Discussion of "Financial Crises and Lending of Last Resort in Open Economies" by Luigi Bocola and Guido Lorenzoni

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Javier Bianchi

Minneapolis Fed & NBER

Overview of the Paper

- Elegant well-crafted model of financial crises with rich insights and policy implications
    - Currency mismatches, fire-sales, bailouts, reserves, endogenous domestic liability dollarization
- Novel self-fulfilling risk panics
- Analysis of lender of last-resort and role of reserves

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Discussion: review mechanism of self-fulfilling risk panics in simple model and comments

Prelim: Self-fulfilling risk panic

- If all households deposit in dollars, the economy might fall into a crisis
- Households want to save more in dollars to hedge
- This reduces real rate in dollars
- Under some conditions, bankers also happy taking more risk by borrowing in dollars

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- Households want to save more in dollars to hedge
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- Under some conditions, bankers also happy taking more risk by borrowing in dollars
- Key externality: households fail to internalize how deposits in foreign currency lead to higher crisis probab.

Review Mechanism: Simple Model

Goals:

- Graphical illustration
- Highlight key elements
  - Externality on households
- Similar mechanism at work in closed economy

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Elements of the Model

- Closed and real economy with complete markets
- Uncertainty realized in intermediate period
  - Two states of nature $s = \{U, D\}$
- Three periods $t = 0, 1, 2$. No time discounting
- Two types of agents: households and bankers
- Externality on HH is triggered in crisis state $s = D$.
  - Increasing in bankers's exposure to security that pays off in crisis state
  - Catch-all for fire-sale and other externalities

Households' Problem

Only decision: asset positions at $t = 0$. At $t = 1$, consume.

$$\begin{aligned} & \max \quad \pi(s_D)u(c(s_D)) + \pi(s_U)u(c(s_U)) \quad s.t \\ 0 \quad &= \quad q(s_D)a(s_D) + q(s_U)a(s_U) \\ c_2(s_D) \quad &= \quad 1 + a(s_D) - \psi(B(s_D)) \\ c_2(s_U) \quad &= \quad 1 + a(s_U) \end{aligned}$$

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Assume $\psi' > 0, \psi(0) > 0$

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Assume $\psi' > 0, \psi(0) > 0$ First-order condition:

$$\frac{u'(c(s_D))\pi(s_D)}{q(s_U)} = \frac{u'(c(s_U))\pi(s_U)}{q(s_D)}$$

Bankers

Choose asset positions at time $t = 0$ and k at $t = 1$

$$\begin{aligned} & max \quad d + zk^{\alpha} \\ 0 \quad &= \quad q(s_D)b(s_D) + q(s_U)b(s_U) \\ k \quad &\geq \quad 1 - b(s_U) - d \\ k \quad &\geq \quad 1 - b(s_D) \; - d \\ d \quad &\geq \quad -\bar{d} \quad (\eta) \end{aligned}$$

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Net-worth more valuable when $d \geq -\bar{d}$ binds:

$$\frac{1 + \eta(s_D)}{1 + \eta(s_U)} = \frac{q(s_U)}{q(s_D)}$$

Equilibrium

Asset market clearing

$$\begin{aligned} a(s^D) &= b(s^D) \\ a(s^U) &= b(s^U) \end{aligned}$$

Portfolio conditions:

$$\frac{u'(c(s_D))}{u'(c(s_U))} = \frac{q(s_U)}{q(s_D)} = \frac{1+\eta(s_D)}{1+\eta(s_U)}$$

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One equilibrium: zero gross positions

