exogenous to the model)



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- $t = 3$ If the plan is confirmed, the debtor continues to make payments until he is hit by a shock to his excess income. If the case is dismissed, the debtor exits Chapter 13 without getting a discharge

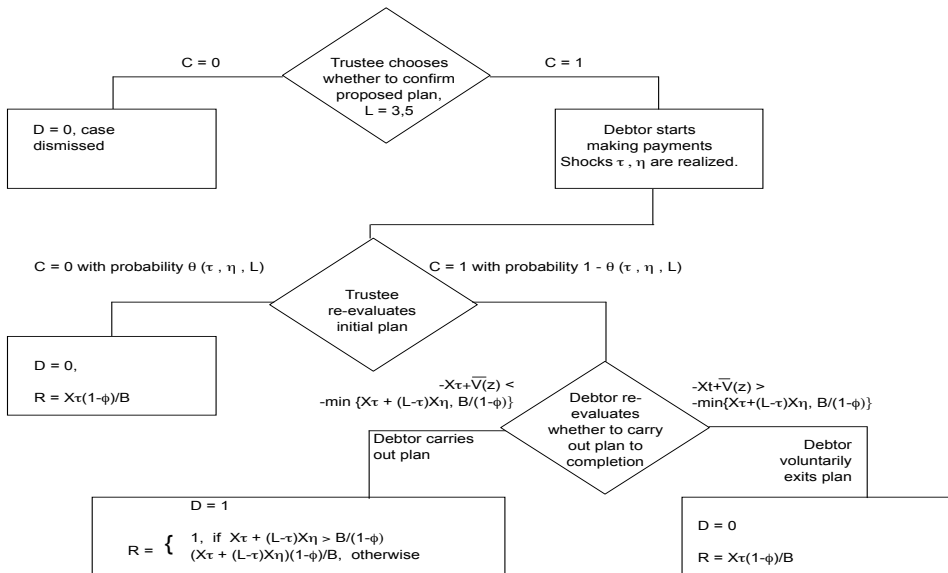
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- $t = 5$ If the trustee does not dismiss the case, the debtor decides whether to continue making modified payments or exit Chapter 13

Timing (starting at $t=2$)



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Let L denote the chosen plan

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their densities $p(\tau|L, Z)$ and $p(\eta|L, Z)$ depend on the confirmed plan length L



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(Collects a percentage fee of $\phi = 6\%$ whenever he makes a disbursement)

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If the case is not dismissed, debtor makes decision at $t = 5$

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if the debtor exits bankruptcy without discharge, his payoff is

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if he continues, he obtains a discharge and his payoff is

$$-\min\left\{X\tau + (L - \tau)X\eta, \frac{B}{1-\phi}\right\} \text{ and gets a discharge}$$



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Expected payoff from choosing plan L : $p(C = 1|L, Z)V(L, Z)$

Plan Length and Filing Choices

$t = 1$: Choose plan $\hat{L} \in \{3, 5\}$ over $L \neq \hat{L}$ if

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$t = 0$: File for bankruptcy if $p(C = 1|\hat{L}, Z)V(\hat{L}, Z) > \bar{V}(Z)$



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Let R : recovery rate, D : discharge dummy

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Given parameters β , the likelihood function is

$$P(\hat{L}, C, R, D|Z, \beta) = P(\hat{L}|Z, \beta)P(C|\hat{L}; Z, \beta)E_{\eta, \tau} \left[P(R, D|C, \hat{L}, \eta, \tau; Z, \beta) \right]$$

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Need to introduce an error term



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So that $E[\epsilon_L] = 1$

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and

$$P(\hat{L}|Z, \beta) = \int_{\mathcal{E}_{\hat{L}}} P(\hat{L}|\hat{\epsilon}; Z, \beta) dG_{\hat{L}}(\hat{\epsilon}).$$

