Unemployment, Negative Equity, and Strategic Default

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September 3, 2014

Introduction

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- **Our Approach:** 2009-2011 PSID Mortgage Distress Supplement to answer the question
  - Self-reported home value, principal, months delinquent
  - Job loss information for both head and spouse
  - Wealth (liquid & illiquid assets, unsecured debts), many other shocks (medical, divorce, etc.)

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(2) Demonstrate highly non-linear interaction between job loss and equity
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   - Strong interaction if $88 < LTV < 125$
   - 20% price drop for LTV *between* 88 and 125 increases default rate by 3.2% for employed HH & 11.46% for unemployed HH

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(3) Provide *direct* measures "strategic default" using wealth data
   - $\frac{2}{3}$ of underwater defaulters have liquid wealth < 1 mortgage payment

Implications

- **Implications for models of mortgage default:**
  i. Evidence against option theoretic models & models which assume independence between equity/non-equity shocks.

  ii. Evidence supports portfolio constraint models Gerardi, Shapiro, & Willen (2008), Corbae & Quintin (2010), and Chatterjee & Eyigungor (2009)

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- **Implications for policy makers:**
  i. Need GE labor search and matching model with secured defaultable debt (*in progress*) – PE Herkenhoff & Ohanian (2012)

  ii. Modifications: Principal reductions, temporary payment reductions

  iii. Labor Market Policy: Payroll tax holidays, unemployment insurance (Hsu, Matsa, Meltzer 2013)

Related Literature

- **Early empirical work:** Campbell & Dietrich (1983), Foster & Van Order (1985), Vandell (1995), Deng, Quigley, & Van Order (1996), Capozza Kazarian Thomson (1997), Deng, Quigley, & Van Order (2000), UK – Boheim & Taylor (2000) among others.

- **Importance of interaction:** Foote, Gerardi, and Willen (2008), Elul, Souleles, Chomsisengphet, Glennon, & Hunt (2010), Bhutta, Dokko, & Shan (2011), UK – Gathergood (2009) and Italy – Mocetti & Viviano (2013) among others, Chile– Alvazini, Martinez, Perez (2014).

- **Importance of individual level unemployment:** Gyourko & Tracy (2013)

- **Aggregate implications:** Mayer, Pence, & Sherlund (2009), Goodman, Ashworth, Landy, & Yin (2010), Mian & Sufi - (2008) among others.

- **Strategic Default:** Many of the above and Guiso, Sapienza, Zingales (2010) among others.

- **Modifications:** Agarwal, Amromin, Ben-David, Chomsisengphet, & Evanoff (2011) among others.

Existing Models of Mortgage Default

Compare default predictions from 3 types of theoretic models:

(1) Option theoretic models of Kau & Keenan (1995)

(2) Pure liquidity driven models of Bajari et al. (2008) & Bhutta et al. (2011)

(3) Portfolio constraint models of Gerardi, Shapiro, & Willen (2008), Corbae & Quintin (2010), and Chatterjee & Eyigungor (2009)

Option Theoretic Models

- Kau & Keenan (1995)
- **Assumptions:** Complete markets, no borrowing constraints.
- **Predictions:** Default decision independent of liquidity shocks.

Figure : Option theoretic model without transaction cost heterogeneity.

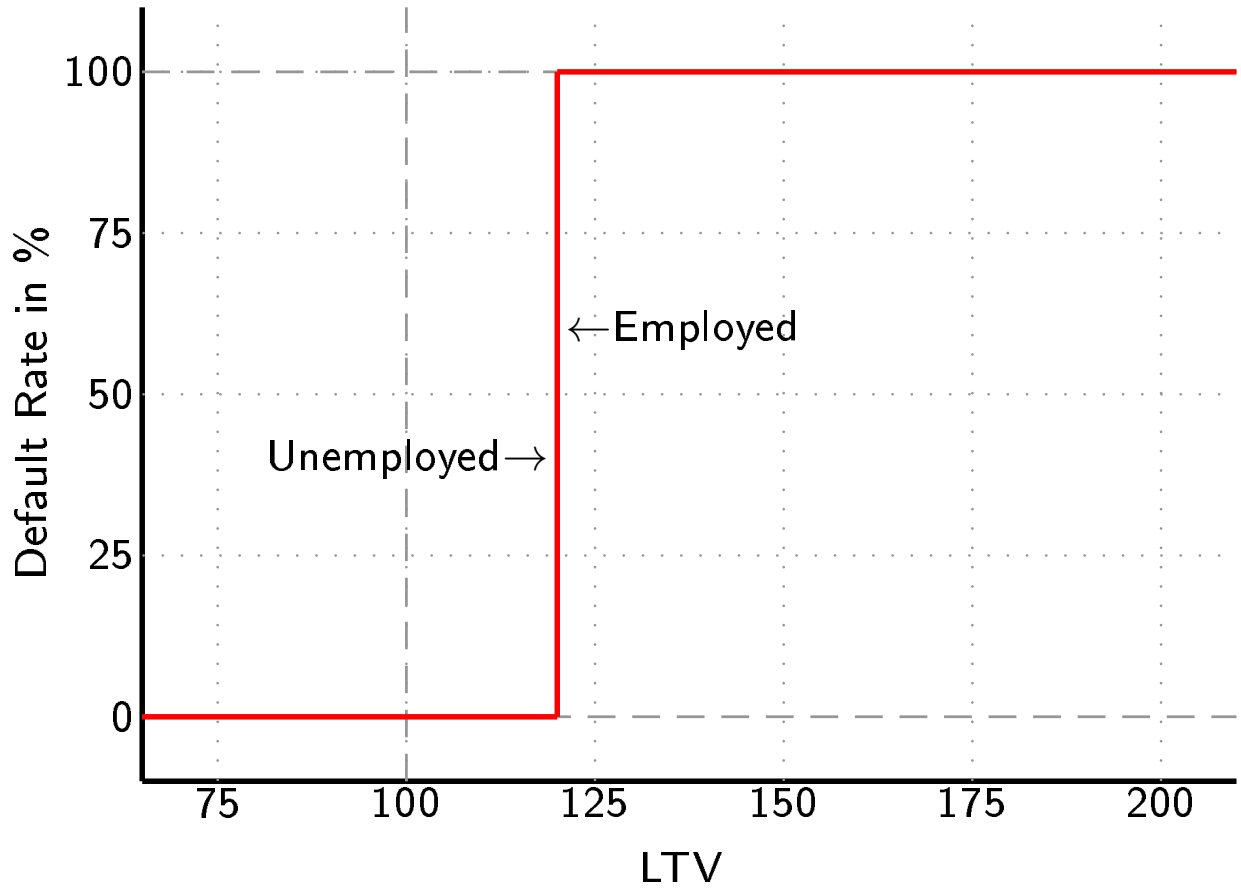

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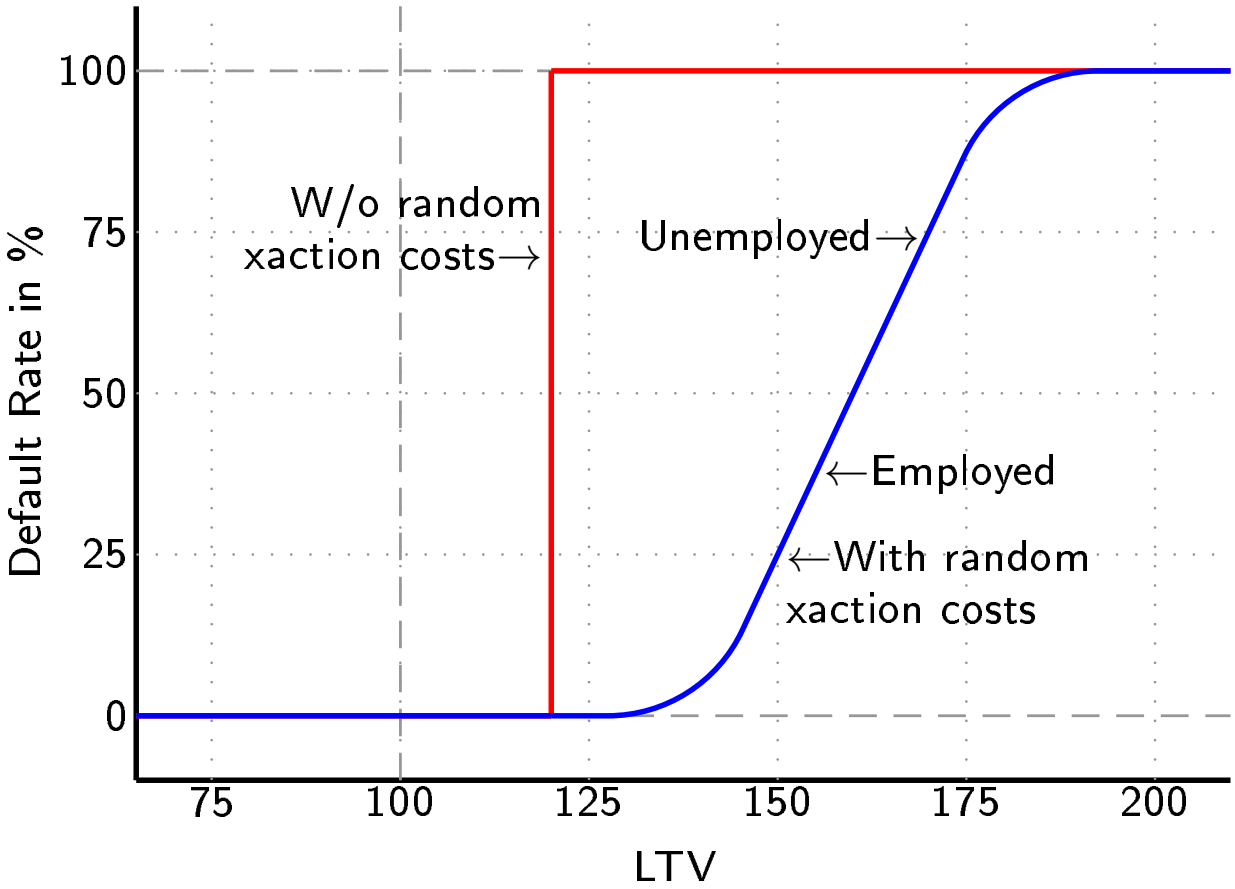
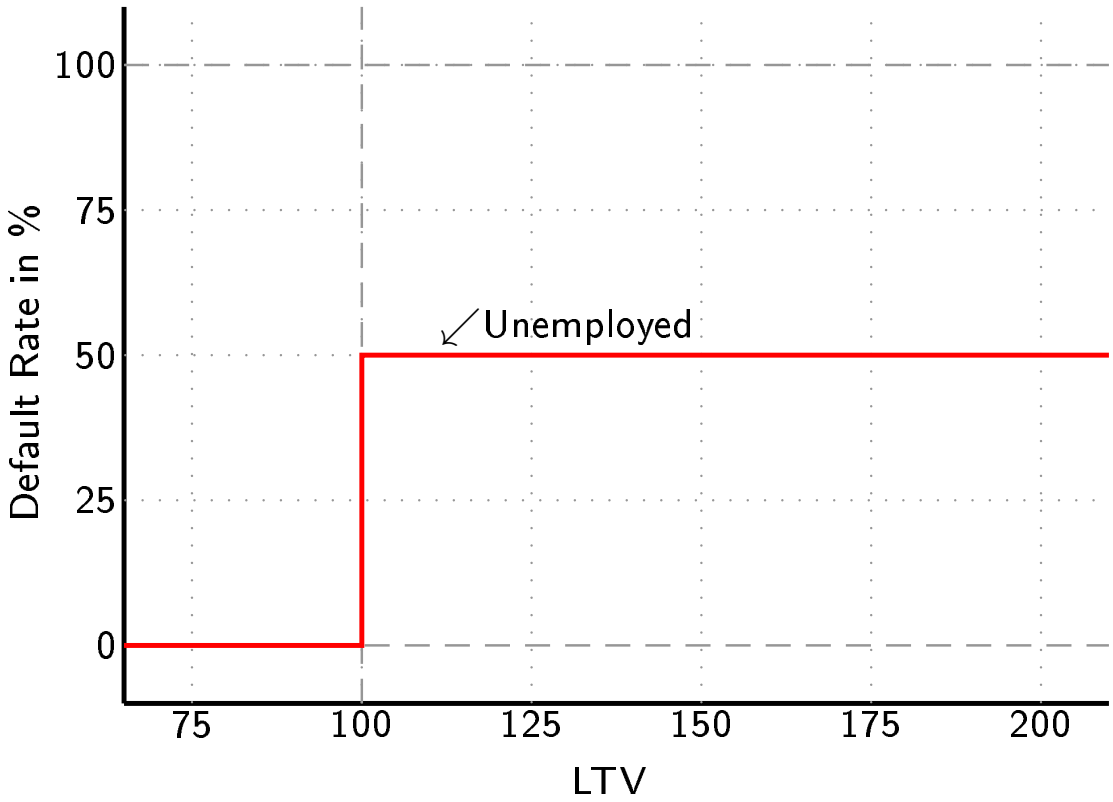
Figure : Option theoretic model **with** transaction cost heterogeneity.