$$\frac{u'(1)}{u'(1)} = \frac{1+\eta}{1+\eta} = 1$$

Equalize consumption, price of assets

Searching other Equilibria

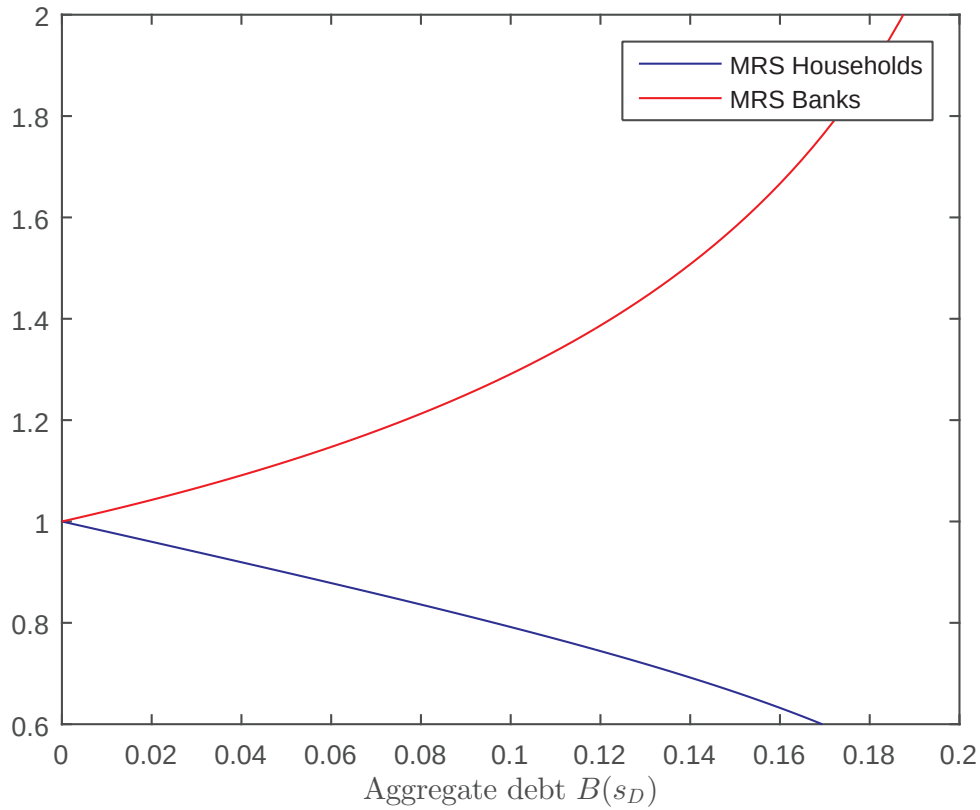
Look for equilibrium with $\eta(s_D) > \eta(s_U) = 0$

Substituting $\eta(s), c(s), q(s)$

$$\frac{1 - B(s_D)\frac{\alpha z}{(1 - B(s_D) + \bar{d})^{1-\alpha}}}{1 + B(s_D) - \psi(B(s_D))} = \frac{\alpha z}{(1 - B(s_D) + \bar{d})^{1-\alpha}}$$

- RHS is increasing in $B(s_D)$
- LHS is decreasing in $B(s_D)$, absent externality
- Several intersections possible if $\psi'(B(s_D))$ large enough

