

Financial Crises, Dollarization, and Lending of Last Resort in Open Economies

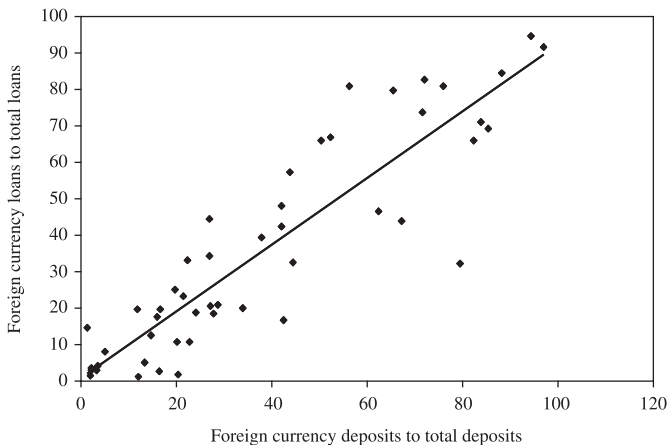
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Motivation

- Dollar-denominated liabilities source of financial instability in emerging economies (recent example: Turkey)
- Bad shock → currency depreciates → debt burden increases
- What creates incentives to accumulate dollar liabilities?
- Common view: flow of dollars chasing yield
- Our view: lack of domestic appetite for domestic currency assets

Dollarization, assets and liabilities



from Levy-Yeyati (2006)

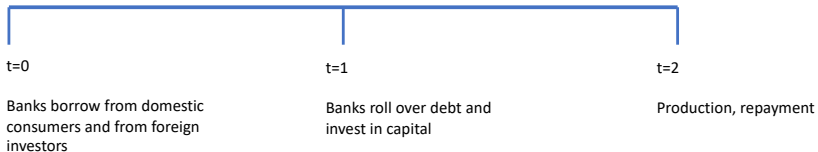
This paper

- Emphasis on self-sustaining nature of financial dollarization:
 - Fear of financial instability increases domestic demand for foreign currency assets by savers
 - This induces more foreign currency borrowing by borrowers
 - Foreign currency debt makes economy more financially fragile
- Look at policies that stabilize financial system, LOLR
 - Surprising “reverse moral hazard” result
 - LOLR makes agents take less risky private decisions ex ante

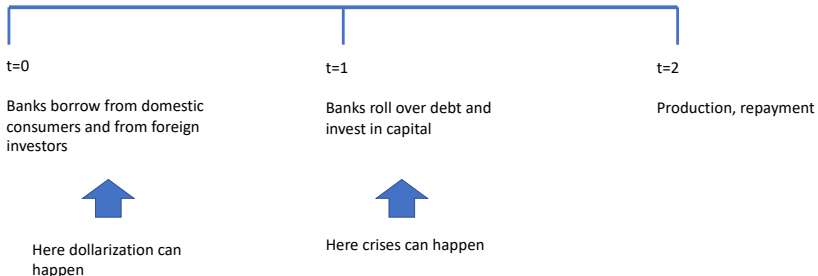
Ingredients

- Small open economy
- Agents: consumers, banks, international investors
- Collateral constraints for banks
- Currency choice in borrowing/lending
- Segmented markets
- Government with limited fiscal capacity

Timeline



Timeline



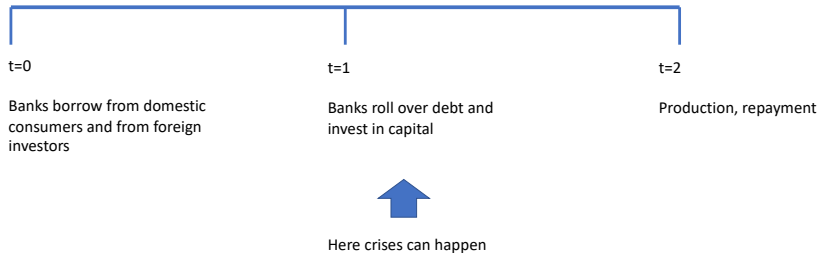
Model

- Tradable good = numeraire (= “dollar”)
- Non-tradable good, price p_t (=“real exchange rate”)
- Risk averse consumers, consume $c_t = (c_t^T)^\omega (c_t^N)^{1-\omega}$
- Risk neutral banks, enter each period with net worth