Models of Pure Liquidity Driven Defaults

- Bajari et al. (2008) & Bhutta et al. (2011)
- **Assumptions:** Liquidity shock implies default, independent of depth of negative equity
- **Predictions:** Those with liquidity shocks are not sensitive to equity

Figure : Pure liquidity shock model.



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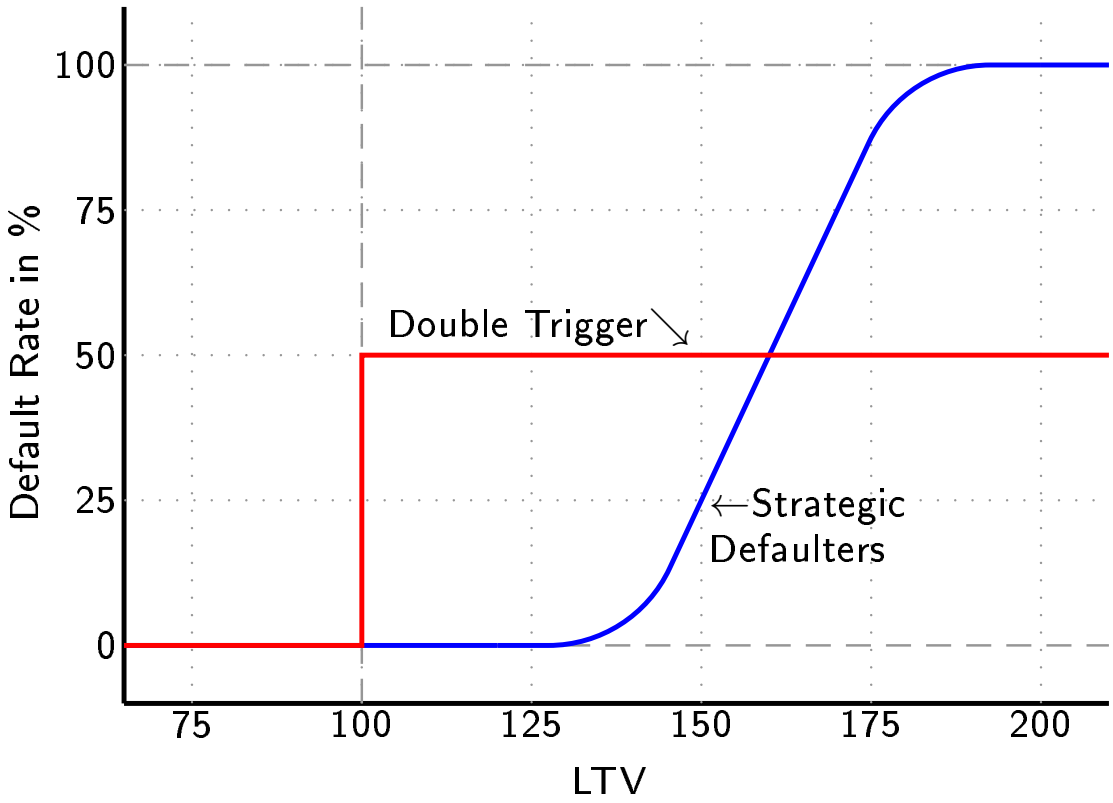
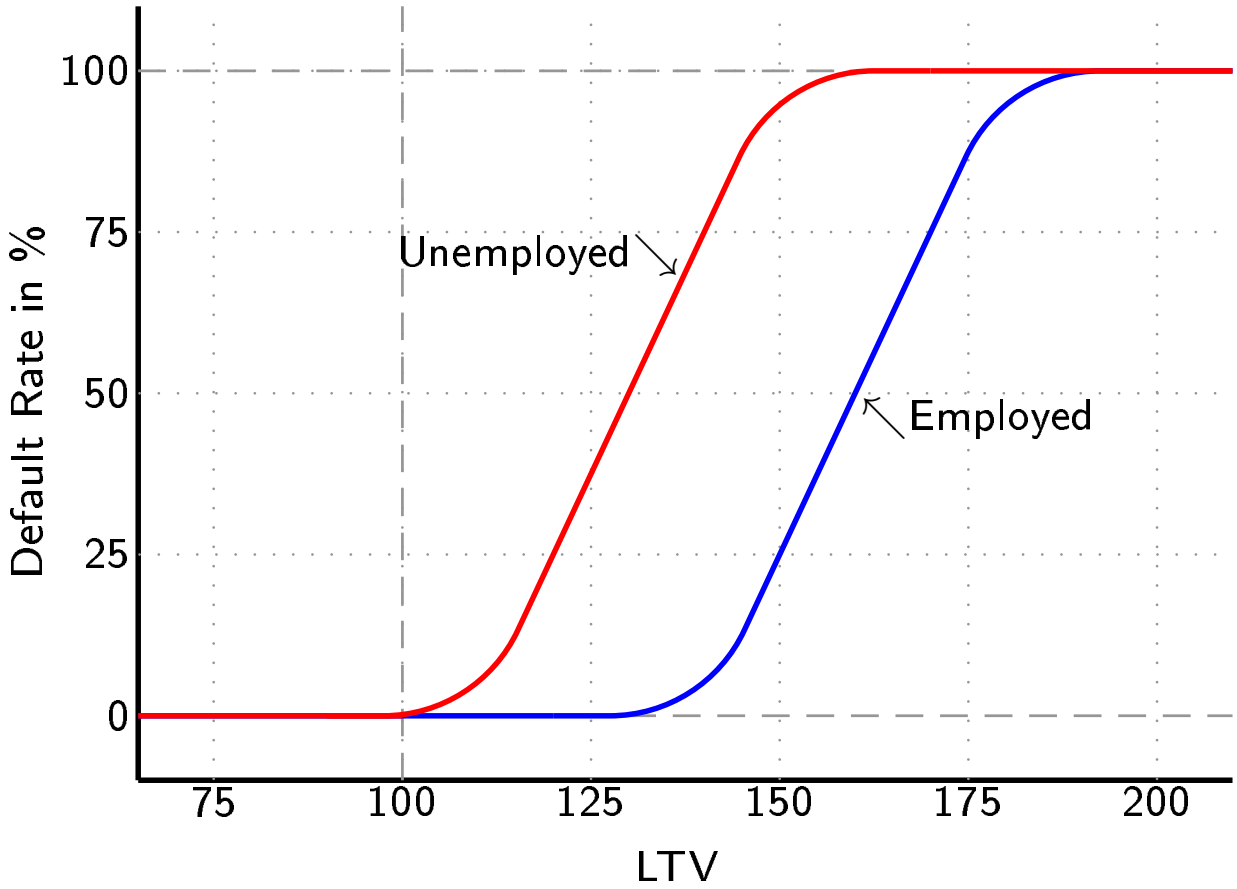