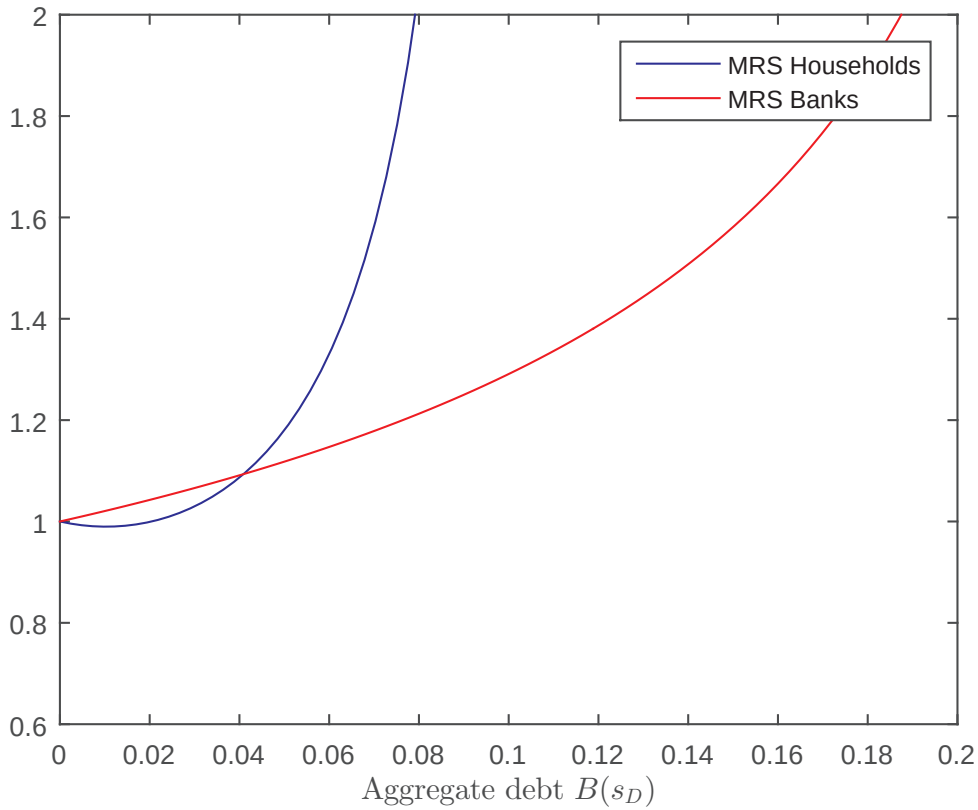
Unique Equilibrium with $\psi = 0$



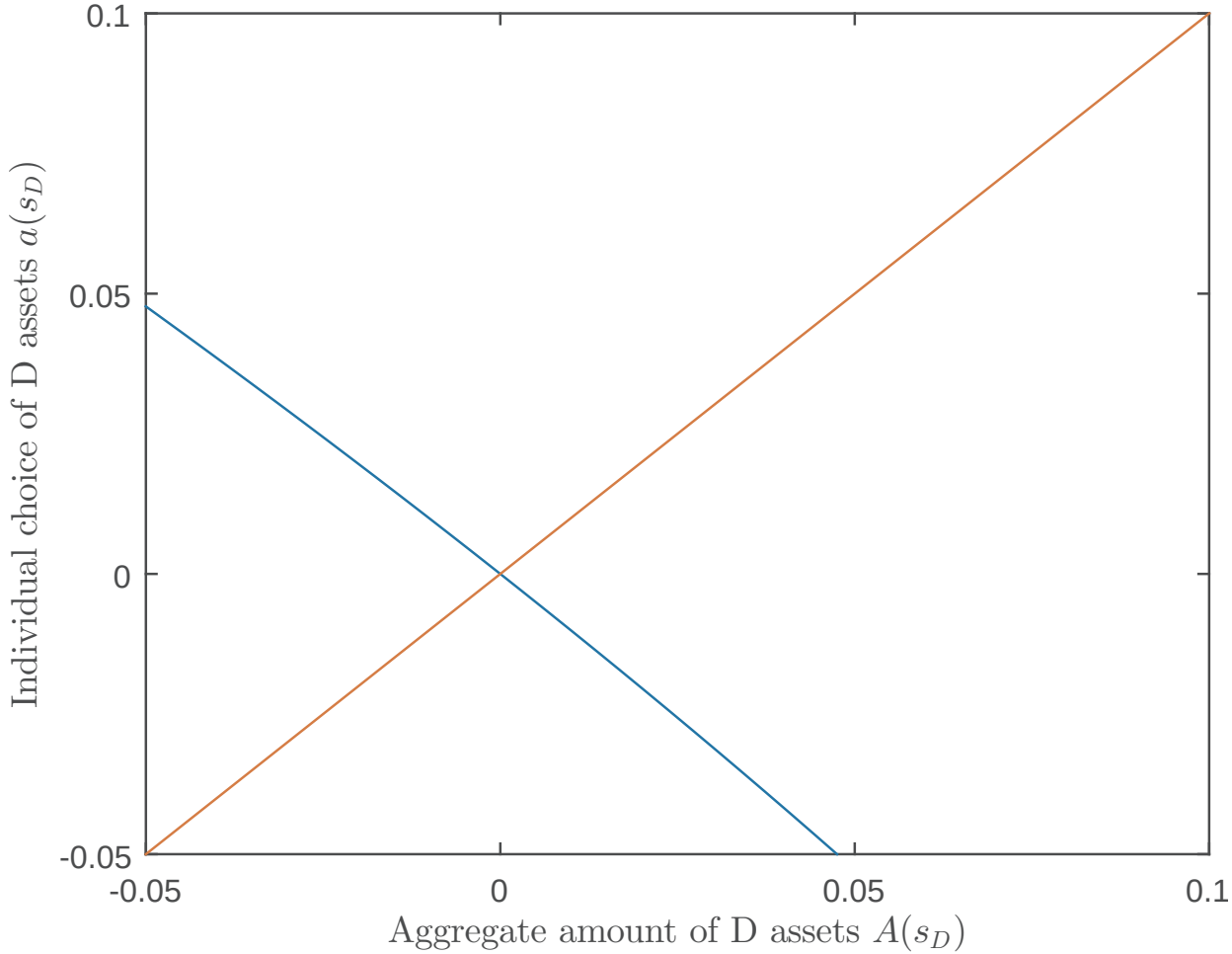
As bank deposits $B(s_D)$ goes up, bankers optimization require that asset that pays off in U state is expensive (high q_U/q_D) is cheap

