Financial Liberalization, market Structure and Credit Penetration

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Motivation

In the last three decades Emerging Economies (EE) began a process of financial liberalization (FL).

- Entry of foreign banks
- Freer capital flows.

The expectations were:

- More efficient banking system (more competition, better technology).
- Financial deepening, more access for SMEs, lower costs for large firms.
- End result was to be higher growth.



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Results

The results were unexpectedly mixed:

- Beck, Levine and Loayza (2000), Levine (2001), Claessens, Demigurc-Kunt and Huizinga (2002), Gianetti and Ongena (2009) –for Eastern Europe– observed positive results.
- Gormley (2010) for India and Detriagache, Gupta, Tressel (2008) for a large set of countries, and others, found less lending to SME's.

¿What could account for these results?



- Motivation

Clues

- Mian (2006), Berker, Klepper and Udell (2001): in general foreign banks lend less to opaque SME's. See Dell'Ariccia and Marquez (2004) for a theoretical explanation.¹
- Fathi (2010): using 1770 banks in 54 countries shows that foreign banks are more efficient than domestic banks.
- Berger et al (1995) for the US, Rashid (2010) for 81 countries: Cost of funds for domestic banks increases after liberalization due to increased competition.



¹However, Clarke, Cull and Peria (2005) observe that this is limited to smaller foreign banks.

Explanations

Detriagiache, Gupta and Tressel (2008): Initial closed market has pooling and no monitoring. Foreign banks with better technology cream-skim the market, breaking the pooling equilibrium. In a separating equilibrium, SME's face much higher lending costs, some are excluded.

Gormley (2011): Foreign banks have higher information costs but lower cost of funds. Again, initially there is a pooling equilibrium that is cream skimmed by foreign banks.



Our proposal

Domestic banks initially competitive \Rightarrow FL beneficial (as expected).

With initial imperfect competition in domestic banking:

- \blacktriangleright \Rightarrow imperfect competition for funds.
- $\blacktriangleright \Rightarrow$ low cost of funds, compensates imperfect lending market.

Foreign entry:

- \blacktriangleright \Rightarrow cream-skimming by foreign banks,
- ► ⇒ increased competition for domestic funds
- ➤ ⇒ domestic banks curtail lending to opaque SMEs, to which only they can lend.

Response to FL depends on the degree of competition in the closed market.



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The Model

				P
Agent z born	Agents request loan L_z .	If agents z receives	Nature plays: with	If project succeeds, loan
owning K_z .	Bank accepts or rejects	loan, invests.	probability p, project	is paid back. Otherwise,
	and offers contract.		of agent z is successful.	bankruptcy.

Risk neutral banks, entrepreneurs $z \in [0, 1]$ (with limited liability).

Entrepreneurs born with an idea (unalienable) and capital $K_z \simeq G(\cdot)$, log-concave, support [0, 1].

A project requires verifiable l > 1 investment, so all entrepreneurs need to borrow.

Banks intermediate between agents as providers of capital and as borrowers.



The banking industry

- Cost of funds: $1 + \rho$, under FL, $1 + \rho^*$.
- Origination cost c. Foreign banks' origination cost: $c^* < c$.
- Entrepreneur succeeds with prob 0
- Assumption (*projects are productive*): $pR c (1 + \rho)I > 0$.
- Entrepreneur gets fraction $\phi < 1$ as private benefit (*entrepreneurial rent*, Holmstrom and Tirole 2012). Moreover $\phi^* > \phi$
- Only 1 \$\phi\$ contractible and verifiable. Measures quality of law or credit protection.



- The model

A preliminary condition

 K_z the wealth of entrepreneur, \hat{K}_z declaration to bank.

Contract: $\{R_e(\hat{K}_z), \hat{I}_e(K_z)\}$: return and investment of entrepreneur. Expected utility:

$$U(\hat{K}_{z}, K_{z}) \equiv \rho R_{e}(\hat{K}_{z}) + (1+\rho)(K_{z} - I_{e}(\hat{K}_{z})) - (1+\rho)K_{z}, \quad (1)$$

Entrepreneur may wish to lower declared wealth (never increase it)!

Otherwise the monopoly could extract all rents from agents.²

Lemma Truthful revelation requires:

$$pR'_{\rho}(\hat{K}_{z}) - (1+\rho)I'_{\rho}(\hat{K}_{z}) = 0, at \hat{K}_{z} = K_{z}.$$



²Holds with continuous investment. In that case, investment is suboptimal. 🗇 🕨 < 🗄 🕨 🗧

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(2)

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Competitive equilibrium

Banks solve (they always receive 0 profits):

$$\max_{\substack{R_{e}(K_{Z}), A, I_{e}(K_{Z})}} \int_{A}^{1} [pR_{e}(K_{Z}) - (1+\rho)I_{e}(K_{Z})] dG_{Z}$$
(PCCI)
subject to $\forall K_{Z} \in [A, 1]$

$$\int_{A} [\rho(R - R_e(K_z)) - c - (1 + \rho)(I - I_e(K_z))] dG_z \ge 0,$$
(IRB)

$$R_e(K_z) \ge \phi R$$
, (LPC)

$$R \ge R_e(K_z),$$
 (LL1

$$\rho R_e(K_z) + (1+\rho)(K_z - I_e(K_z)) \ge (1+\rho)K_z,$$
 (IRE

$$\rho R'_{\rho}(K_z) - (1+\rho)l'_{\rho}(K_z) = 0, \qquad (TTE$$

$$K_z \ge I_e(K_z),$$
 (LL2)