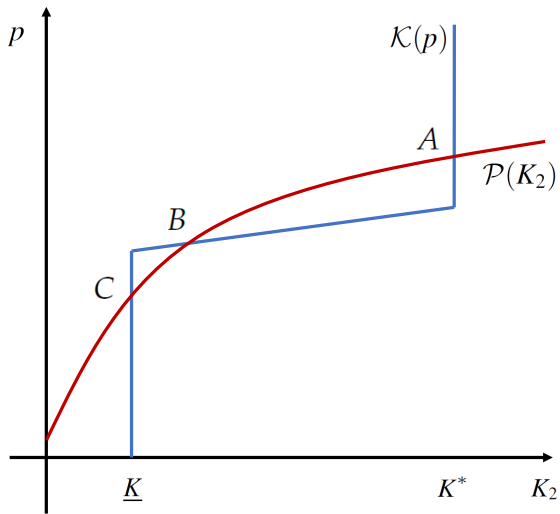
$$r_t k_t - b_t^T + p_t (e_{b,t}^N - b_t^N)$$

- Collateral constraint: banks' net worth affects investment
- Risk neutral foreign investors: only hold T bonds

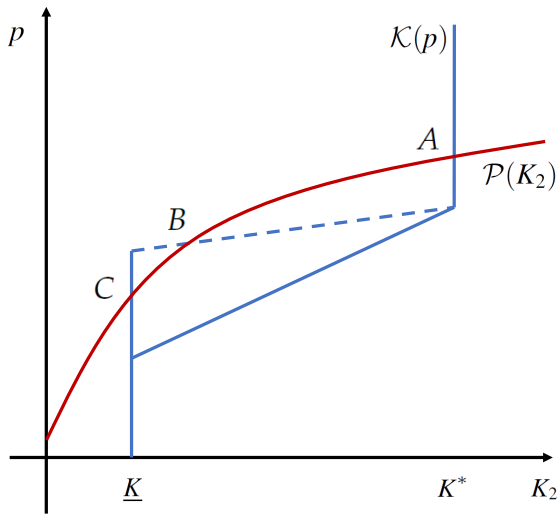
Timeline



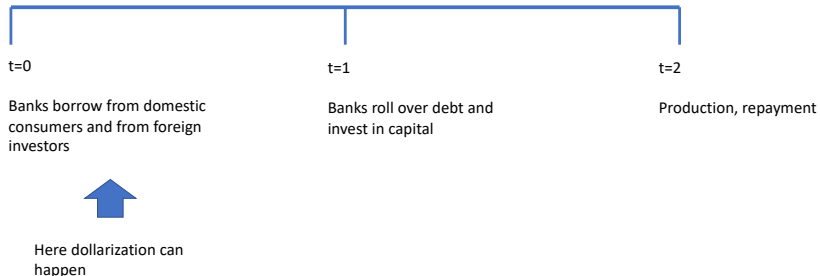
Equilibrium at $t = 1$



With less T debt, more NT debt



Timeline



Dollarization

- Will banks choose debt composition that exposes them to a crisis?
- A: Yes
- Banks have a hedging motive, which tends to eliminate multiplicity
- ... but households have a hedging motive too, which can dominate

Fragile equilibrium

- Portfolio choice between T and NT saving/borrowing
- In fragile equilibrium, NT bonds pay lower return in crisis state, when marginal utility of wealth is higher

$$1 + i_0^T - (1 + i_0^N) E \left[\frac{p_1}{p_0} \right] = \text{Cov} \left(\left(1 + i_0^N \right) \frac{p_1}{p_0}, \frac{\lambda_1}{E[\lambda_1]} \right) < 0$$

- This holds both for banks' and consumers' marginal utility of wealth λ_1
- **Theory of dollarization:** banks borrow in dollars because it's cheap; it's cheap because dollar appreciate when things go bad

Safe equilibrium

- When fragile equilibrium exists, there is also a safe equilibrium in which the continuation equilibrium is unique
- In safe equilibrium

$$1 + i_0^T - (1 + i_0^N)E \left[\frac{p_1}{p_0} \right] = 0$$

- Now no risk, consumers no longer ask for protection

Lending of Last Resort

- At $t = 1$ benevolent government transfers T_b to banks in exchange for repayment R
- No superior ability to enforce repayment
- But helps agents coordinate
- First externality, through p_t

Moral hazard?

- For *given risk premia*, intervention that reduces probability of bad equilibrium give bankers incentive to issue more dollar debt
- However, as households save more in NT, lower NT interest rate gives less incentive to borrow in dollars
- **Result:** LOLR that reduces probability of bad equilibrium does not lead to more risk taking
- Second externality, through i_{NT}

Concluding

- What does it mean to have a stable currency?
- Item: having abundant sources of funding in that currency
- Stable inflation is important, but also needs financial stability, so agents willing to save in local currency
- For future work: interactions with other policy tools (monetary policy, regulation, currency interventions)