Portfolio Constraints Model

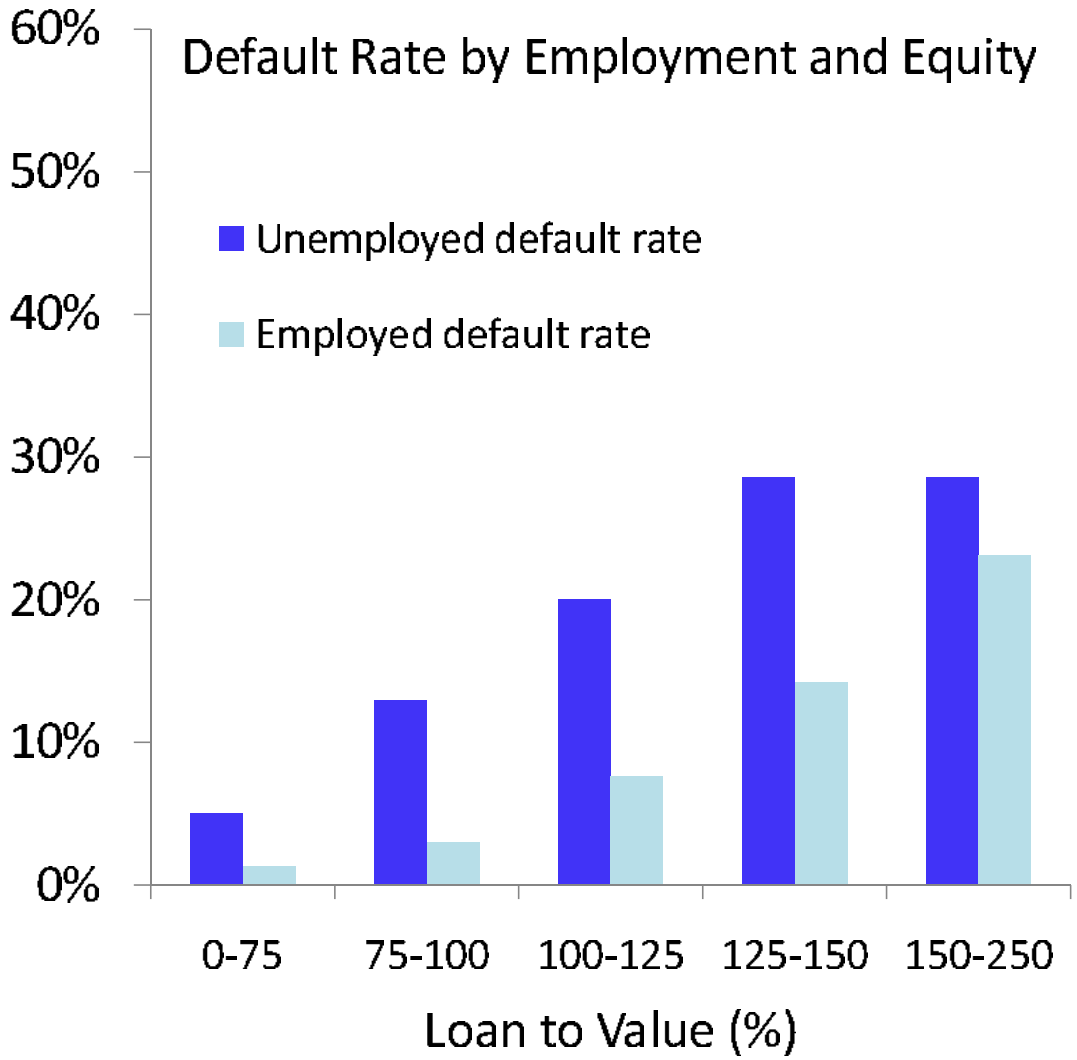
- Gerardi et al (2008), Corbae & Quintin (2010) among others
- **Assumptions:** Borrowing constraint, wedge b/w saving & borrowing rate
- **Predictions:** Strong interaction between liquidity shock and equity

Figure : Portfolio Constraints Model.



Data Supports Portfolio Constraint Model

Figure : Default rates by equity and liquidity (PSID 2009-2011)



Steps to measure interaction between income loss and equity

- Describe PSID mortgage distress supplement from 2009-2011
- Baseline model with linear interaction between job loss and equity
- Use non-linear squares to estimate the region of equity levels in which job loss and equity interact the most.

PSID Data

- **Subsample:** 2009-2011 Working age heads, labor force participants, mortgagors, & LTV<250%
  - 5281 total observations
  - 190 households 60+ days late

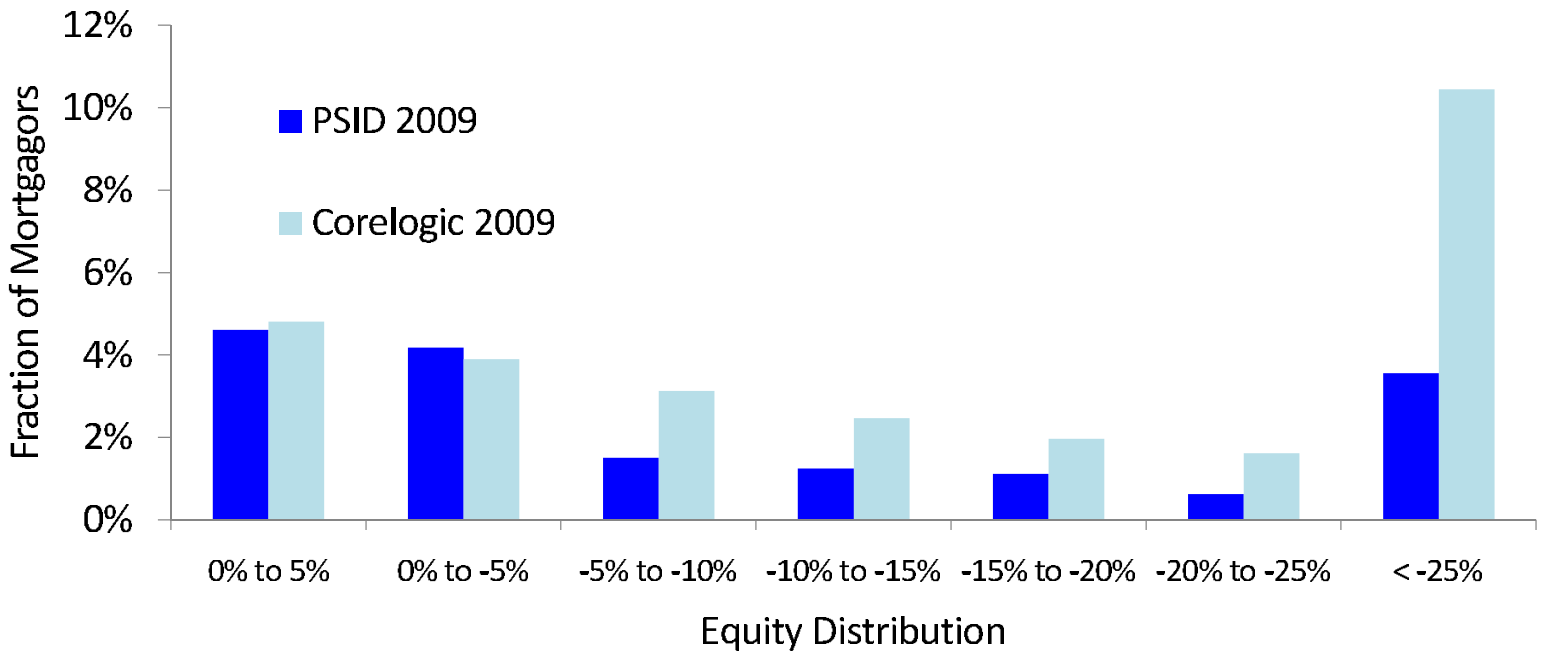
Table : PSID vs. American Housing Survey

	PSID 2009-2011	2011 AHS
	Medians	
Principal Remaining	120,000	120,000
Monthly Mortgage Payment	1,100	1,015
Mortgage Interest Rate	5	5.3
Mortgage Term Remaining	24	22
Loan to Value Ratio	0.71	0.71
	Fraction with	
Second Mortgage	0.18	0.13
ARM	0.09	0.07

Representativeness

- Mortgage Bankers Association 60+ day delinquency rate in 2009= 5.8%
- PSID 60+ day delinquency rate in 2009= 4%.

Figure : Equity Distribution



Definitions

- LTV – combined loan to value ratio.
- Unemployment Shock – positive duration unemployment spell over the 12 months prior to the survey date.
- Low Liquid Assets – insufficient liquid assets to cover 1 month's mortgage payment.

Baseline Linear Probability Model. Dependent variable is 60+ Days Late Indicator.

	(1)	(2)
LTV	0.096***	0.094***
	(8.43)	(6.75)
Unemployed (d)	0.068***	0.053***
	(4.75)	(3.73)
LTV × Unemployed (d)		
Spouse Unemployed (d)	0.036**	0.040**
	(2.19)	(2.48)
Low Liquid Assets (d)		
High Hospital Bills (d)		
High Medical Bills (d)		
Divorce (d)		
High Unsecured Debt (d)		
State UR		
LTV × State UR		
Controls	N	Y
Observations	5,281	5,281
R-squared	0.043	0.082

Controls include demographic, mortgage, and state controls

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	(1)	(2)	(3)
LTV	0.096***	0.094***	0.087***
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LTV × Unemployed (d)			
Spouse Unemployed (d)	0.036**	0.040**	0.034**
	(2.19)	(2.48)	(2.14)
Low Liquid Assets (d)			0.054***
			(6.52)
High Hospital Bills (d)			0.045
			(1.41)
High Medical Bills (d)			0.005
			(0.91)
Divorce (d)			0.033
			(1.20)
High Unsecured Debt (d)			0.002
			(0.18)
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	(8.43)	(6.75)	(6.32)	(5.48)
Unemployed (d)	0.068***	0.053***	0.049***	-0.022
	(4.75)	(3.73)	(3.55)	(-0.72)
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Low Liquid Assets (d)			0.054***	0.053***
			(6.52)	(6.46)
High Hospital Bills (d)			0.045	0.043
			(1.41)	(1.35)
High Medical Bills (d)			0.005	0.005
			(0.91)	(0.85)
Divorce (d)			0.033	0.033
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LTV	0.096***	0.094***	0.087***	0.077***	0.099***	0.034
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State UR					-0.001	-0.006
					(0.48)	(1.52)
LTV × State UR						0.007
						(1.20)
Controls	N	Y	Y	Y	Y	Y
Observations	5,281	5,281	5,281	5,281	5,281	5,281
R-squared	0.043	0.082	0.097	0.100	0.073	0.073

Controls include demographic, mortgage, and state controls

Baseline results:

- Job loss is equivalent to 45% reduction in equity.

- Strong interaction between unemployment and equity
  - Unemployment more than doubles default rate for any given LTV

- Regional unemployment rate suffers from severe attenuation bias

- This baseline specification forces constant interaction between job loss and equity, potentially biases interaction coefficient toward zero.

