Foreign Lenders in Emerging Economies

Matteo Iacoviello
Boston College

Raoul Minetti
Michigan State University

Motivation

- In last three decades, emerging economies (Mexico, Argentina, East Asia) output growth but also volatility of output and prices of local assets (real estate)

- Empirical regularity boom-bust cycles (Tornell, Westermann, Martinez, 2005)

  Boom-busts follow liberalization, internationalization credit markets. E.g., foreign bank entry in East Asia (1980s) and in Mexico and Argentina (1990s)

- We explain this macroeconomic pattern with asymmetric skills of foreign and domestic lenders in emerging economies

Key Feature

- On one hand, foreign lenders in emerging economy more efficient technology for monitoring entrepreneurs' output than domestic lenders (Giannetti and Ongena, 2005, Dages, Goldberg, and Kinney, 2000)

  For example, internationally active U.S. banks count on more efficient employees and loan recovery offices and sounder assessment practices than local banks of developing economies

- On other hand, domestic lenders more experience than foreign lenders in local asset (collateral) market. Thus, have local private information in this market while foreign lenders can only rely on public information

Intuition

- Entrepreneurs can implement generic or specialized projects
  Specialized projects tailored to skills, hence yield more output if success
  Yet, if default assets (collateral) entrepreneur-specific and illiquid

- Entrepreneurs borrow from foreign or domestic lenders

  Domestic reluctant to finance specialized projects because illiquid collateral
  Thanks to better ability to monitor output, foreign lenders compensate for project illiquidity by obtaining higher repayment in case of success

Asymmetry between domestic and foreign lenders allows to finance more specialized/illiquid projects, raising average output

Intuition (cont.)

Asymmetry also exacerbates output and asset price volatility, however

- Domestic lenders private information in local asset (collateral) market and liquidate projects efficiently

- Because know this market less and use public signals (asset price), foreign lenders make "mistakes" in local asset market. Liquidate projects early, when asset price rising, or late, when price already dropping

- Countercyclical asset supply renders asset price more procyclical and, through link credit constraints-asset price, exacerbates output volatility

Example

- Positive shock to asset productivity
- Increase asset (collateral) price renders generic/liquid projects attractive, discouraging domestic lenders from financing specialized/illiquid projects
- More entrepreneurs borrow from foreign lenders to finance specialized projects
- Foreign lenders make mistakes in local asset/collateral market: hoard projects during boom and liquidate them during recession. This renders asset price more procyclical

Example [cont.]

- In turn, this can destabilize output:

  "Project volume" effect. Asset price more procyclical, credit constraints loosen in boom, allowing more projects be financed, and tighten in recession, allowing less projects to be financed

  "Project composition" effect. Foreign lenders finance specialized projects even when asset (collateral) price rises. Rise (drop) volume projects in boom (recession) without significant drop (increase) average productivity

Related Literature

- Role of financial markets for instability of emerging open economies.
  Aghion, Bacchetta and Banerjee (2004); Shneider and Tornell (2004); Diamond and Rajan (2001); Caballero and Krishnamurty (2001)

- Role of financial imperfections in generating endogenous business cycles in closed economies. Matsuyama (2006 and 2005)

- Asset pricing in environments with informed and uninformed traders. Grossman and Stiglitz (1980)

Setup

- Two periods (**t=1, 2**). Each period "morning" and "afternoon"
- Unit continuum of entrepreneurs and two continua of lenders, domestic and foreign, of measure larger than one
- Two storable goods, final good and productive assets, and projects-ideas
- In each period lender starts with ***I*** final good; entrepreneur with one project
- Entrepreneurs' utility $\mathbf{U^e = c_t - n_t^2/2}$

  $\mathbf{c_t}$ = consumption

  $\mathbf{n_t \epsilon [0,1]}$ = specialization project

  $\mathbf{n_t^2/2}$ = effort cost to specialize

  Lenders' utility $\mathbf{U^l = c_t + c_{t+1}}$

Real Sector

Morning

- Each entrepreneur can run her project. At beginning of morning transform ***I*** final good into ***A*** assets. At end morning, assets produce with prob. **π** or liquidated

  Expected return:

  $$\pi y(1+n_t)+(1-\pi)v_t A(1-n_t)$$

  y~f(.) across entrepreneurs

  $\mathbf{v_t}$ final good expected from asset resale (gross of liquidation costs)

- Specialization: Output edge $\mathbf{yn_t}$ but assets specific/illiquid ($\mathbf{nv_t}$ liquidation cost)

Real Sector [cont.]