Opposite happens to households

Two intersections with $\psi' > 0$

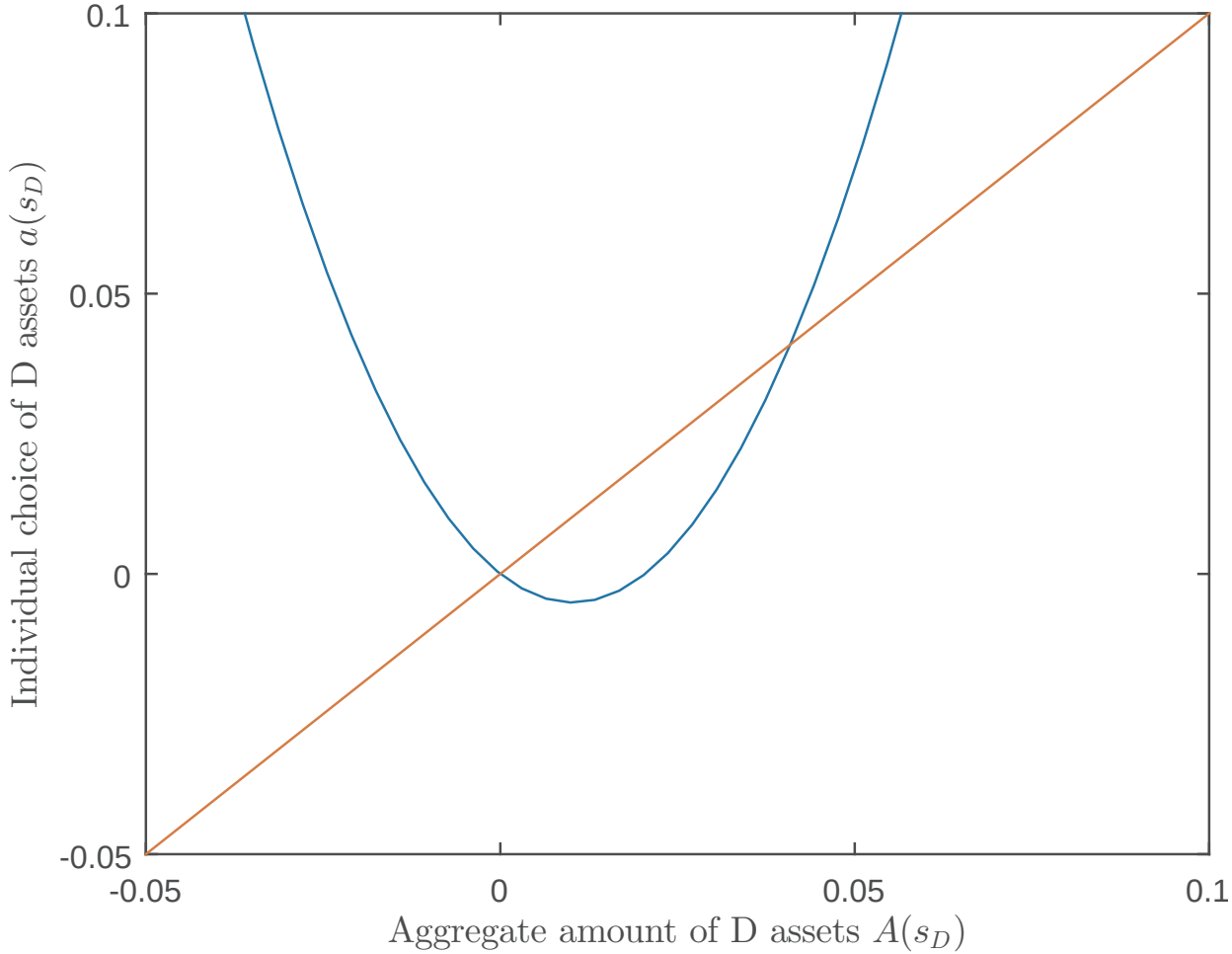


small a, Big A: Unique eq. if $\psi = 0$



As all households save more in $A(s_D)$, these assets become more expensive. HH save less in $A(s_D)$

small a, Big A


0.1
0.05
0
-0.05
-0.05
0
0.05
0.1
Individual choice of D assets $a(s_D)$
Aggregate amount of D assets $A(s_D)$

Testing the Model

- How plausible is multiplicity?
- Need large slope of ψ'. Perhaps, relate bank networth to change in wages, employment during crisis.

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Testing the Model

- How plausible is multiplicity?
- Need large slope of ψ'. Perhaps, relate bank networth to change in wages, employment during crisis.
- Model suggests that initial "fundamentals" do not explain domestic liability dollarization?
    - Can this be seen in the cross-section?
- Heterogeneity/ownership structure is key: depositors' income need to get hit more than bankers during crisis

Welfare and Policy

Welfare and policy analysis can be expanded

- Are bankers necessarily worse-off? In bad eq. they borrow cheaper and obtain high returns on capital.
- Natural policy candidate is prudential policy: tax dollar deposits
- Reserves also useful if crises are due to fundamentals and there are limits to government borrowing (BHM, 2016)
- Monetary policy can alter real balance sheets.

Final Remarks

- Excellent paper!
- Sheds light on important issues:
  - Domestic liability dollarization
  - Corrective policies to reduce financial fragility