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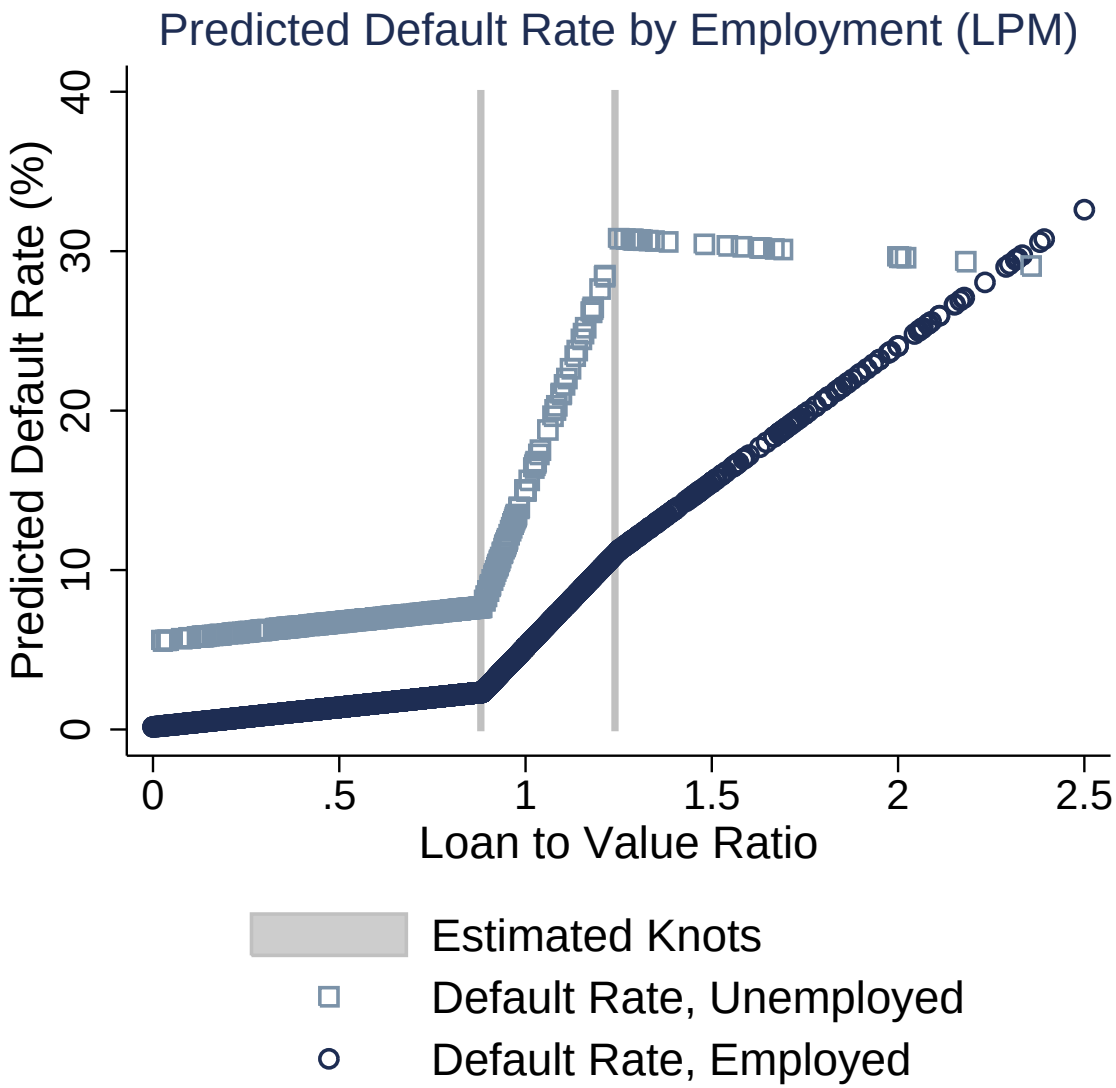
Next:

- Allow for loan to value ratio to follow linear spline
- Along each segment of the spline, unemployment can interact differently with equity
- Use non-linear squares to optimally determine kinks of spline

Figure : Non-linear relationship between LTV and default (Source: 2007-2011 PSID)



Estimating the spline kinks without controls

- Use non-linear squares to estimate optimal spline kinks c_1 and c_2.

$$\min_{\{b_k\}_{k=1}^{k=6}, c_1, c_2} \sum_{i=1}^{N} \|d_i - \hat{d}_i\|^2$$

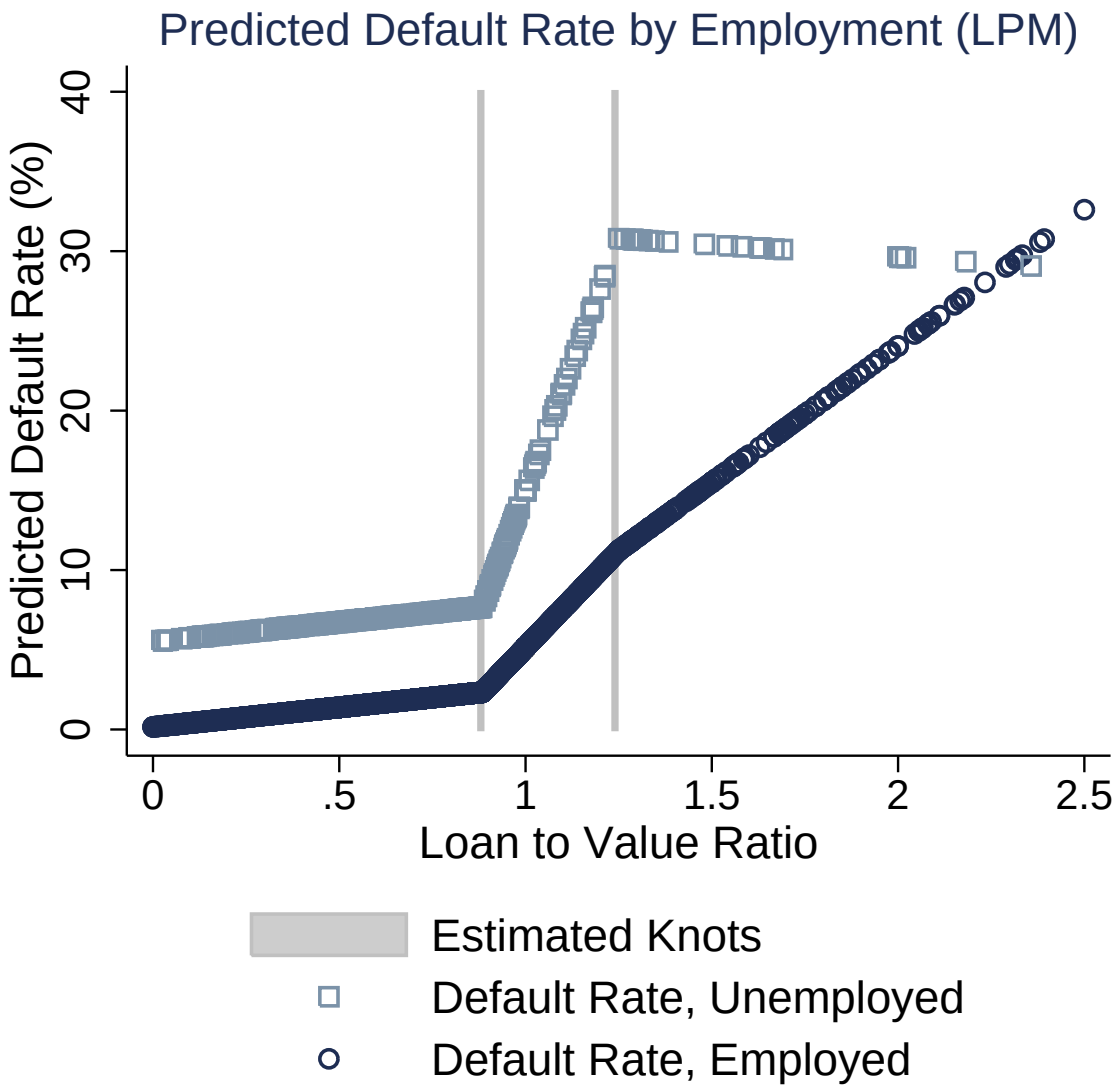
s.t.

$$\begin{aligned}
\hat{d}_i =& b_0 + b_1 \cdot LTV_i \cdot \mathbb{I}_{LTV_i < c_1} \\
&+ \left\{ b_1 c_1 + b_2 (LTV_i - c_1) + b_4 (LTV_i - c_1) \mathbb{I}_{Unempl_i} \right\} \mathbb{I}_{c_1 < LTV_i < c_2} \\
&+ \Big\{ b_1 c_1 + b_2 (c_2 - c_1) + b_4 (c_2 - c_1) \cdot \mathbb{I}_{Unempl_i} \\
&\qquad + b_3 (LTV_i - c_2) + b_5 (LTV_i - c_2) \mathbb{I}_{Unempl_i} \Big\} \mathbb{I}_{LTV_i > c_2} \\
&+ b_6 \mathbb{I}_{Unempl_i} \ , \quad \forall i \in \{1, \ldots, N\}
\end{aligned}$$

Table : Estimation of Spline Kinks, Non-Linear Least Squares. Dependent variable is 60+ Days Late Indicator.

		NLS
LTV, Up to 1st Kink	b_1	0.025
		(1.94)
LTV Cutoff 1st Kink	c_1	0.884***
		(24.52)
LTV, Middle Segment	b_2	0.237***
		(5.23)
LTV*Unemployed, Middle Segment	b_4	0.394*
		(2.56)
LTV Cutoff 2	c_2	1.250***
		(11.65)
LTV, Past Last Kink	b_3	0.176***
		(5.01)
LTV * Unemployed, Past Last Kink	b_5	-0.190
		(-1.76)
Unemployed	b_6	0.053***
		(5.24)
N		5281
R-squared		0.0562

Figure : Non-linear relationship between LTV and default (Source: 2007-2011 PSID)



Spline Results with Controls

- Fix LTV kinks at current values of 88 and 125
- Augment regression of default rate on the LTV spline with controls
- Estimate using regular OLS

Spline Results with Controls

Table : Spline Linear Probability Model. Slopes of spline segment reported. Dependent variable is 60+ Days Late Indicator.

