Discussion of "A Quantitative Theory of Unsecured Consumer Credit with Risk of Default"

by

Satyajit Chatterjee, Dean Corbae, Makoto Nakajima and José-Víctor Ríos-Rull

Dirk Krueger

Stanford University and NBER

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Introduction

- Personal bankruptcy common phenomenon: 1.8% of U.S. population in 1998 (SCF), about $39 billion in unsecured loans lost.

- Paper develops theory of unsecured consumer credit with default. Also Livshits et al. (2001), Lehnert and Maki (2000), Athreya (2002).

- It investigates whether the theory is quantitatively consistent with U.S. data on default rates.

- It evaluates the allocative and welfare consequences of a recently proposed personal bankruptcy legislation reform.

Outline

- A theory of unsecured consumer credit with risk of default.
- Is it a *quantitative* theory of unsecured consumer credit with risk of default?
- Is it *the* theory of unsecured consumer credit with risk of default?

The Model: Households face

- Idiosyncratic Markov preference shocks $\eta \in S$
- Idiosyncratic income shocks $e \in E$ that are iid
- Idiosyncratic mortality shock with probability δ; mass $1-\delta$ of assetless newborns

The Model: Households can

- Consume, buy discount bonds of discrete sizes $l \in L$ at prices $q_{l,\eta}$.
- Repay debt or declare bankruptcy. Consequences of default:
  - All debt forgiven
  - Can't save in current period (why?)
  - Credit rating turns bad: $h = 1$; constant probability of reversal to $h = 0$ of λ
  - With bad credit rating: $l \in L \cap \mathbf{R}_+$, income $(1 - \gamma)e$

The Model: Households cannot

- Buy insurance contracts against preference shocks or income shocks (markets are incomplete for exogenous reasons); note that mortality shocks are perfectly insurable

- Households have standard preferences

$$E_0 \sum_{t=0}^{\infty} (\beta\delta)^t \, u(c_t, \eta_t)$$

The Model: Financial Intermediaries

- Can obtain funds at constant, exogenous world interest rate $\hat{r}$

- Behave perfectly competitive and have CTRS "technology", therefore

$$q_{l',\eta} = \begin{cases} \frac{\delta}{1+\hat{r}}(1 - p_{l',\eta}) & \text{if } l' < 0 \\ \frac{\delta}{1+\hat{r}} & \text{if } l' \geq 0 \end{cases}$$

The Model: Equilibrium

- Fixed point problem in $\mathbf{R}^{\#L \times \#S}$.

$$(p_{l,\eta}) \Rightarrow (q_{l,\eta}) \Rightarrow (d^*_{l,\eta}(e,q)) \Rightarrow (\varphi_{l,\eta}(p))$$

  Use continuum of agents to deal with the discontinuous nature of the default decision.

- Note: no explicit mentioning of prices necessary for existence.

The Model: Main Results

- Let $\bar{D}^*_{l,\eta}(q)$ denote the set of incomes for which default is weakly preferred to no default. $\bar{D}^*_{l,\eta}(q)$ is a closed interval, with $\bar{D}^*_{l^1,\eta}(q) \subseteq \bar{D}^*_{l^2,\eta}(q)$ whenever $l^1 > l^2$.

- An equilibrium default probability vector p^* and price vector q^* exist (by Kakutani).

- It satisfies $p^*_{l',\eta} = 0$ for $l' \geq 0$, $p^*_{l^1,\eta} \leq p^*_{l^2,\eta}$ if $l^2 < l^1 < 0$, and $p^*_{l_{\text{min}},\eta} = 1$ if $l_{\text{min}} = \min L$ small enough.

The Model: Comments

- Why income in the current period cannot be saved? Timing of paper is such that with period you first decide on default, then on c, l. But after default saving cannot be confiscated; even if timing is changed, if saving is below exemption level, cannot be confiscated.

