

Unemployment Insurance with Consumer Bankruptcy¹

Diego Legal

Central Bank of Paraguay

Eric Young

University of Virginia

Cleveland Fed

Banco Central del Paraguay

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¹Opinions in this paper are of the authors and do not represent the views of the Central Bank of Paraguay or the Cleveland Fed.

Motivation

- Labor income is the main source of income for most households → labor income risk as a main source of risk
- Different labor-market policies (e.g., UI) aiming to help workers cope with income risks
 - Widely recognized: Consumption smoothing vs. moral hazard
- Those more likely concerned about labor risk, also key users of unsecured credit markets
- Potentially interesting interaction between labor policies and consumer bankruptcy
 - Link: labor risk → default risk

Motivation

- Adverse labor market outcomes such as low earnings or job loss have been associated with consumer bankruptcy
 - **67.5%** of bankrupts cite lower labor income (Sullivan, Warren, Westbrook, 2000)
 - Unemployed are disproportionately more likely to file for bankruptcy and bankruptcy filers are more likely to be unemployed (Athreya and Simpson, 2006)
 - Job losers are **3** times more likely to file for bankruptcy (Keys, 2018)

Motivation

- Can these facts justify a more generous UI?
- How valuable is UI would also depend how it affects borrowers
- UI can reduce default risk: provides income during a situation of low-income
- UI can increase default risk: encourages borrowing and unemployment, and requires taxes

Research Questions

Positive:

Data: What cross-state differences tell us on how UI affects consumer bankruptcy?

Model: What is the effect of UI on unsecured credit market?

- Default risk, bankruptcy rate, interest rates, debt

Normative:

How do the welfare implications of UI depend on consumer bankruptcy?

What I do

Empirical analysis using county-level data on bankruptcy rates and cross-state differences in max. UI benefits from 1991-2007

Challenge: Same shock can influence both policy and bankruptcy decisions

Specification: Bordering counties (DID type)

- The comparison is between bordering county-pairs at a given year
- Conditional on covariates, shocks affect the counties on the two sides of the state border similarly (but the policy is discontinuous at the border)
- Bordering counties are better control groups, limitations?

▶ RegEq

▶ Stats

▶ Map

What I find

Table: The effect of UI on Chapter 7 consumer bankruptcy (1991-2007)

	Chapter 7 bankruptcy rate Bordering counties
$\ln(\max UI_{s(c)t})$	-0.06015** (0.026)
$Unempl.rate_{c,t}$	Y
$\log(income_{c,t})$	Y
Other state policies	Y
County FE	Y
Pair-specific time FE	Y
N. Obs.	35,226

$\ln(\max UI_{s(c)t}) = \ln(\max \# \text{ of weeks} \times \max. \text{ WBA})$. Standard errors are in parentheses and two-way clustered at the state and border segment. All monetary values are in 2017 dollars. Other state policies includes home exemptions and minimum wage. Significance levels: *10%, **5%, ***1%.

Bankruptcy rates tend to be lower in counties with more generous UI

Relative to the mean, a 10% increase in the total amount of UI available during a given unemployment spell reduces Chapter 7 bankruptcy rate by 1.9%.

What I do

Build a GE life-cycle model of unsecured consumer credit and a frictional labor market with bankruptcy and UI [▶ Model ingredients](#)

- UI can reduce default risk: provides income during a situation of low-income
- UI can increase default risk: encourages borrowing and unemployment, and requires taxes

Calibrated to match statistics of the labor and unsecured credit market [▶ Calibration](#)

Tested if it can replicate the negative relationship observed in the data w.r.t. max. UI and others [▶ Validation](#)

What I find

Positive analysis - replacement rate

- Non-monotonic effect depending on the level of UI
- For low replacement rates, the first effect dominates and more UI \rightarrow lower default risk and bankruptcy, increases borrowing
- As the replacement increases (keeping the UI cap), default risk increases, which leads to higher interest rates on loans, reducing debt and bankruptcy [▶ Graphs](#)

What I find

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Normative analysis

- With bankruptcy, ex-ante welfare initially increases but then falls
- *Increasing the replacement rate way above the current 50% would increase welfare if bankruptcy is not considered, but with a bankruptcy option, it reduces welfare*

[▶ Graphs](#)

Summary

- The effect of UI on consumer bankruptcy is theoretically ambiguous
- For the U.S. data, there is a small but significant negative correlation b/w the max. of UI bankruptcy rates across counties
- In the model, the effect of UI depends on the level of UI (and components)
- For example, higher replacement rate has a non-monotonic effect on debt-to-income and welfare
- From an ex-ante welfare perspective, an increase in the replacement rate beyond 50% increases welfare when bankruptcy is not allowed but decreases it when bankruptcy is allowed
- Even if a more generous UI reduces bankruptcy, we should be cautious about interpreting this fact as an argument in favor of a more generous UI

Thanks!