Afternoon

- Each entrepreneur can employ one unit liquidated assets, obtaining $\mathbf{x\theta_t}$

  x~U over support **[0,1]**

  $\mathbf{\theta_t}$ aggregate productivity second hand users

$$\theta_1 = \theta + \varepsilon,$$
$$\theta_2 = \theta$$

  $\varepsilon \sim h(.)$, $\theta = \theta^H$ ("boom") or $\theta = \theta^L$ ("recession")

Credit Sector

- In morning, each entrepreneur can enter credit match with lender to finance project

- Limited contract enforceability:

  (i) Entrepreneur can contractually commit to generic ($\mathbf{n_t=0}$) or specialized project ($\mathbf{n_t>0}$) but cannot commit to degree of specialization $\mathbf{n_t}$

  (ii) Lender can force renegotiation of contract after specialization $\mathbf{n_t}$ chosen

Domestic and Foreign Lenders

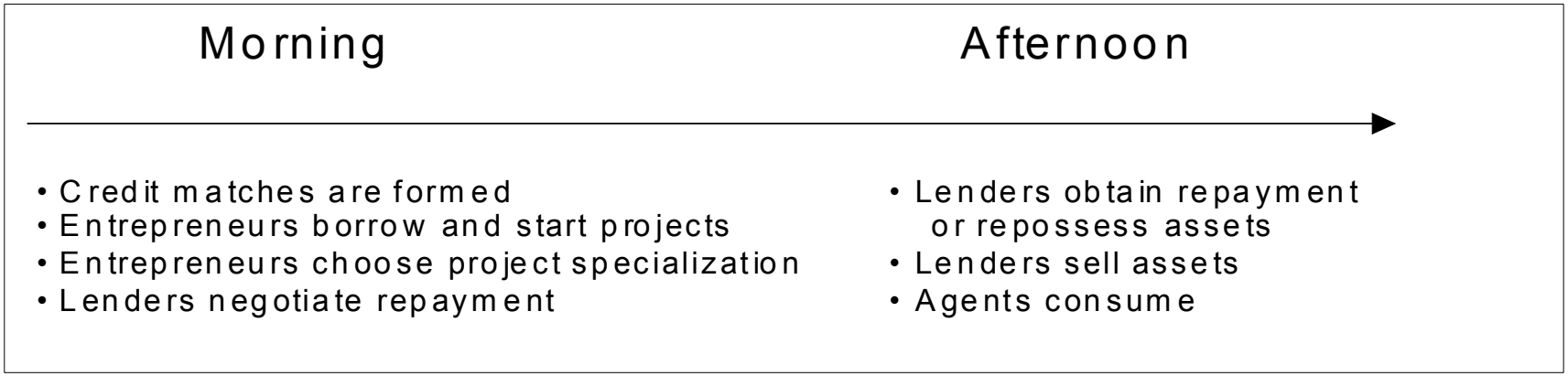
- Emerging economy where in credit sector domestic and foreign lenders

- Foreign Lenders: better technology for monitoring output. Maximum output lender can monitor and obtain is

$$R=(1-\alpha)y+\min\{\omega^l, yn_t\} \quad \text{where } \omega^f > \omega^d$$

Domestic lenders more information in local asset (collateral) market: observe θ_1 and ε while foreign observe only current asset price

Within Period Time Line



Within period time line.

Equilibrium: Agents' Decisions

- First, solve for agents' decisions given asset prices $\mathbf{p_1}$ and $\mathbf{p_2}$
- Decision of lenders on project liquidation. Lender compares proceeds in first period with expected proceeds in second period

$$\ell^l=1 \quad \text{if} \quad p_1 \geq E^l(p_2)$$
$$\ell^l=1 \quad \text{if} \quad p_1 < E^l(p_2)$$

- Degree of specialization chosen by entrepreneur

$$n_t=\pi y$$

Agents' Decisions [cont.]