Likelihood Function: $P(C|\hat{L}; Z, \beta)$

Since $E[\epsilon_{\hat{L}}] = 1$,

$$P(C|\hat{L}; Z, \beta) = Q(C|\hat{L}, Z)$$



Likelihood Function: $E_{\eta, \tau} \left[P(R, D | C, \hat{L}, \eta, \tau; Z, \beta) \right]$

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Disciplined by debtor's choices and trustee rules

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if case is confirmed, trustee does not dismiss case after shock, and debtor chooses to continue

$$R = \frac{\min\{X_{\tau} + (L - \tau)X_{\eta}, \frac{B}{1-\phi}\}}{B} (1 - \phi) \quad \text{and} \quad D = 1$$

Likelihood Function: $E_{\eta, \tau} \left[P(R, D | C, \hat{L}, \eta, \tau; Z, \beta) \right]$

Disciplined by debtor's choices and trustee rules

If case is not confirmed

$$R = 0 \quad \text{and} \quad D = 0$$

if case is confirmed, trustee does not dismiss case after shock, and debtor chooses to continue

$$R = \frac{\min\{X_{\tau} + (L - \tau)X_{\eta}, \frac{B}{1-\phi}\}}{B}(1 - \phi) \quad \text{and} \quad D = 1$$

otherwise

$$R = \frac{\min\{X_{\tau}, \frac{B}{1-\phi}\}}{B}(1 - \phi) \quad \text{and} \quad D = 0$$

DESCRIPTIVE STATISTICS

Exogenous Variable	Mean	Standard Deviation	Median	Minimum	Maximum
<i>ARR_DEBT</i>	0.43	0.31	0.40	0	1
<i>MED_DEBT</i>	0.08	0.27	0.00	0	1
<i>ASSET_DEBT</i>	4.58	6.91	3.14	0.02	132
<i>TENURE</i>	5.07	7.86	1.00	0	40
<i>INC_ABOVE</i>	0.23	0.42	0.00	0	1
<i>REPEAT</i>	0.22	0.42	0.00	0	1
<i>ATT_EXP</i>	92.30	51.77	108.00	1	165

Parametrization

$$Q(C = 1|L; Z, \beta) = \frac{e^{q(L; Z, \beta)}}{1 + e^{q(L; Z, \beta)}}$$

where

$$\begin{aligned} q(L; Z, \beta) = & \beta_0^C + \beta_1^C L + \beta_2^C ARR_DEBT + \beta_3^C MED_DEBT \\ & + \beta_4^C ASSET_DEBT + \beta_5^C PROP_REC + \beta_6^C TENURE \\ & + \beta_7^C INC_ABOVE + \beta_8^C REPEAT + \beta_9^C ATT_EXP \end{aligned}$$



Parametrization

$$\theta(\eta, \tau, L, Z, \beta) = \frac{e^{d(L; Z, \beta)}}{1 + e^{d(L; Z, \beta)}}$$

where

$$\begin{aligned} d(L; Z, \beta) = & \beta_0^d + \beta_1^d L + \beta_2^d \text{ARR_DEBT} + \beta_3^d \text{MED_DEBT} \\ & + \beta_4^d \text{ASSET_DEBT} + \beta_5^d \text{DIS_REC} + \beta_6^d \text{DSMS_REC} \\ & + \beta_7^d \text{TENURE} + \beta_8^d \text{INC_ABOVE} + \beta_9^d \text{REPEAT} \\ & + \beta_{10}^d \text{ATT_EXP} + \beta_{11}^d \eta + \beta_{12}^d \tau \end{aligned}$$



Parametrization

$$\bar{V}(Z, \beta) = \beta_1^D DEBT + \beta_2^D ASSET$$

$$f_\tau(\tau|L; Z, \beta) = \left(\frac{\tau}{L}\right)^{\beta_L^\tau} \text{ for } \tau \in [0, L]$$

$$f_\eta(\eta|L; Z, \beta) = \eta^{(\beta_{0L}^\eta - 1)} \frac{(\beta_{1L}^\eta)^{\beta_{0L}^\eta} e^{-(\beta_{1L}^\eta)\eta}}{\Gamma(\beta_{0L}^\eta)}$$