What I do

$$BK_{cpt} = \alpha + \eta \ln(\max UI_{ct}) + \phi_c + \tau_{pt} + X_{ct} + \varepsilon_{cpt}$$

BK_{cpt} : Chapter 7 bankruptcy percentage rate in county c belonging to pair p at time t

$\ln(\max UI_{ct})$: $\ln(\max \# \text{ of weeks} \times \max. \text{ WBA})$

ϕ_c : represents a county fixed effect.

τ_{pt} : a pair-specific time fixed effect

X_{ct} : county-level income and unemployment rate as well as state home exemption

▶ Back

Comparative Statistics

Table: Comparative sample statistics

	All counties				
	Mean	Std. Dev.	25th perc.	Median	75th perc.
Chap. 7 BK rate (%)	0.266, 0.303*	0.17	0.14	0.23	0.36
Max. num. of weeks	26.05	0.43	26.00	26.00	26.00
Max. WBA	290.71	81.95	230.50	279.50	337.00
Max. Benefits	7,580	2,188	5,993	7,280	8,775
Unemp. Rate (%)	5.74	2.72	3.90	5.20	6.90
Income	2,588,422	9,758,054	216,688	514,524	1,422,771
	Bordering counties				
Chap. 7 BK rate (%)	0.27, 0.303*	0.17	0.14	0.23	0.36
Max. num. of weeks	26.06	0.46	26.00	26.00	26.00
Max. WBA	290.95	86.48	230.00	276.00	339.00
Max. Benefits	7,592	2,326	5,980	7,202	8,827
Unemp. Rate (%)	5.74	2.65	3.90	5.20	7.00
Income	2,503,086	8,862,479	206,564	518,677	1,420,862

*First value of mean is unweighted, the second is the population weighted mean.

Model: Unsecured credit with job search and matching

- Agents: workers, firms, financial intermediaries, central government.
- Lifecycle model with heterogeneous workers in terms of their labor productivity
- Incomplete credit market with competitive financial intermediaries
- Labor market frictions in a Diamond-Mortensen-Pissarides search and matching framework
 - Firms post vacancies and are matched with a worker
- Institutional framework modeled as U.S. Ch7 bankruptcy and regular UI

Estimation

Targeted statistics

Name	Data	Model
Annual bankruptcy rate (2007 SCF)	1.18%	0.96%
Employment rate (2007 SCF)	80%	85.6%
Annual debt-to-income ratio (2007 SCF)**	1.64%	1.54%
Annual debt-to-income ratio for Bankruptcy filers (US Courts, 2007)	110%	93.2%
Bankruptcy rate for non-employed	4%	3.22%
Employment rate for Bankruptcy filers (US Courts, 2007)	73%	65.3%
Mean earnings	1	0.96
b_1 (trend component of earnings over the lifecycle)	0.14	0.139
b_2 (trend component of earnings over the lifecycle)	-0.0016	-0.0015
ρ_z (persistence of stochastic component of earnings)	0.83	0.836
σ_ζ (standard deviation of stochastic component)	0.41	0.476

**Debt= $\max(0, -\text{Networth})$

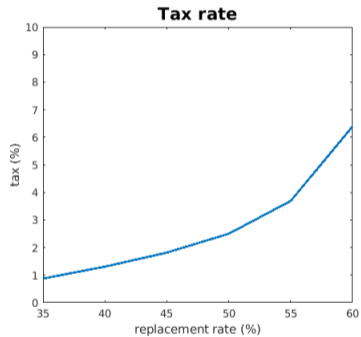
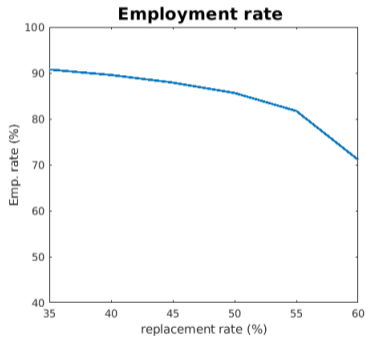
Untargeted statistics