- Decision whether to finance generic, specialized, or no project

  Lender finances specialized project in **t = 1** iff

$$V^l_{s,1} \geq I$$

$$\omega^l > (1-\pi) y [\ell^l p_1 + (1-\ell^l) E^l(p_2)]$$

  i.e. iff i) higher output lender obtains under this project exceeds loss in terms of lower asset (collateral) liquidity relative to generic project;
  ii) expected return covers lender's opportunity cost of funds ***I***

Equilibrium: Asset Prices

- Solve for $\mathbf{p_1}$ and $\mathbf{p_2}$. In each period, $\mathbf{M^d_t = M^s_t}$

Asset demand

$$\mathbf{M^d_t = 1\text{-}p_t/\theta_t}$$

Asset supply

$$\mathbf{M^s_1 = (1\text{-}\pi)(\ell^d M^{sd}_1 + \ell^f M^{sf}_1)}$$

$$\mathbf{M^s_2 = (1\text{-}\pi)[M^{sd}_2 + M^{sf}_2 + (1\text{-}\ell^d)M^{sd}_1 + (1\text{-}\ell^f) M^{sf}_1]}$$

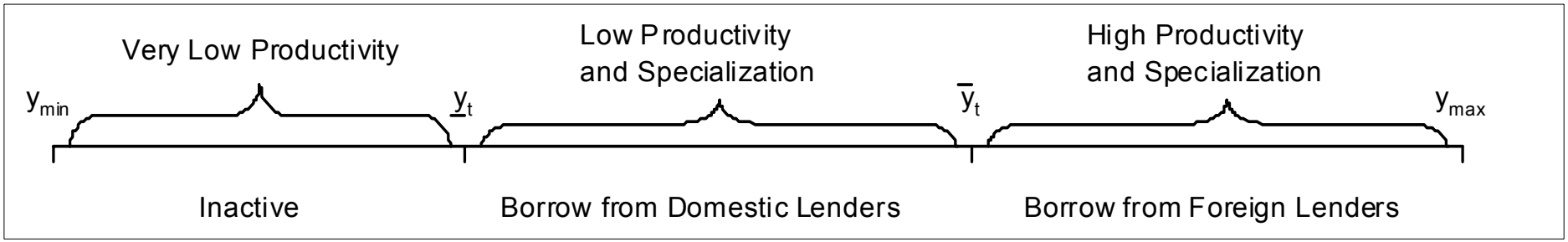
In both periods asset supply endogenous and depends on lenders' resale decisions ℓ^d and ℓ^f, which hinge on lenders' information

Equilibrium Characterization

Lemma 1

i) In t=1,2, $\mathbf{y_t}$ such that entrepreneurs with $\mathbf{y \geq y_t}$ obtain credit and implement specialized projects

ii) In t=1,2, $\mathbf{y_t^*}$ such that entrepreneurs with $\mathbf{y \geq y_t^*}$ borrow from foreign lenders while those with $\mathbf{y_t < y \leq y_t^*}$ borrow from domestic lenders (e.g., $\mathbf{M^{sd}_1 = F(y_1^*) - F(y_1)}$ and $\mathbf{M^{sf}_1 = 1 - F(y_1^*)}$)



Entrepreneurs' distribution across productivity levels.

Equilibrium Characterization [cont.]

Definition 1

For given parameters π, ω^f, ω^d, α, **A**, **I**, and realizations θ_1, ε, equilibrium vector

$$[\underline{y}_1, \underline{y}_2, \bar{y}_1, \bar{y}_2, p_1, p_2, E^d(p_2), E^f(p_2), \ell^d, \ell^f]$$

s.t. agents maximize utility and in both periods credit and asset market clear

We focus on boom-recession scenario; recession-boom symmetric.
Benchmark: economy closed to foreign lenders