	(1)
LTV<88 Spline	0.014
	(1.10)
88< LTV <125 Spline	0.166***
	(2.80)
LTV >125 Spline	0.188**
	(2.54)
Unemployed (d)	0.034**
	(2.49)
88< LTV <125 Spline * Unemployed (d)	0.413*
	(1.82)
LTV >125 Spline * Unemployed (d)	-0.221
	(0.95)

How does one interpret the coefficients?:

- LTV of 1, and 20% price drop.
- Employed default propensity increases by 3.2% (.2*.16=.032)
- Unemployed default propensity increases by 11.46% (.2*[.16+.413]= .1146)
- The impact for the unemployed is roughly 3.5 times larger

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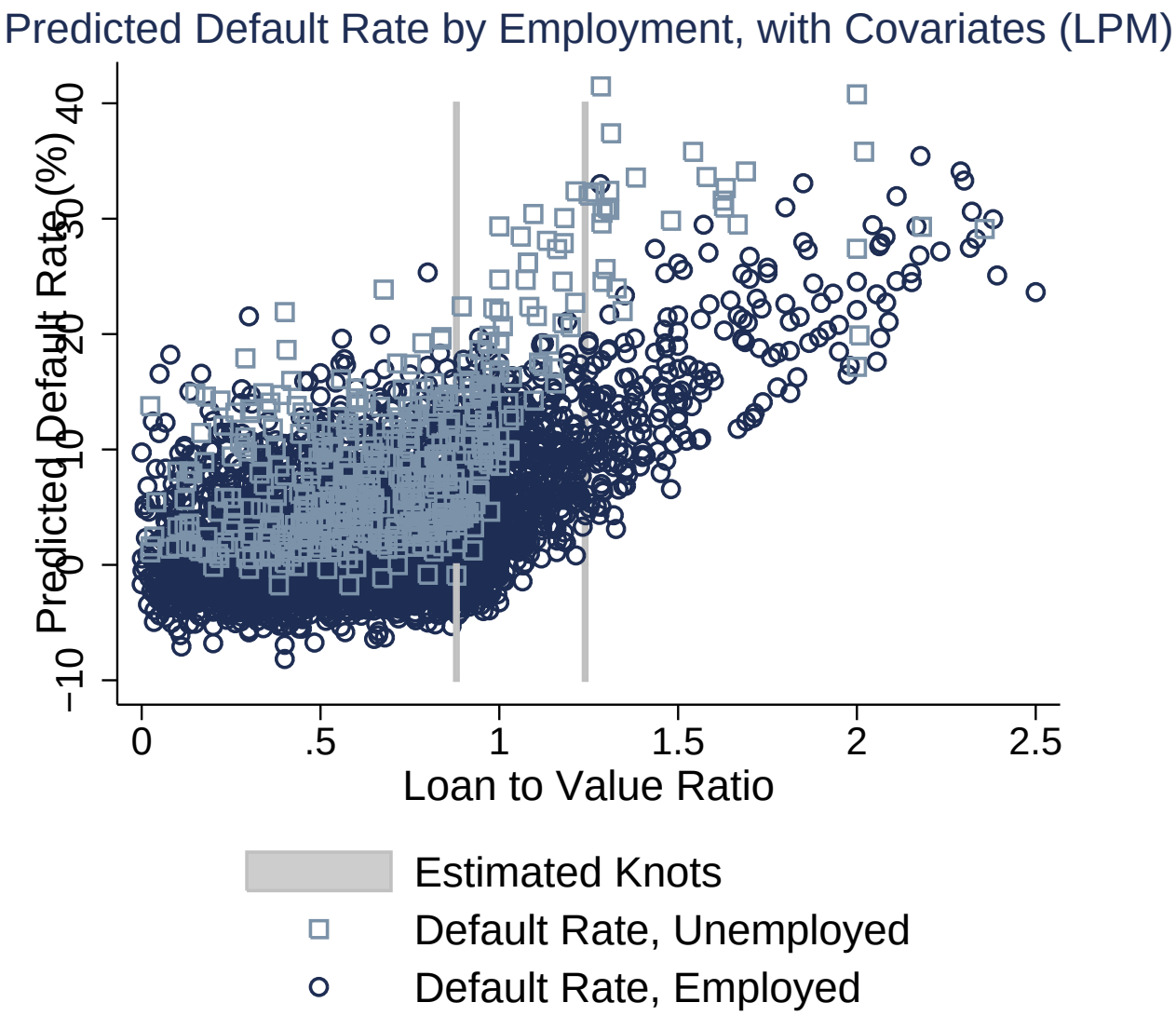
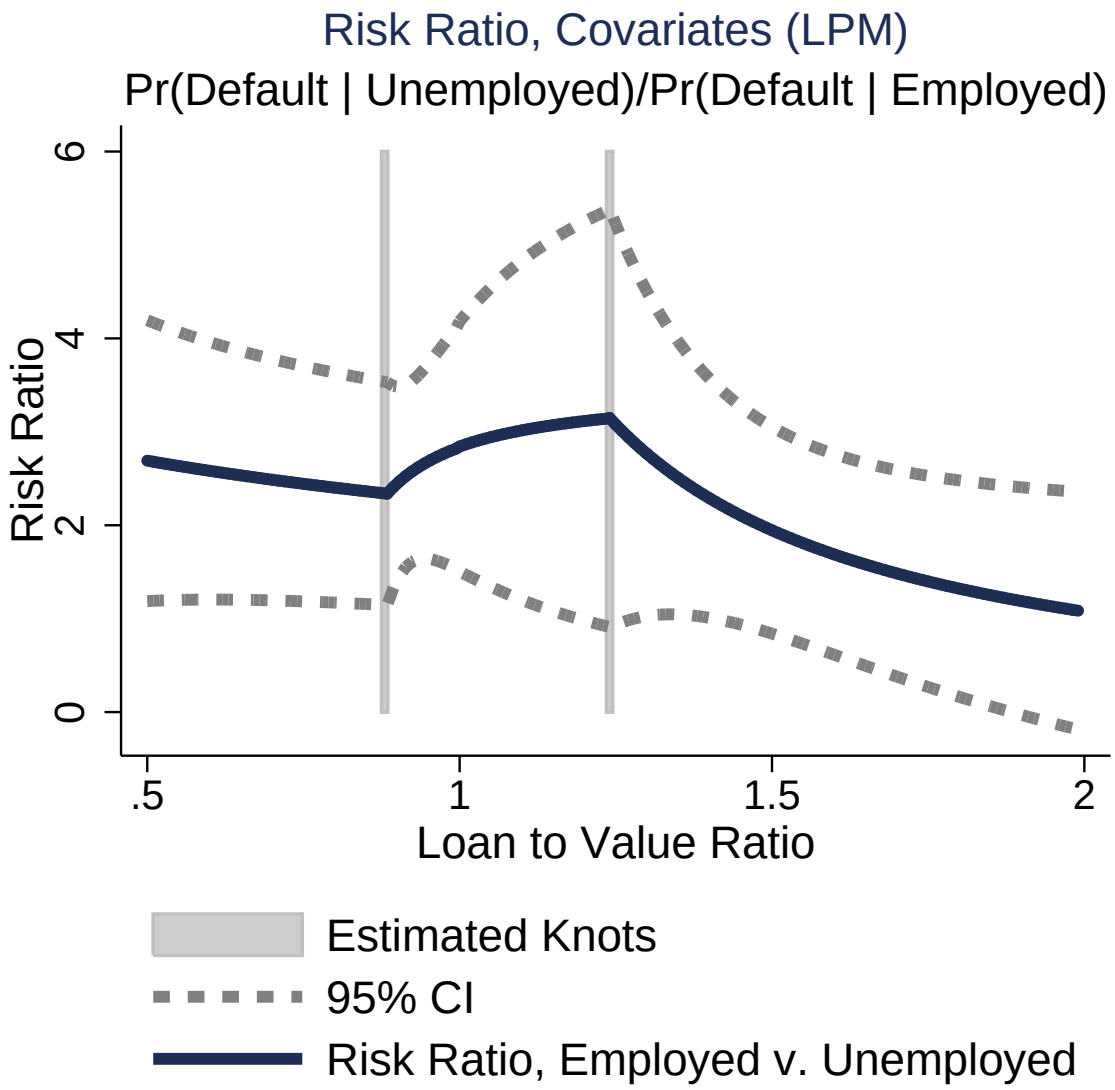


Figure : Risk ratios, LPM model, covariates included (PSID 2007-2011)



Shocks and the effect of equity

- Pure double trigger says equity doesn't matter if borrower has suffered shock.
- Evidence is mixed.
- Run regressions for *only* borrowers suffering shocks
  - For *unemployed*, some evidence that borrowers don't respond to equity.
  - For *cash flow shocks*, effect of equity as strong at 150 as at 100.

	(1)	(2)	(3)	(4)
	LPM		Logit	
Dependent variable	Unemployment	Cash Flow	Unemployment	Cash Flow
$LTV < 88$ Spline	0.044	0.070	1.543	1.770**
	(0.60)	(1.59)	(1.13)	(2.03)
$88 < LTV < 125$ Spline	0.430*	0.208	3.070	1.663
	(1.77)	(1.36)	(1.42)	(1.26)
$LTV > 125$ Spline	-0.055	0.260*	-0.696	1.676**
	(-0.23)	(1.75)	(-0.25)	(2.01)
Spouse Unemployment	0.084	0.045*	1.077*	0.570**
	(1.55)	(1.74)	(1.83)	(1.96)
Observations	435	919	416	903
R-squared	0.219	0.109		

Robust t-statistics in parentheses. $***$, p-val$< .01$.

Strategic Default

Table : What Fraction of Households in Default with Negative Equity Can Make 1 or 2 Months' Worth of Mortgage Payments

Defaulters with LTV>1, 2009-2011		
	Unwtd.	Wtd.
Liquid Assets< 1 Month's Mortgage Payment	67.5%	65.9%
Liquid Assets< 2 Months' Mortgage Payment	83.8%	85.1%
Liquid+Illiquid Assets- Unsecured Debt < 1 Month's Mortgage Payment	38.8%	40.8%
Liquid+Illiquid Assets- Unsecured Debt < 2 Months' Mortgage Payment	45.0%	49.4%
N=78		
Non-Defaulters, 2009-2011		
	Unwtd.	Wtd.
Liquid Assets< 1 Month's Mortgage Payment	22.5%	19.5%
Liquid Assets< 2 Months' Mortgage Payment	31.6%	28.0%
Liquid+Illiquid Assets- Unsecured Debt < 1 Month's Mortgage Payment	21.2%	18.7%
Liquid+Illiquid Assets- Unsecured Debt < 2 Months' Mortgage Payment	22.5%	19.8%
N=4919		

Conclusion

Question: What drove mortgage defaults during the crisis?