Name	Data	Model
Semi-elasticity bankruptcy rate w.r.t. UI cap	-0.06015	-0.041
Elasticity potential benefit durations on unemployment durations**	(0.10 , 0.41)	0.08
Elasticity benefit increases on unemployment durations**	(0.10 , 1.21)	1.23
Mean interest rate on loans*	13.7%	8.24%
Bankrupt debt*	2.74%	1.49%
Share of bankruptcy by age*		
- Ages 25-34	55%	61%
- Ages 35-44	30%	17%
- Ages 45-54	15%	13%
- Ages 55-65	0%	9%

*See Athreya et. al (2018). **See Schmieder and von Wachter (2016)

Effect of replacement rates on steady state employment

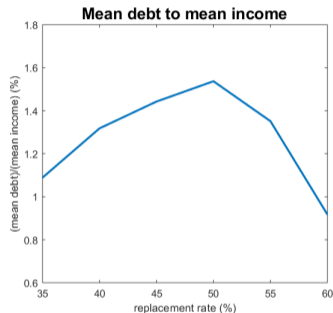
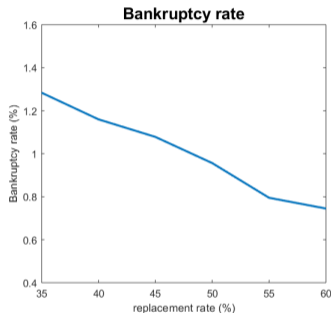
$$b(\epsilon_t) = \max \{ \min \{ \theta_R \times w(\epsilon_t), C_{UI} \}, z \}$$



▶ Back

Effect of replacement rates on unsecured consumer credit

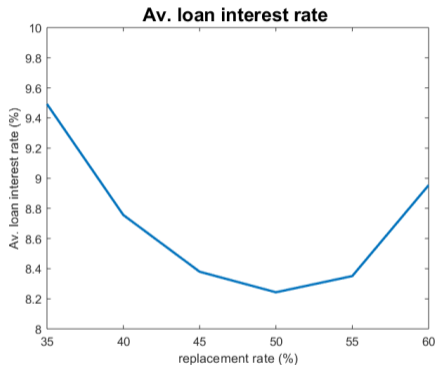
$$b(\epsilon_t) = \max \{ \min \{ \theta_R \times w(\epsilon_t), C_{UI} \}, z \}$$



- Just the fact that bankruptcy falls with more generous UI is not enough
- Other components of UI matter (constraint how many people receive the benefit increase)
- UI is good for low values, but very costly implications in terms of credit access beyond 50%

Effect of replacement rates on unsecured consumer credit

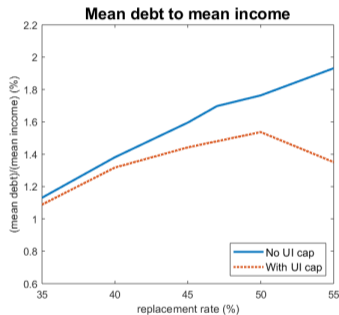
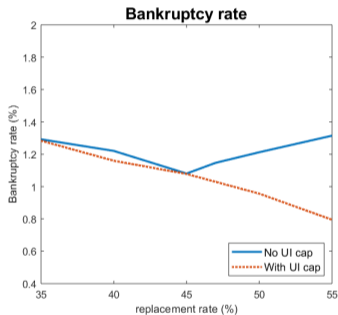
$$b(\epsilon_t) = \max \{ \min \{ \theta_R \times w(\epsilon_t), C_{UI} \}, z \}$$



- Lower default risk and more credit access when going from $\theta_R = 35\%$ to $\theta_R = 50\%$
- From $\theta_R = 50\%$ to $\theta_R = 60\%$ tighter credit conditions

Effect of replacement rates on unsecured consumer credit

$$b(\epsilon_t) = \max \{ \theta_R \times w(\epsilon_t), z \} \quad , \quad C_{UI} = \infty$$

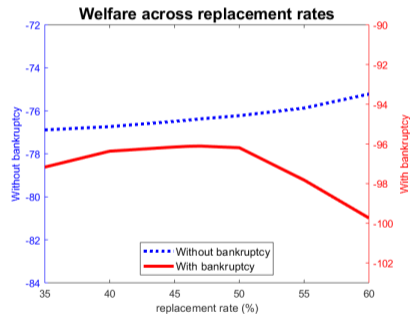


- More generous UI for all qualifying unemployed can increase bankruptcy rate

Welfare: Does bankruptcy affect the desirability of UI?