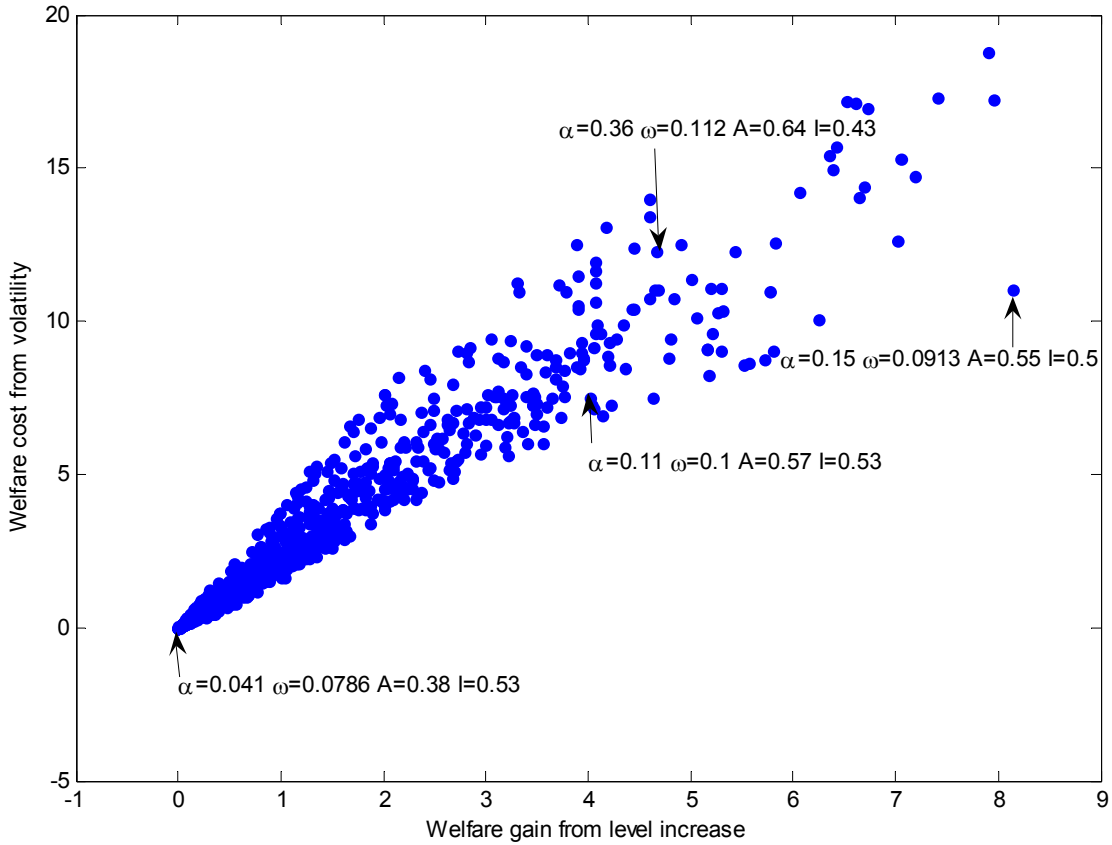
Equilibrium Characterization [cont.]

Proposition 1

Assume boom followed by recession ($\theta_1 = \theta^H$ and $\theta_2 = \theta^L$)
There exists region of parameter space such that:

(i) Average output in two periods higher than in benchmark

ii) In first period, asset price and output higher than in benchmark economy. In second period asset price and output lower than in benchmark economy. % output and asset price drop larger than in benchmark economy



Welfare gains and welfare costs from financial liberalization.

Robustness Analysis

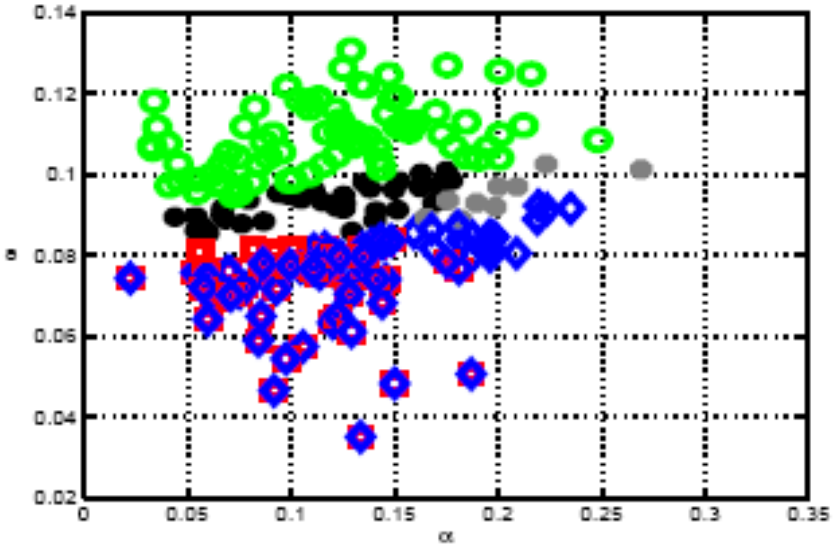


Figure 4: Fixing ω^d and α.