3 Contributions:

(1) Quantify importance of individual unemployment & non-equity shocks for default
   - Job loss by head has equivalent impact on default rates as 45% reduction in equity

(2) Demonstrate interaction between job loss and equity
   - 20% price drop for LTV between 88 and 125 increases the default rate by 3.5$\times$ for unemployed HH

(3) Provide *direct* measures "strategic default" using wealth data
   - $\frac{2}{3}$ of underwater defaulters have liquid wealth $<$ 1 mortgage payment

Appendix

Parameters

- Period is 1 year. Households discount the future at a rate of 4% ($\beta = .9615$).
- Utility function is CRRA,

$$u(c) = \frac{c^{1-\sigma}}{1-\sigma}$$

- The household has a standard risk aversion parameter of $\sigma = 2$.
- Initial endowment $y_0 = 1$.
- House price is given by $P_0 = 4.3 \cdot y_0$ to match the annual income to house price ratio.
- We choose m such that $\frac{m}{y_0} = .21$ to match the median back-end DTI in the 2009 Panel Study of Income Dynamics (PSID).
- We evaluate the model at various values of remaining principal, x_0, and we set next years' principal balance to reflect the mortgage payment $x_1 = x_0 - m$.
- Savings rate is 4%, and we set the borrowing rate to 12% to match the real historic credit card borrowing rate.

Parameters

- From the 2007 Survey of Consumer Finances (SCF) we set the credit limit to annual income to 40% which implies $\phi = .4 \cdot y_0$.
- Wealth is set to match the 2007 SCF median liquid wealth to annual income ratio of $w = 0.04$.
- We assume that the distribution of households across beliefs over the state of the world at date 1 is uniform, $p_L \sim U[0, 1]$.
- House prices in each state of the world are given by $P_1(H) = 1.2$ and $P_1(L) = .8$.
- Labor income be given by $y_1(L) = .54$ and $y_1(H) = 1$.
  - In low state, households are 'unemployed,' and the income replacement rate is 54% as in the OECD Benefits Database for the US.

Table : Summary of Shocks and Default Rates

A. Default Rates Among Subgroups of Households

	Unemployed?		Negative Equity?		Low Liquid Assets?		Income Drop of 50% or More?	
	Yes	No	Yes	No	Yes	No	Yes	No
Default Rate	10.1%	3.0%	11.3%	2.4%	10.1%	1.6%	10.7%	3.3%
# of HHs in Subgroup	435	4846	708	4573	1256	4025	233	5048

	Recently Divorced?		Cash Flow Shock?		Any Non-Equity Shock?		High Hospital Bills?	
	Yes	No	Yes	No	Yes	No	Yes	No
Default Rate	9.7%	3.5%	8.9%	2.5%	5.4%	1.2%	7.0%	3.6%
# of HHs in Subgroup	113	5168	919	4362	3031	2250	57	5224

B. Among Defaulters/Non-Defaulters, How Many Had Shocks?

	Unemployed?		Negative Equity?		Low Liquid Assets?		Income Drop of 50% or More?	
	Defaulters	Non-Defaulters	Defaulters	Non-Defaulters	Defaulters	Non-Defaulters	Defaulters	Non-Defaulters
Fraction HHs w/ shock	23.2%	7.7%	42.1%	12.3%	66.8%	22.2%	13.2%	4.1%
# of HHs in Subgroup	190	5091	190	5091	190	5091	190	5091

	Recently Divorced?		Cash Flow Shock?		Any Non-Equity Shock?		High Hospital Bills?	
	Defaulters	Non-Defaulters	Defaulters	Non-Defaulters	Defaulters	Non-Defaulters	Defaulters	Non-Defaulters
Fraction HHs w/ shock	5.8%	2.0%	43.2%	16.4%	86.3%	56.3%	2.1%	1.0%
# of HHs in Subgroup	190	5091	190	5091	190	5091	190	5091

Table : Summary Statistics for All PSID Households Heads in Sample, 2009-2011

	(A) Demographics							
	All Households				Delinquent Households			
	Mean	p10	p50	p90	mean	p10	p50	p90
Age	44.08	30	44	58	43.19	31	42.5	57
Male (d)	0.85	0	1	1	0.68	0	1	1
Married (d)	0.74	0	1	1	0.55	0	1	1
Less than High School (d)	0.08	0	0	0	0.14	0	0	1
High School Education (d)	0.26	0	0	1	0.33	0	0	1
Some College Education (d)	0.27	0	0	1	0.29	0	0	1
College Grad+ Education (d)	0.33	0	0	1	0.17	0	0	1
Number of Children	1.01	0.0	1.0	3.0	1.23	0.00	1.00	3.00
Income	110,000	38,000	87,000	180,000	64,000	21,000	55,000	120,000

	(B) Mortgage Characteristics							
	All Households				Delinquent Households			
	Mean	p10	p50	p90	mean	p10	p50	p90
Home value	240,000	80,000	180,000	450,000	190,000	50,000	140,000	350,000
Principal Remaining	150,000	35,000	120,000	290,000	180,000	31,000	130,000	350,000
Monthly Mortgage Payment	1253	500	1100	2200	1349	459	1100	2528
Second Mortgage (d)	0.18	0	0	1	0.21	0	0	1
Refinanced Mortgage (d)	0.46	0	0	1	0.40	0	0	1
ARM (d)	0.09	0	0	0	0.22	0	0	1
Mortgage Interest Rate	5.15	4	5	7	5.81	0	6	9
Mortgage Term Remaining	20.56	7	24	29	23.10	10	25	30
Recourse (d)	0.24	0	0	1	0.26	0	0	1
Judicial (d)	0.39	0	0	1	0.38	0	0	1
Default (60+ Days Late) (d)	0.04	0	0	0				
Months Delinquent	0.20	0	0	0	4.95	2	3	11.5
Loan to Value Ratio	0.71	0.28	0.71	1.04	1.01	0.52	0.94	1.66

Table : Summary Statistics for All PSID Households Heads in Sample, 2009-2011

	(C) Employment							
	All Households				Delinquent Households			
	Mean	p10	p50	p90	mean	p10	p50	p90
Unemployed Head Last Year (d)	0.08	0	0	0	0.23	0	0	1
Unemployed Spouse Last Year (d)	0.05	0	0	0	0.12	0	0	1
Unemployed Head or Spouse Last Year (d)	0.13	0	0	1	0.31	0	0	1
Head Unemployed as of Survey Date (d)	0.06	0	0	0	0.21	0	0	1
Spouse Unemployed as of Survey Date (d)	0.04	0	0	0	0.10	0	0	1
Unemployment Duration	0.26	0	0	0	0.97	0	0	3
Unemployment Duration, Spouse	0.20	0	0	0	0.52	0	0	0

	(D) Wealth							
	All Households				Delinquent Households			
	Mean	p10	p50	p90	mean	p10	p50	p90
Value of Stocks	21,000	0	0	25,000	2,655	0	0	0
Value of Liquid Assets	20,000	0	5,000	45,000	3,238	0	250	5,000
Unsecured Debt	16,000	0	4,354	40,000	18,000	0	6,750	40,000
Value of Vehicles	19,000	2,000	12,000	40,000	11,000	0	8,000	27,000
Value of Bonds	13,000	0	0	6,800	14,000	0	0	0
Business Income	41,000	0	0	0	4,973	0	0	0
Value of IRA	33,000	0	0	90,000	1,870	0	0	0
Value of Other Housing	29,000	0	0	30,000	3,794	0	0	0
N	5281				N	190		

Definitions

- 'Unemployment' Shock – positive duration unemployment spell over the 12 months prior to the survey date.
- 'Low Liquid Assets' – is defined as insufficient liquid assets to cover 1 month's mortgage payment (23.8% of the sample falls into this category).
- 'High Unsecured Debt' – as having unsecured debt greater than 5 years' worth of mortgage payments (5.1% of the sample falls into this category).
- 'High Medical Bills' – is defined as annual medical bills greater than 1 year's worth of mortgage payments (21.3% of our sample falls into this category).
- 'High Hospital Bills' – is defined as annual hospital bills greater than 1 year's worth of mortgage payments (1.08% of the sample falls into this category).
- 'Cash Flow' shocks – divorce, unemployment of head or spouse, or a 50% reduction of income
- 'Generic Non-Equity' – recent divorce, unemployment of head or spouse, a 50% reduction of income, low liquid assets, high hospital bills, or high medical bills
- Approximately 17% of the sample suffered a cash flow shock, and 57.4% of the sample suffered a generic non-equity shock

Figure : **Option Theoretic Assumptions:** Default Policy Function for one household with belief $p_L = .4$ in 2-Period Model Economy.

