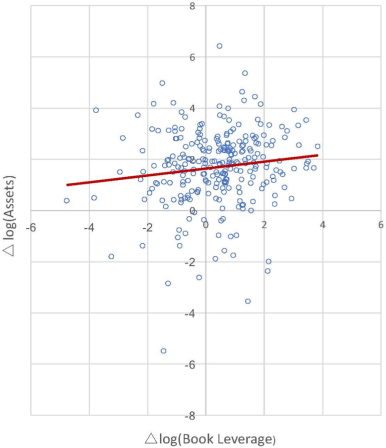
Leverage

Santos & Veronesi

Discussion – EFA Summer 2019

Erik Loualiche

Motivation



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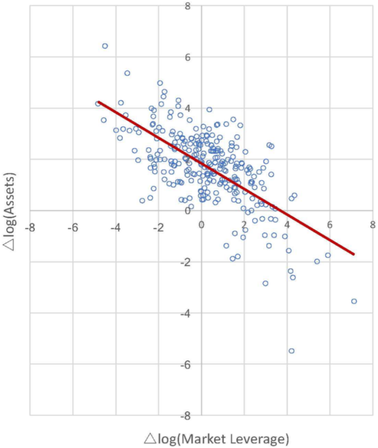
△ log(Assets)
△log(Book Leverage)



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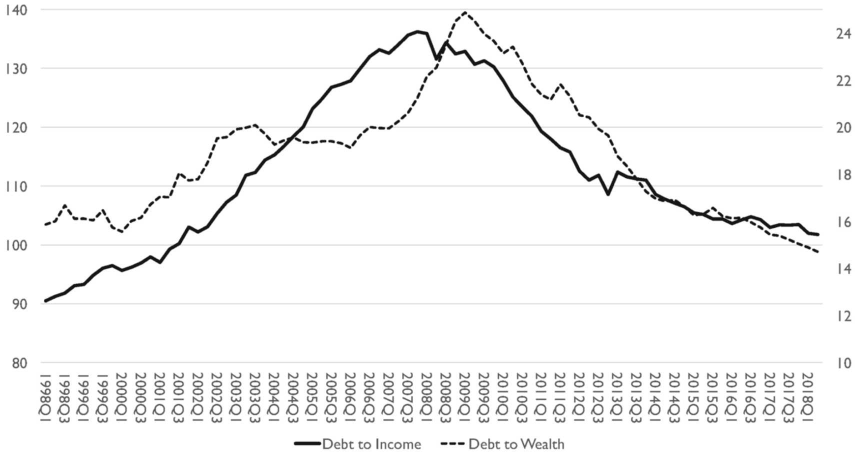
△log(Assets)
△log(Market Leverage)

Motivation



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Debt to Income
Debt to Wealth

Intermediary Asset Pricing – Two Theoretical Mechanisms

He & Krishnamurthy

- Role of intermediary capital for the risk premium:
- Negative shocks to intermediary capital is source of risk for the economy
- Effect through the risk premium $\rightarrow$ look for increase in equity leverage

Brunnermeier & Sannikov

- Role of net worth: large shocks deplete net worth
- Crisis state: net worth is low, intermediaries cannot absorb shocks
- Sell shocks to reduce their exposure $\rightarrow$ look for decrease in book leverage

Intermediary Asset Pricing – Two Empirical Results

Adrian, Etula & Muir

- Role of intermediary capital for the risk premium:

He, Kelly & Manela

- Equity leverage predicts expected returns

This Paper: Intermediaries as "Veil"

Intermediaries as "veil"

- Heterogeneous households with different income and habits
- Nonlinearity in movements in risk premium due to the distribution of households
- Intermediaries intermediate: only role as a pass-through

Leverage

- Some households have low curvature: high risk-bearing capacity $\rightarrow$ natural borrowers
  - Directly through preferences γ_i or endogenously through endowment ω_i
- Other households have high curvature: risk-averse $\rightarrow$ natural lenders

$$\text{Debt}_i = v(\omega_i - \gamma_i)H(I_t)Y_t$$

Leverage Mechanism

Debt-to-Wealth Ratio (equity leverage)

$$\frac{\text{Debt}_i}{\text{Wealth}_i} = \frac{\text{Debt}_i}{\text{Stock}_i - \text{Debt}_i}$$

- In good times: curvature is small, risk tolerance is high $\rightarrow$ stock prices are high
- Debt increases more slowly than stock prices $\rightarrow$ D/W ratio decreases

Debt-to-Income Ratio (book leverage)

$$\frac{\text{Debt}_i}{\text{Income}_i} \propto (\omega_i - \gamma_i) H(I_t)$$

- Households borrow more relative to their income because of low risk aversion
- Debt-to-Income Ratio Increases

Debt and Income in the Crisis

Important Cross-Sectional Result

- In the data for the financial crisis: Individuals with low wealth also have high Debt-to-Wealth ratios
- In the model: true if relative curvature γ_i/ω_i correlates **positively** with initial wealth ω_i
- In other words: poor people are less risk averse and borrow more naturally!

Evidence

- Indirect: this seems to match the data on cross-sectional leverage
- Identification of the mechanism? Is this the only reason low wealth individuals also have high levels of debt?