Parameter Estimates:

Log-likelihood: -313.256

Confirmation Probability $Q(C|L; \mathbf{Z}, \beta)$

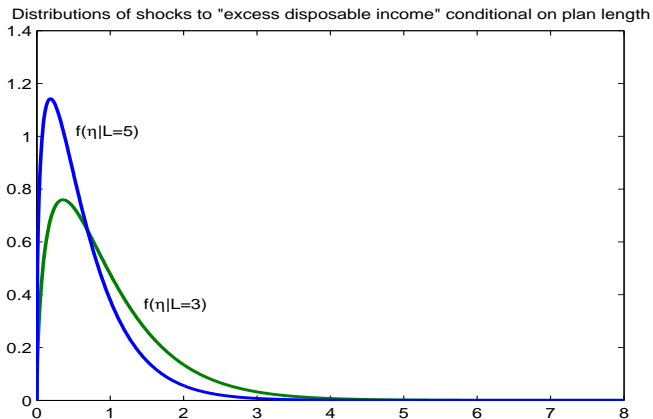
Variable	Estimate	St. Error	T-statistic
<i>L</i>	1.09*	0.10	10.94
<i>ARR_DEBT</i>	-3.14*	0.31	-10.17
<i>MED_DEBT</i>	0.010	0.29	0.04
<i>ASSET_DEBT</i>	-0.008	0.021	-0.39
<i>PROP_REC</i>	0.48*	0.17	2.80
<i>TENURE</i>	0.03*	0.01	2.64
<i>INC_ABOVE</i>	0.51*	0.18	2.84
<i>REPEAT</i>	-0.69*	0.18	-3.80
<i>ATT_EXP</i>	0.0007	0.001	0.45

Parameter Estimates:

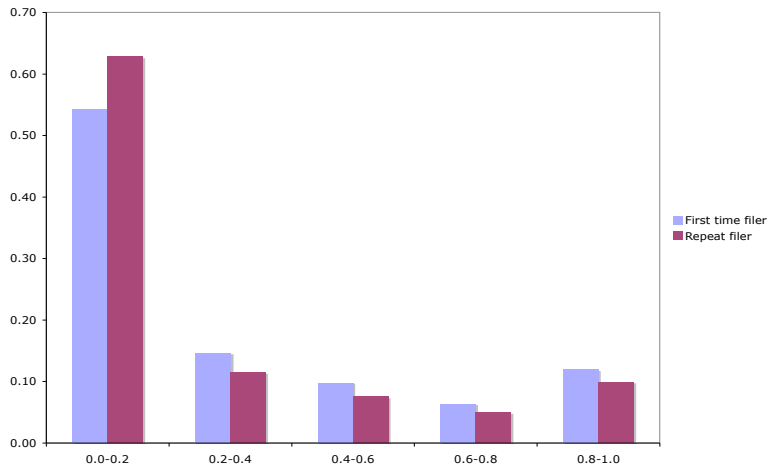
Dismissal Probability $\theta(\eta, \tau, Z, \beta)$

Variable	Estimate	St. Error	T-statistic
<i>L</i>	0.25	0.16	1.58
<i>ARR_DEBT</i>	0.52	0.53	0.97
<i>MED_DEBT</i>	-0.006	0.36	-0.02
<i>ASSET_DEBT</i>	0.04	0.03	1.22
<i>DIS_REC</i>	-0.87	0.17	-0.53
<i>DSMS_REC</i>	-0.03	0.51	-0.05
<i>TENURE</i>	-0.004	0.02	-0.26
<i>INC_ABOVE</i>	-0.04	0.26	-0.14
<i>REPEAT</i>	-0.69*	0.18	-3.80
<i>ATT_EXP</i>	-0.005*	0.002	-2.33
η	-4.52*	1.33	-3.40
τ	-0.60*	0.18	-3.29