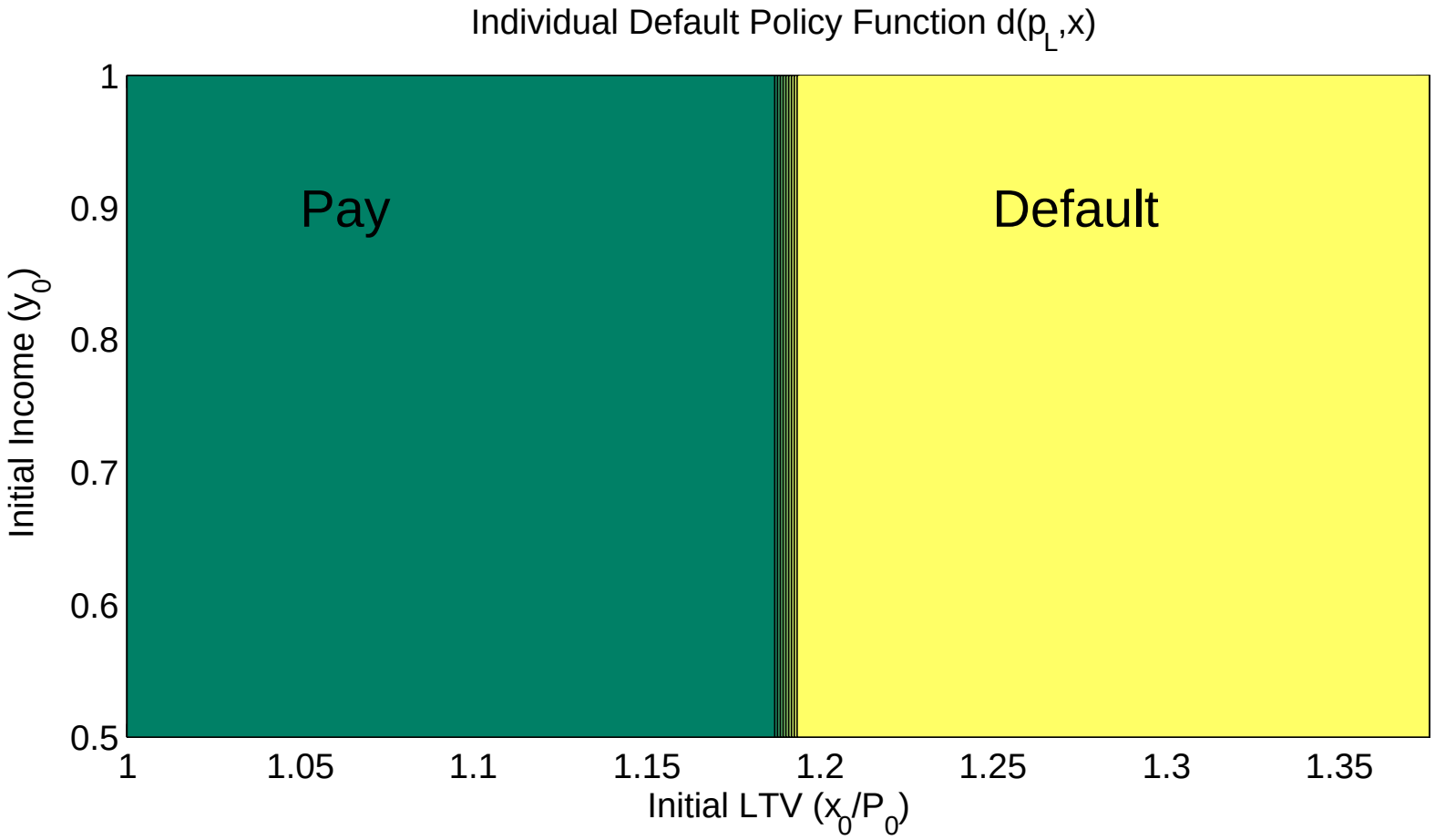


Figure : **Option Theoretic Assumptions:** Default Rates for 2-Period Model Economy.

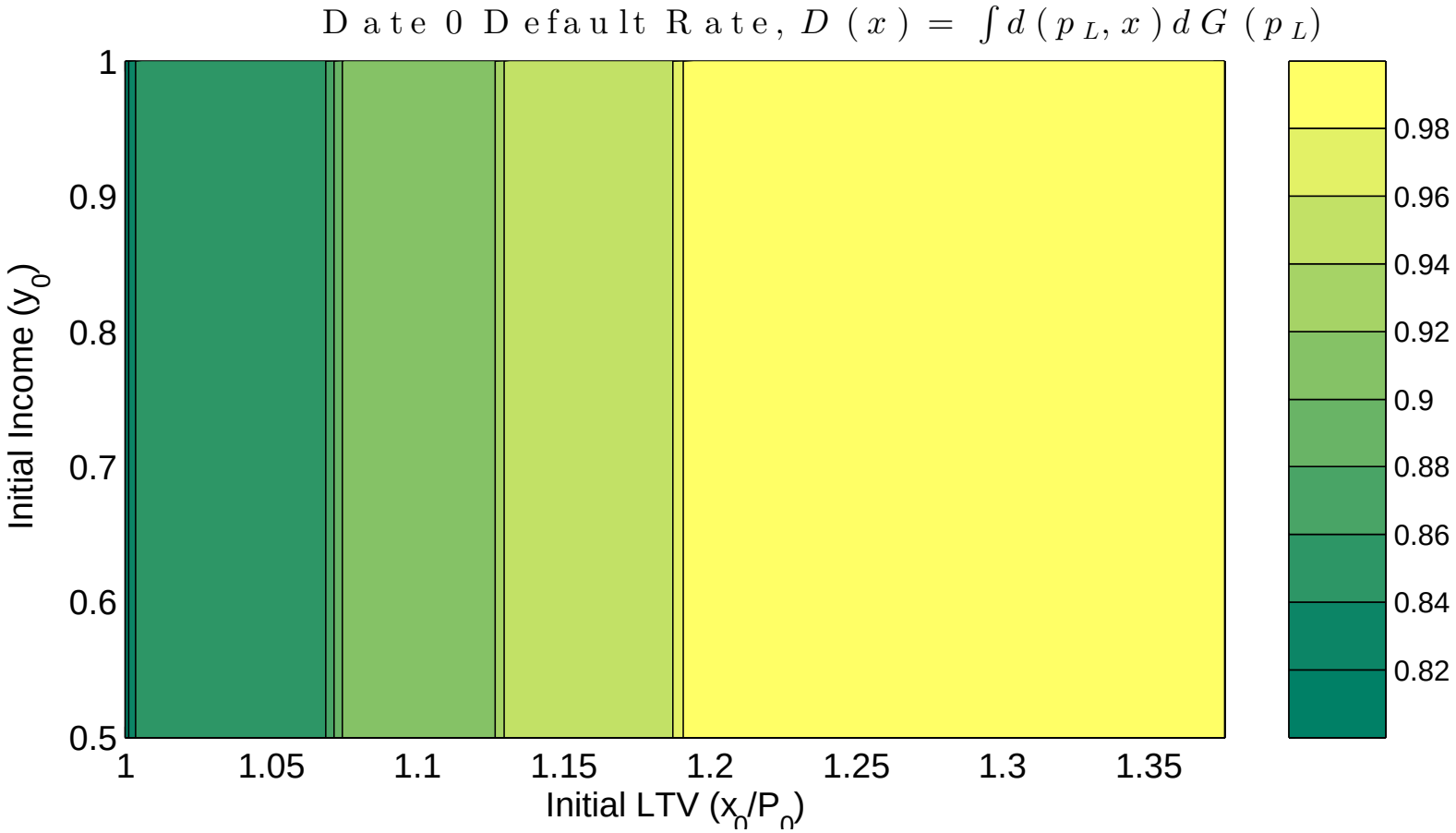


Figure : **Portfolio Constraints Assumptions:** Default Policy Function for one household with belief p_L=.4 in 2-Period Model Economy.

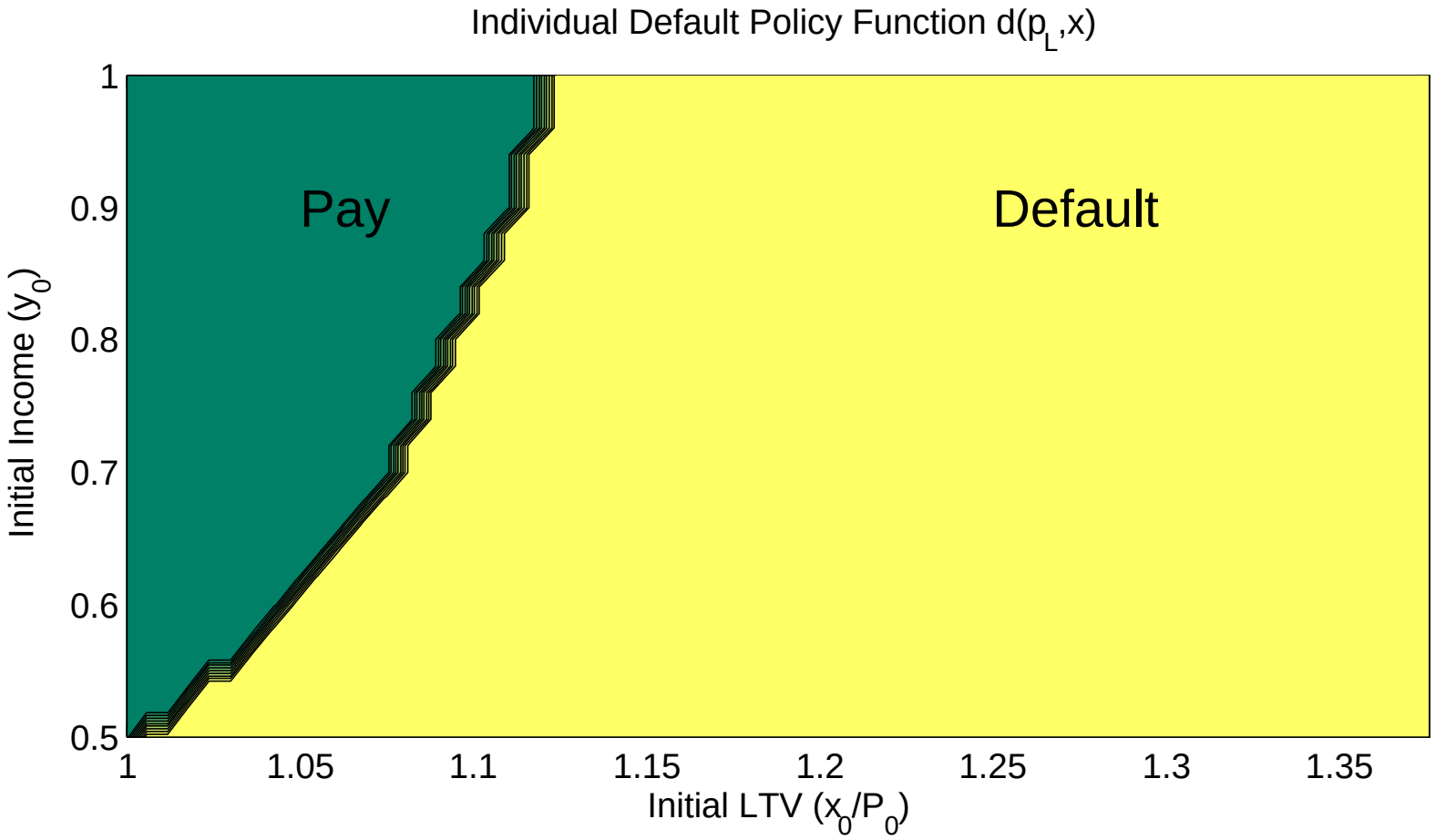


Figure : **Portfolio Constraints Assumptions:** Default Rates for 2-Period Model Economy.