Proposition

Given a cost of capital ρ , in a closed competitive economy,

Loans are given only to entrepreneurs with

$$K_z \ge K(\rho) \equiv I - \frac{p(1-\phi)R - c}{1+\rho}, \quad (\text{efficiency}) \tag{3}$$

For entrepreneur z, there are many contracts of the form

$$\left\{R_{e}(K_{z}), I_{e}(K_{z})\right\} = \left\{R_{e}(K_{z}), \frac{pR_{e}(K_{z}) - \left[pR - c - (1+\rho)I\right]}{1+\rho}\right\}$$

where $R_e(K_z) \in \left[\left[\phi R, \frac{pR-c-(1+\rho)(I-K_z)}{p}\right]\right]$. These contracts are implementable and provide the same utility.

There is a competitive interest rate $\rho_{bc} > 0$ in equilibrium.



Closed economy

Monopoly

The monopoly also evaluates its cost of funds and solves:

$$\begin{split} & \max_{\{\rho, R_e(K_Z), A, l_e(K_Z)\}} \int_A^1 \rho(R - R_e(K_Z)) - c - (1 + \rho)(I - l_e(K_Z)) dG_Z \end{split} \tag{PMCl} \\ & \text{subject to } \forall K_Z \in [A, 1] \\ & R_e(K_Z) \ge \phi R, \qquad (LPC) \\ & R \ge R_e(K_Z), \qquad (LL1) \\ & \rho R_e(K_Z) + (1 + \rho)(K_Z - l_e(K_Z)) \ge (1 + \rho)K_Z, \qquad (RE) \\ & \rho R_e'(K_Z) - (1 + \rho)l_e'(K_Z) = 0, \qquad (TTE) \\ & K_Z \ge l_e(K_Z), \qquad (LL2) \\ & K_S \ge I(1 - G(A)) \qquad (CA) \end{split}$$



Proposition

In a closed economy with a monopoly:

- 1. The cost of funds is set at $\rho_M = 0$.
- 2. Only agents with a $K > K_M$ obtain loans, and this could mean that not all capital is used (potential inefficiency).
- 3. Contracts for entrepreneur z are of the form

$$\left\{R_e(K_z), I_e(K_z)\right\} = \left\{R_e(K_z), pR_e(K_z) + K_M - p\phi R\right\}$$

where $R_e(K_z) \in \left[\phi R, \phi R + \frac{K_z - K_M}{p}\right]$.



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Comparative statics





Less credit protection and higher loan origination costs implies more inefficiency.

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Financial liberalization

Foreign and domestic banks face cost of funds ho^* .

Foreign banks face higher entrepreneurial rents $\phi^* > \phi$.

Better technology of foreign banks means that $c^* < c$.

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Image: A matrix and a matrix

- Financial liberalization

Initially competitive financial system

Proposition

- 1. Firms with $K_z \ge K^* \equiv I \frac{pR(1-\phi^*)-c^*}{1+\rho^*}$ obtain loans from foreign banks.
- 2. Firms with $K_z \in [K(\rho^*), K^*]$ get (more expensive) loans from domestic banks.
- Increases in the entrepreneurial rents of domestically funded banks *φ*, in the cost of originating loans of domestic banks *c*, or in *ρ** reduce the efficiency of the economy (*K*(*ρ**) ↑).

This is what is expected from liberalization.

If $\rho^* < \rho_{bc}$, there is an increase in the number of entrepreneurs receiving loans.



Financial liberalization

Wealth distribution results under competition

Definición

A country is wealth constrained if $\tilde{K} \equiv EK_z < K(\rho^*)$.

Proposition

Suppose two countries A, B, where the wealth distribution of A is an MPS of the one in B. Then the benefits of liberalization are higher in country A if it is wealth constrained.



— Financial liberalization

Initial imperfect competition in financial market

- 1, Financial liberalization raises the cost of funds for the domestic bank.
- 2. Wealthy entrepreneurs ($K_z > K^*$) switch to less expensive foreign banks.

3. Entrepreneurs in the range $[K(\rho^*), K^*]$ face a monopoly bank (with higher cost of funds).

Main result

Proposition (Main result)

The domestic bank finances entrepreneurs $K_z \in [K_M(\rho^*), K^*]$, where $K_M(\rho^*) > K(\rho^*)$. It is possible that $K_M(\rho^*) > K_M$, i.e., some entrepreneurs that received credit in the closed economy do not receive credit in the open economy.

The smaller the technical advantage of foreign banks, the more likely is the domestic bank to exclude more small entrepreneurs than before FL.



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- An alternative explanation for the ambiguous effect of FL on access to credit of SME's.
- Model is based on observed features of the market: technological advantage of foreign banks, smaller rent appropriation with domestic banks and increase in domestic cost of funds when competition increases.
- 3. Model can be tested easily by including an ex ante competition variable in current regressions of FL and financial access.
- Policies that reduce entrepreneurial rents Φ, Φ* (better credit protection) will be welfare increasing.
- 5. Learning by foreign banks (reduction in ϕ^*) and technological diffusion $c \downarrow$ reduce negative effects of FL under imperfect competition over time.



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