Tracing Out the Role of Income Shocks in the Crisis

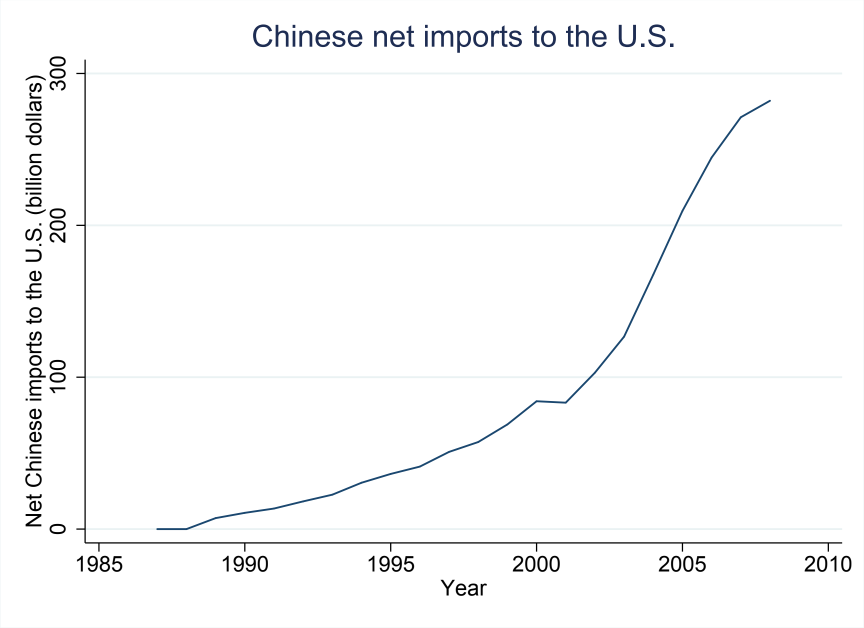
Standard View of the Crisis

- Mian & Sufi (2011): Collateral Channel
- House Price Appreciation increases household wealth and relaxes their borrowing constraint
- Increase borrowing against housing wealth for consumption
- Crisis when house prices fall $\rightarrow$ deleveraging cycle

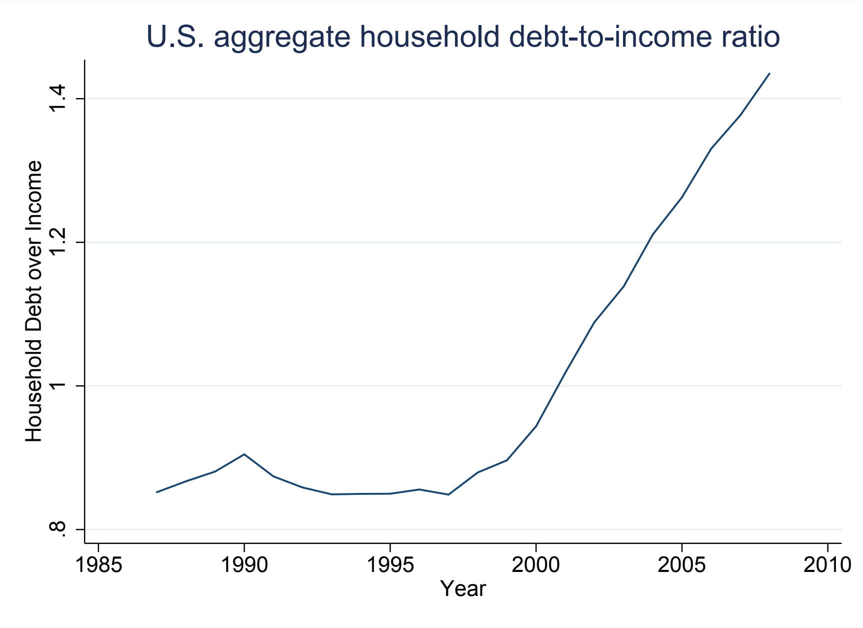
Role of Income Shocks

- Why did households suddenly borrow agains their wealth: conspicuous consumption (Bertrand & Morse)
- Different view: Barrot, Loualiche, Plosser & Sauvagnat: negative income shocks for some households during 2000-2007 period

Debt and Income



Debt and Income



Tracing Out the Role of Income Shocks in the Crisis

Role of Income Shocks

- Large negative income shocks for some households
  - the **China shock** of Autor, Dorn & Hanson
- Households self-insurance mechanism against a drop in income
  - borrow against their increasing (housing) wealth
- Debt-to-Income rises
- Debt-to-Wealth is ambiguous: depends on house price appreciation

Similarity with this paper

- Role of household income distribution for leverage
- Leverage due to incomplete markets and idiosyncratic shocks rather than risk preferences

The Complex Link between Debt and Income

	Change 1999-2007			
	ΔLog(debt+1)		ΔDTI	
	OLS	IV	OLS	IV
Δ log(labor income +1)	0.18***	-1.21*	-0.15***	-0.73**
	(0.05)	(0.70)	(0.05)	(0.37)
Individual level controls	Yes	Yes	Yes	Yes
Observations	719	719	719	719
R-Squared	0.252		0.146	

Final Thoughts

Household Centric View

- References to other crisis events where households played no role
- If intermediary leverage correlates with asset prices but not household leverage
  - Missing link: model specific to household debt crises

Great Paper!

- Strong views on the role of intermediaries