Distribution of Shocks



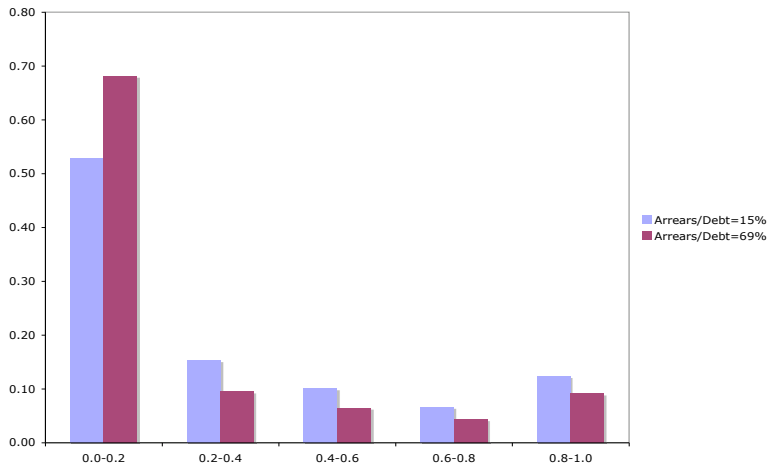
Recovery Rates Conditional on Bankruptcy Experience



Average recovery rate for repeat filers=0.24

Average recovery rate for first time filers=0.29

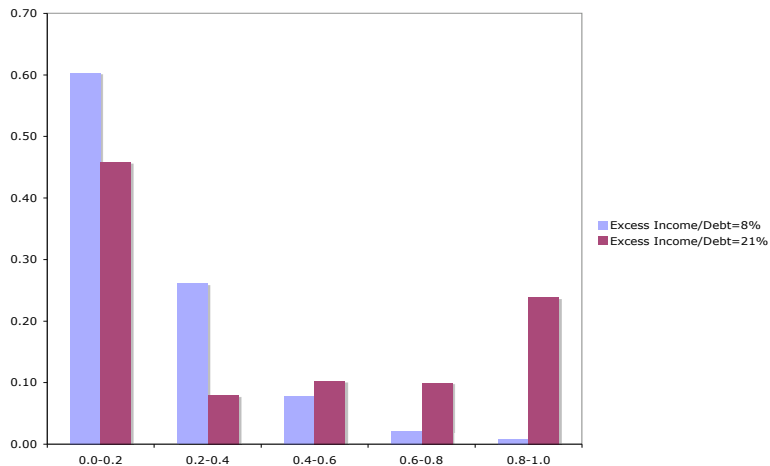
Recovery Rates Conditional on Arrear Burden



Average recovery rate for high arrear burden=0.21

Average recovery rate for low arrear burden=0.30

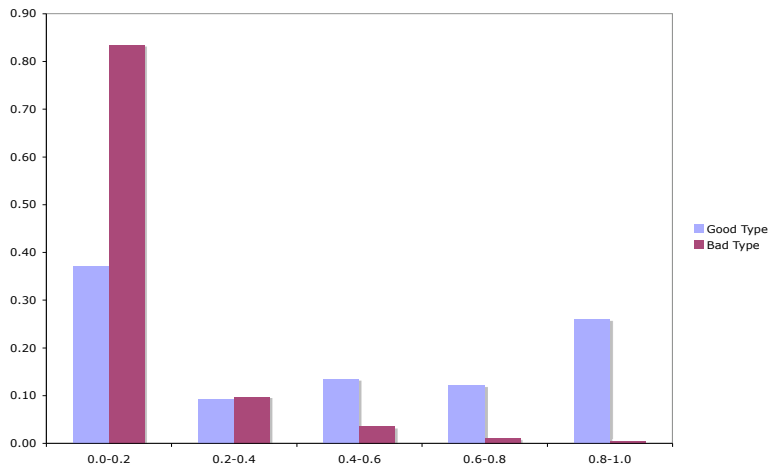
Recovery Rates Conditional on Ability to Pay