- Suppose you relax this assumption:
  - Decision about l after $d = 1$ nontrivial
  - Proofs of Lemma App. 3 and 4 (and thus Theorem 2: Characterization of the Default Region) don't go through

Quantitative Implementation

Parameter	Value	Target
Death Prob. $1-\delta$	2.5%	Exp. Life 40 years
Discount Factor β	0.82	$\frac{Wealth}{Earnings} = 1.53$
CRRA σ	1.6	None
Interest Rate $\hat{r}$	0.5%	After-Tax Return
Earnings Loss in Bankr. γ	0.4%	$\frac{Defaulters}{Population} = 0.5\%$
Prob. of Status Rev. λ	10%	Avg. Excl. 10 years
Ear. Dist. $F(e) = \left[\frac{e-\underline{e}}{\bar{e}-\underline{e}}\right]^{\epsilon}$	0.44, 1.19	$Gini(e) = 0.44$, $\frac{\mu_e}{med_e} = 1.19$
Pref. Sh. $\theta u(.)$, prob. p_θ	2.53, 0.07	$\frac{-W.\text{-HH}}{Pop.} = 10\%$, $\frac{-W}{\mu_e} = 2.5\%$

Quantitative Results: Comments

- Calibration targets matched (this is a success!!)

- Wealth distribution of model not concentrated enough (even compared to restricted sample in data): Wealth gini 0.48 vs. 0.63 (for overall population 0.8). Why?

  - Individuals lack motive to accumulate assets: no retirement, income shocks iid (and preference shocks infrequent as well as non-consecutive)

  - Individuals lack opportunity to save: don't live long enough

A Quantitative Theory of Default?

- Who defaults in the model? Regular guy that got very hungry yesterday all of a sudden, piled up a lot of debt (about μ_e, despite very high interest rates of 150%) and wakes up today with a bad income realization. Preference-based theory of default. In data?

Reason for Filing	Percentage
Job Loss	12.2%
Marital Distress	14.3%
Credit Mismanagement	41.3%
Health Care	16.4%
Lawsuits and Harassment	15.9%

A Quantitative Theory of Default?

- Default because of noncollateralized debt? Outstanding debt of household sector \$7.7 tr. (75% of GDP) in 2001 (FoF), 70% mortgages, 22% consumer credit (\$1.6 tr.); half of this may be unsecured credit.

- Can a quantitative theory of personal bankruptcy ignore entrepreneurship? Income share of bankrupt households from businesses is -0.7%, for nonbankrupt ones 10.3% (SCF). This "... indicates that bankruptcy occurs often in households who fail in their business projects" (BDQR).

- Default=Bankruptcy? Default does not only occur when individuals file for bankruptcy. SCF: 1.8% of individuals file for bankruptcy, 6% have "delayed payments". Theory of *personal bankruptcy*.

Policy Experiment: Change in Bankruptcy Legislation

- Individuals with $e \geq \mu_e$ can't file for bankruptcy.
- More credit extended; percentage of defaulters remains the same, loans lost per default increases.
- Large welfare gains, because borrowing rates become much more favorable.

Policy Experiment: Comments

- No change in the risk free interest rate induced by a policy change? Policy experiments in partial "partial" equilibrium problematic. Should expect risk free interest rate to rise as demand for loans increases.

- Individuals that are not allowed to declare bankruptcy may find other ways to default, if welfare gains from doing so are large.

Is this THE Theory of Default?

- Without exogenous restrictions on set of contracts that can be written a bankruptcy code (which restricts the set of contracts) is a bad thing; does this model provide a theory for why the "bankruptcy" or "default" option exists as part of an optimal legal code? Probably not.

- Possible conclusion: need models in which restrictions of contracts are derived from explicitly modeled frictions due to private information and/or limited commitment. These models may not have "bankruptcy", but they can be interpreted as having "default" as part of the constrained optimal contract.

Is this THE Theory of Default?

Stiglitz (1981) "Without a clear specification of the information / transactions technology, there is always a danger that any intervention in the economy designed, say, to alleviate problems arising from an absence of risk markets will be either infeasible or so costly to implement that it would not, in fact, constitute a Pareto improvement, for precisely the same reasons that the markets were absent in the first place."

Conclusion

A very beautiful "Equilibrium Theory of Unsecured Consumer Credit and Personal Bankruptcy"