$$b(\epsilon_t) = \max \{ \min \{ \theta_R \times w(\epsilon_t), C_{UI} \}, z \}$$

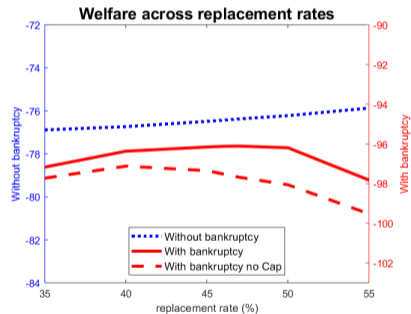
- Consider an European-style replacement rate of 60%
- Increasing replacement rate from 50% to 60% w/o bankruptcy **increases** ex-ante welfare by **1.3%** in terms of lifetime consumption
- Increasing replacement rate from 50% to 60% with bankruptcy **reduces** ex-ante welfare by **3.6%** in terms of lifetime consumption



Welfare: Does bankruptcy affect the desirability of UI?

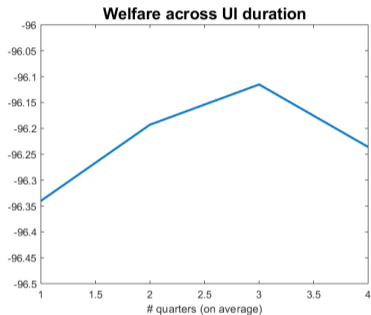
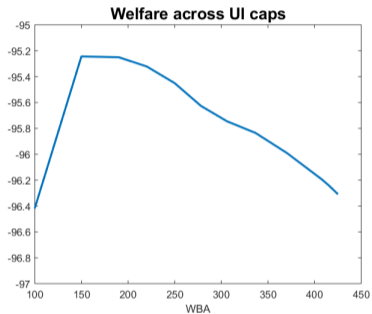
$$b = \max \{ \theta_R \times w(\epsilon_t), z \} \quad , \quad C_{UI} = \infty$$

- Increasing replacement rate from 40% reduces welfare when there is no UI cap



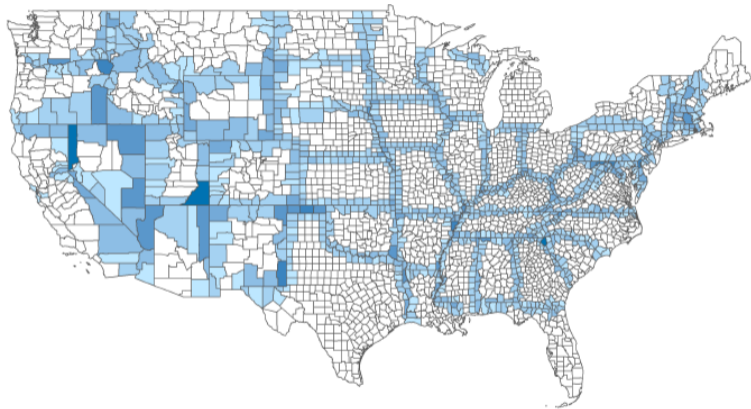
Welfare: other UI components

Given $\theta_R = 50\%$, with bankruptcy



- Reducing the UI cap from a WBA of \$407 to \$150 increases welfare by 1% in terms of lifetime consumption
- Extending the duration from 2 to 3 quarters on average increases welfare by less than 0.1%

Bordering counties



Bordering-counties from Dube et al. (2010).

What I find - Chapter 3

Table: The effect of Minimum Wage on consumer bankruptcy (1991-2017)

Sample period	Ch7 bankruptcy rate		
	U.S.	West	East
$\log(MW_{it})$	-0.129*** (0.041)	-0.282*** (0.0795)	-0.083** (0.037)
Covariates (X_{ct})	Y	Y	Y
County FE	Y	Y	Y
Pair-specific time FE	Y	Y	Y
N. Obs.	41,680	9,200	28,542

Standard errors are in parenthesis. Significance levels: *10%, **5%, ***1%. Standard errors are two-way clustered at the state level and at the border segment. X_{ct} includes county-level unemployment rate, housing prices, and income as well as other relevant state policies such as state home exception and Unemployment Insurance generosity.

Potential bias toward zero of spillovers.