Average recovery rate for high payment ability=0.40

Average recovery rate for low payment ability=0.18

Recovery Rates for Extreme Debtor Types



Average recovery rate for good types=0.46

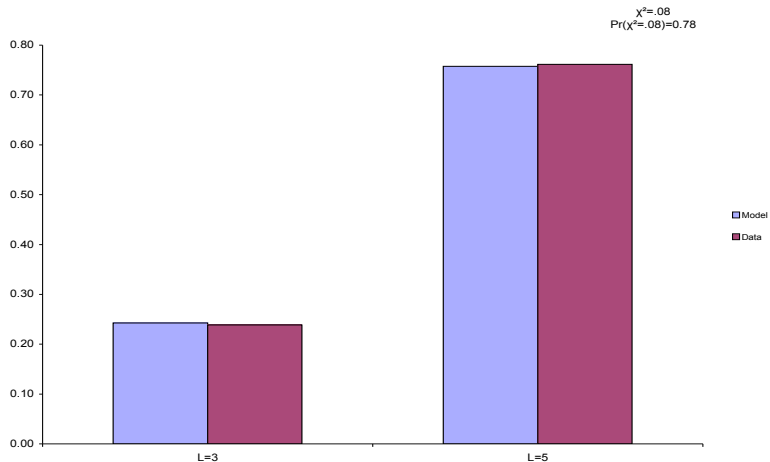
Average recovery rate for bad types=0.08

Effect of Changes in Debtor's Conditions

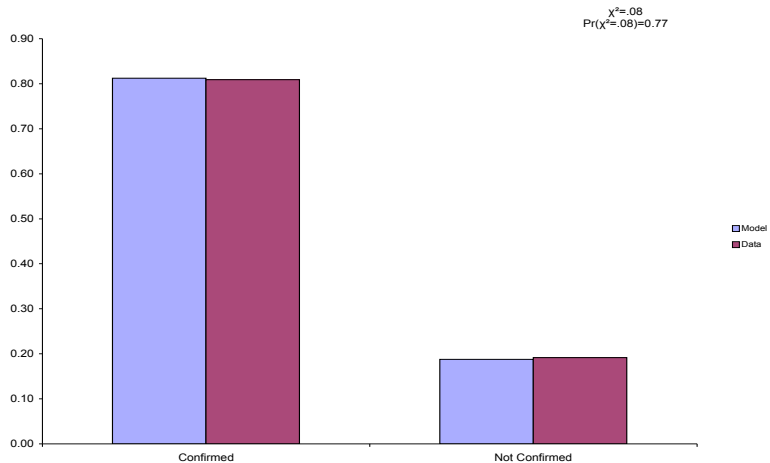
<i>Whole Sample</i>	Benchmark Model	Model Without η and τ
Plan Length		
Fraction Proposing $L = 3$	0.24	0.12
Fraction Proposing $L = 5$	0.76	0.88
Confirmation Rate	0.81	0.82
Discharge Rate	0.41	0.82
Mean Recovery Rate	0.28	0.48