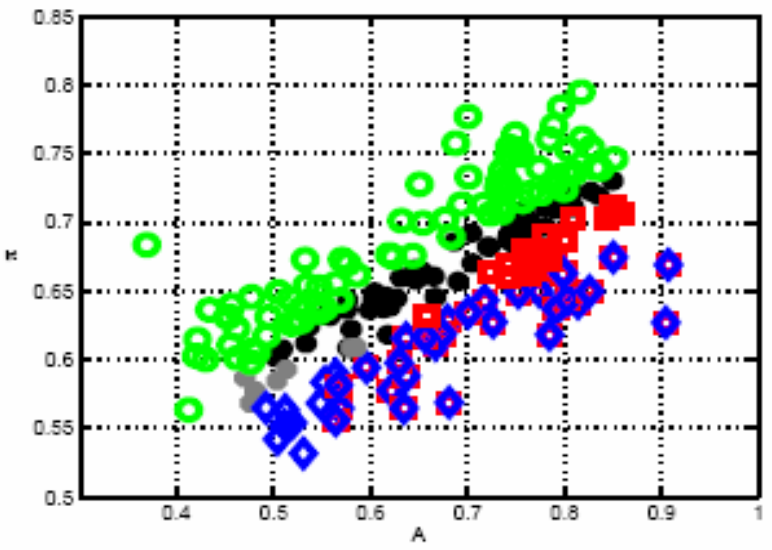


Figure 5: Fixing π and A.

Asset Price

- When a boom raises asset price in first period, domestic lenders become less willing to fund specialized projects. The higher the price, the higher liquidation value that lender gives up if she funds specialized project

- Some high-ability entrepreneurs switch from domestic to foreign lenders to finance specialized projects

- This change in composition of lenders affects intertemporal distribution of asset supply and dynamic pattern of asset price

Asset Price [cont.]

- Domestic lenders anticipate decline of price in **t = 2***:* they observe θ_1, sufficient statistic for θ_2

- Foreign lenders do not observe realization of θ_1, but only p_1, not a sufficient statistic for θ_1. Therefore, may misunderstand boom for recession. If so, they expect asset demand will rise further and will defer project liquidation

- Mistake of foreign lenders depresses asset supply in **t=1** and fosters it in **t=2**. Increase in volatility of asset price feeds back on composition of lenders, further raising share of foreign lenders in **t=1**

- Asset price and composition of lenders breed each other

Output

- Output higher on average: more specialized projects financed

- Output more volatile

"Project volume" effect. Because asset price becomes more procyclical, credit constraints loosen during boom, allowing more projects be financed, and tighten during recession, allowing less projects be financed

"Project composition" effect. Foreign lenders finance specialized projects even when asset (collateral) price rises. Rise (drop) in number of projects during boom (recession) without significant drop (increase) in average productivity

Informativeness Asset Price

- Endogenous cycles due to limited informativeness of **p**. If **p** fully revealing, foreign lenders like domestic in local asset market.

- Limited informativeness stems from randomness asset demand. This due to randomness aggregate productivity, as induced by **ε**

- This parallels Grossman and Stiglitz (1980), where randomness of supply of risky asset dilutes informativeness of price

Conclusion

In this paper, explanation of boom and bust of emerging economies based on asymmetric skills domestic-foreign lenders

Implication: volatility of output and asset prices comes as a cost of higher output. No free lunch.

Thus closing economy entails a loss

Better idea Asset Management Companies

In economy that experienced financial liberalization, many lenders unlikely to have knowledge of market of firms' assets

This paper suggests that in such economy institutions disseminating information in asset market can be valuable in stabilizing economy