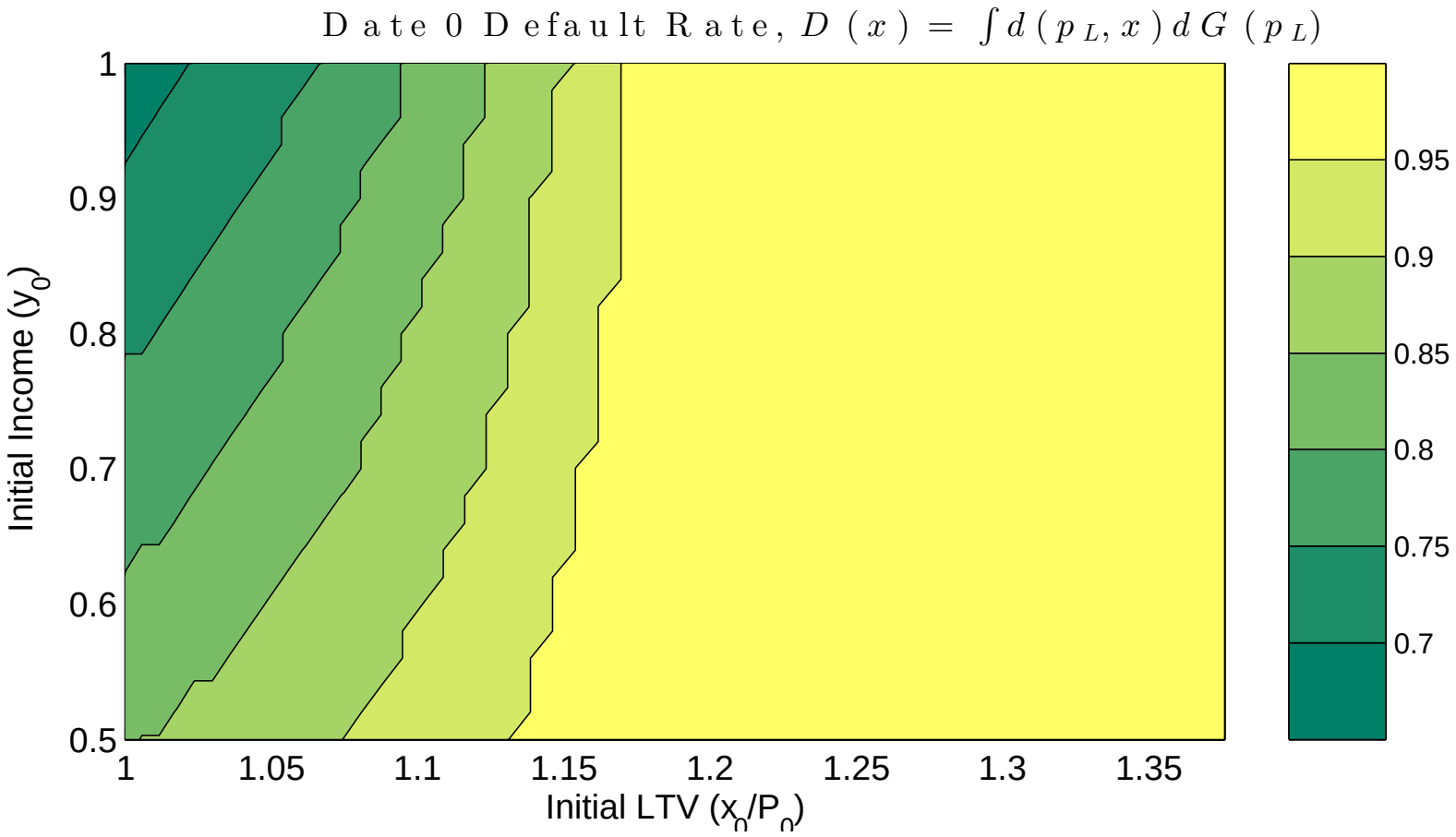


Figure : Empirical Default Rates by Income Loss and Loan to Value (Source: 2007-2011 PSID)

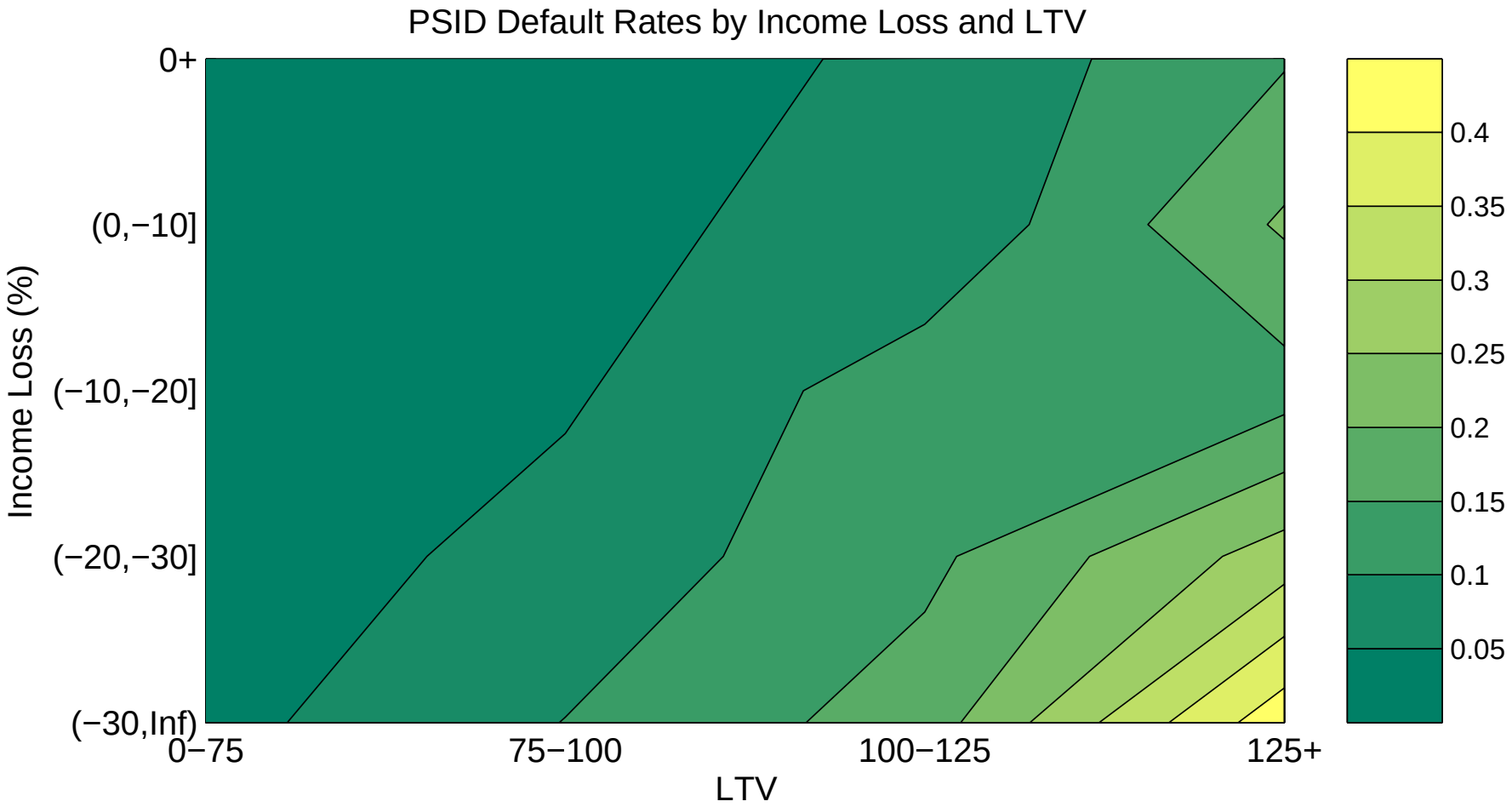


Table : Spline Linear Probability Model. Slopes of spline segment reported. Dependent variable is 60+ Days Late Indicator.

	(3)	(4)
LTV<88 Spline	0.019	0.023**
	(1.54)	(2.41)
88< LTV <125 Spline	0.231***	0.281***
	(3.89)	(4.67)
LTV >125 Spline	0.153**	0.148**
	(2.16)	(2.05)
Unemployed (d)	0.053***	0.066***
	(3.74)	(4.63)
88< LTV <125 Spline * Unemployed (d)		
LTV >125 Spline * Unemployed (d)		
Spouse Unemployed (d)	0.040**	0.034**
	(2.46)	(2.08)
Low Liquid Assets (d)		
Controls	Y	N
Observations	5,281	5,281
R-squared	0.091	0.055
Controls include demographic, mortgage, and state controls		

Table : Spline Linear Probability Model. Slopes of spline segment reported. Dependent variable is 60+ Days Late Indicator.

	(2)	(3)	(4)
LTV<88 Spline	0.013	0.019	0.023**
	(1.04)	(1.54)	(2.41)
88< LTV <125 Spline	0.208***	0.231***	0.281***
	(3.53)	(3.89)	(4.67)
LTV >125 Spline	0.164**	0.153**	0.148**
	(2.33)	(2.16)	(2.05)
Unemployed (d)	0.049***	0.053***	0.066***
	(3.55)	(3.74)	(4.63)
88< LTV <125 Spline * Unemployed (d)			
LTV >125 Spline * Unemployed (d)			
Spouse Unemployed (d)	0.034**	0.040**	0.034**
	(2.11)	(2.46)	(2.08)
Low Liquid Assets (d)	0.054***		
	(6.63)		
Controls	Y	Y	N
Observations	5,281	5,281	5,281
R-squared	0.105	0.091	0.055
Controls include demographic, mortgage, and state controls			

Table : Spline Linear Probability Model. Slopes of spline segment reported. Dependent variable is 60+ Days Late Indicator.

	(1)	(2)	(3)	(4)
LTV<88 Spline	0.014	0.013	0.019	0.023**
	(1.10)	(1.04)	(1.54)	(2.41)
88< LTV <125 Spline	0.166***	0.208***	0.231***	0.281***
	(2.80)	(3.53)	(3.89)	(4.67)
LTV >125 Spline	0.188**	0.164**	0.153**	0.148**
	(2.54)	(2.33)	(2.16)	(2.05)
Unemployed (d)	0.034**	0.049***	0.053***	0.066***
	(2.49)	(3.55)	(3.74)	(4.63)
88< LTV <125 Spline * Unemployed (d)	0.413*			
	(1.82)			
LTV >125 Spline * Unemployed (d)	-0.221			
	(0.95)			
Spouse Unemployed (d)	0.034**	0.034**	0.040**	0.034**
	(2.14)	(2.11)	(2.46)	(2.08)
Low Liquid Assets (d)	0.054***	0.054***		
	(6.61)	(6.63)		
Controls	Y	Y	Y	N
Observations	5,281	5,281	5,281	5,281
R-squared	0.108	0.105	0.091	0.055
Controls include demographic, mortgage, and state controls				