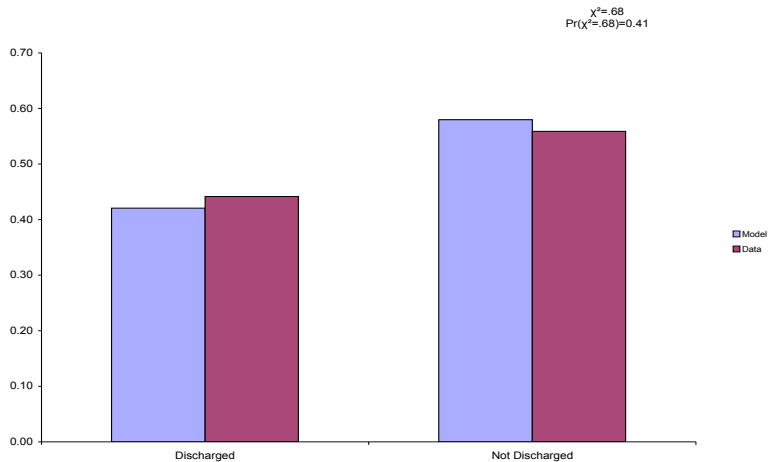
Model Validation: Plan Length Choice



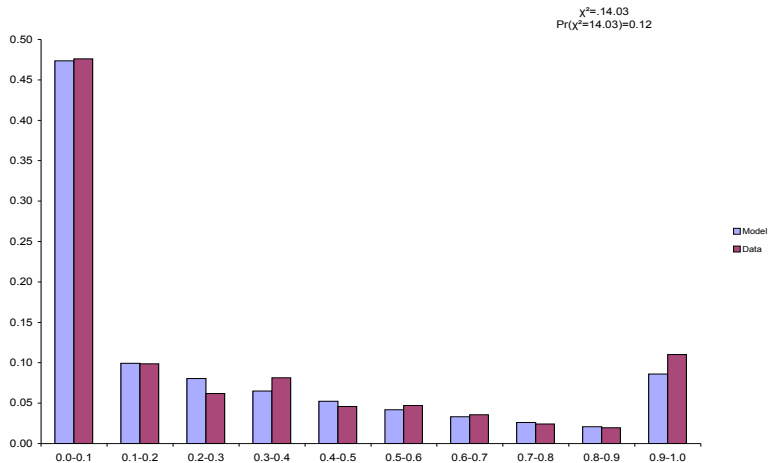
Model Validation: Confirmation



Model Validation: Discharge



Model Validation: Recovery Rate Fit



BAPCPA Required 5 Year Plans

<i>Above Median Income Debtors</i>	Benchmark Model	Experiment
Fraction No Longer Filing	0.00	0.01
Plan Length		
Fraction Proposing $L = 3$	0.30	0.00
Fraction Proposing $L = 5$	0.70	0.99
Confirmation Rate	0.84	0.85
Discharge Rate	0.44	0.40
Mean Recovery Rate	0.28	0.29



Imposing a 30% Recovery Rate Threshold

<i>Above Median Income Debtors</i>	Benchmark	Experiment
Fraction No Longer Filing	0.00	0.14
Plan Length		
Fraction Proposing $L = 3$	0.30	0.19
Fraction Proposing $L = 5$	0.70	0.67
Confirmation Rate	0.84	0.72
Discharge Rate	0.44	0.37
Mean Recovery Rate	0.28	0.27



Imposing a 30% Recovery Rate Threshold

	Outside Recovery Rate: 0.10		Outside Recovery Rate: 0.20	
<i>Above Median Income Debtors</i>	Benchmark	Experiment	Benchmark	Experiment
Fraction No Longer Filing	0.00	0.14	0.00	0.14
Initial Dismissal Rate	0.16	0.14	0.16	0.14
Dismissed after Confirmation	0.40	0.35	0.40	0.35
Mean Recovery Rate				
Under Chap. 13	0.28	0.27	0.28	0.27
Overall	0.33	0.32	0.39	0.39



Who Files for Bankruptcy?

	Sample Mean	State or National Mean
Married	0.45	0.54
Joint filing	0.36	
Family size	2.68	2.5
Home ownership	0.87	0.72
Pending lawsuits	0.53	
Foreclosure	0.22	0.004
Self employed	0.05	0.05
Unemployed	0.04	0.05

Who Files for Bankruptcy?

(in thousand dollars)

Exogenous Variable	Sample		State or National	
	Mean	Median	Mean	Median
Income	2.9	2.6	4.1	4.2
Monthly Expense	2.4	2.2		
Total Assets	116	102	452	137
Total Debt	139	120	55	14
Secured	107	99	52	12
Priority	3.2	0		
Unsecured	29	16	1.8	0
Debt in Default	55	45		