

Do as Romans?

Comments on: "*When in Rome: Lending to small and medium enterprises by foreign and domestic banks*"
by: Carvalho, Perdigão and Schechtman (2020)

Commented by:

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Stylized facts:

São Paulo is the financial center of Brazil. In this banking market both foreign and domestic banks provide loan services with some particular characteristics in terms of credit size and bank ownership.

- 1 Banking Expansion:** After the 90s, and in line with international trends, new international banks arrived to local markets, expanding credit provision.
- 2 Private Domestic Banks (PDBs):** Larger number of participants, larger share of borrowers, larger share of loans, larger share of loan consumption (*size*).
- 3 Foreign Banks (FBs):** Still a very important participation in the loan market on every dimension, but with higher focus on top 1% of the distribution loan consumption.

What is the research question?

Given the observed patterns in São Paulo banking loan market structure:

- 1 Does the "information revelation cost" mechanism of FBs to read Small and Medium Firms (SMBs) types relies on PDBs own mechanisms?
- 2 Is this strategic behavior reversed? i.e. does Do PDBs rely on FBs capacity to "read information" too?
- 3 What about Government Owned Banks (GOBs) revelation of information mechanisms?

Main findings and contribution

The authors of this paper use a large dataset of pooled information including requests filed by banks to the Brazilian Credit Register (more than 409,000 observations, by month, in the period 2013:01-2016-09) as *proxy of loan application* and study the probability of granting a loan conditional on several observed bank's characteristics.

1. The **main findings**:

- a. Recent loans of small and medium firms (SMEs) with PDBs are positive related with the probability of a FB granting credit. The reverse hypothesis does not hold.
 - b. GOBs previous loans are not related with higher probability of granting a loan from FBs.
- 1** These results are robust to several empirical specifications.

2. The **main contributions**:

- a. Incredible empirical exercise of bank-client relationship that opens many other questions regarding the industrial organization and strategic behavior of banks under asymmetric information.

Mechanism of reading information costs

Through the literature review, the authors **implicitly** identify three mechanism to collect asymmetric information, particularly following Petersen and Rajan (1994, 1995) and Rajan (1992) seminal works:

- 1 **Hard Information.** Quantitative and verifiable.
- 2 **Soft Information.** Qualitative and non-verifiable.
- 3 **Other's Information.** "Reading" the "readings" of others.



To sum up

Given the literature review and the observed market behavior:

Does FBs information aquisition rely on other's information aquisition? If so, how important does it is for granting a loan?

Stylized facts in short (1)

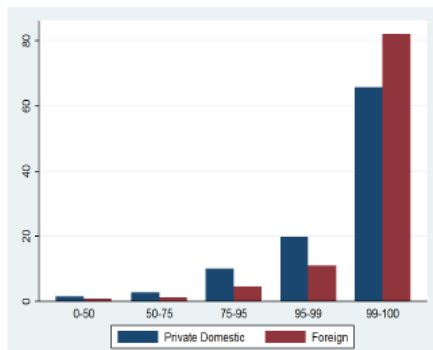
Table 1: Firm and loan market share by bank ownership

Bank Ownership	Number of banks	Number of borrowers (thous.)	Number of loans (thous.)	Total loan consumption (BRL 2015 billions)
Foreign	60	70	1,141	227
Private domestic	72	162	2,809	359
Total	132	208	3,950	586

Note: Market shares computed over a sample of private banks loans to all firms located in the city of São Paulo from 2012M01 to 2017M06.

Stylized facts in short (2)

Figure 1: Distribution of total loan consumption by bank ownership.



Descriptive statistics (1)

Table 2: Description and sample statistics of the regression variables

Variable	Description and statistics of the regression variables	Foreign	Private Domestic	Total
$LoanGranted_{jt}$	= 1 if loan is granted from t to $t+3$, = 0 otherwise	0.117 (0.321)	0.099 (0.298)	0.104 (0.305)
\bar{F}_t	= 1 if the information request was submitted by a foreign bank, = 0 otherwise	1.000 (0.000)	0.000 (0.000)	0.272 (0.445)
SME	= 1 if information request is about an SME firm, = 0 otherwise	0.904 (0.295)	0.850 (0.357)	0.864 (0.343)
$PreviousLoan$	= 1 if the firm borrowed from another bank from $t-3$ to $t-1$, = 0 otherwise	0.328 (0.470)	0.225 (0.417)	0.253 (0.435)
$PreviousLoan_D$	= 1 if the firm borrowed from another private domestic bank from $t-3$ to $t-1$, = 0 otherwise	0.283 (0.451)	0.179 (0.383)	0.207 (0.405)
$PreviousLoan_F$	= 1 if the firm borrowed from another foreign bank from $t-3$ to $t-1$, = 0 otherwise	0.098 (0.297)	0.087 (0.282)	0.090 (0.286)
$PreviousLoan_G$	= 1 if the firm borrowed from a public bank from $t-3$ to $t-1$, = 0 otherwise	0.118 (0.322)	0.074 (0.262)	0.086 (0.280)



Descriptive statistics (2)

Bank controls:

ln_assets	Logarithm of total assets	25.048 (1.628)	25.851 (2.274)	25.632 (2.148)
liq_ratio	Liquid assets over total assets	0.194 (0.086)	0.164 (0.074)	0.172 (0.078)
cap_ratio	Capital over risk weighted assets	0.157 (0.051)	0.166 (0.045)	0.163 (0.047)
ROA	Quarterly return on assets	0.004 (0.019)	0.015 (0.018)	0.012 (0.019)
Sd_ROA	Standard deviation of the annual return on assets	0.004 (0.005)	0.003 (0.006)	0.004 (0.006)
total_loans	Total loans to total assets ratio	0.562 (0.162)	0.515 (0.089)	0.528 (0.116)
NPL	Share of non-performing loans	0.069 (0.034)	0.058 (0.020)	0.061 (0.025)
credit_growth	Growth rate of total loans	0.022 (1.013)	0.006 (0.036)	0.010 (0.530)

Reduced form models

The empirical strategy is **Linear Probability Model using a Pooled data**.

- 1 One type of model studies:

$$\begin{aligned} LoanGranted_{f_{it}} = & + \beta_0 SME_f + \beta_1 \mathcal{F}_b + \beta_2 PreviousLoan_{f_{it}} + \gamma_1 \mathcal{F}_b \bullet SME_f + \gamma_2 \mathcal{F}_b \bullet PreviousLoan_{f_{it}} \\ & + \gamma_3 PreviousLoan_{f_{it}} \bullet SME_f + \lambda \mathcal{F}_{it} \bullet PreviousLoan_{f_{it}} \bullet SME_f \quad (1) \\ & + \theta'_b Bank_{bt-1} + F_{it} + M_t + \epsilon_{f_{it}} \end{aligned}$$

- 2 The second empirical model studies:

$$\begin{aligned} LoanGranted_{f_{it}} = & + \beta_0 SME_f + \beta_1 \mathcal{F}_b + \beta_2 PreviousLoan_D_{f_{it}} + \beta_3 PreviousLoan_F_{f_{it}} \\ & + \gamma_1 \mathcal{F}_b \bullet SME_f + \gamma_2 \mathcal{F}_b \bullet PreviousLoan_D + \gamma_3 \mathcal{F}_b \bullet PreviousLoan_F \\ & + \gamma_4 PreviousLoan_D_{f_{it}} \bullet SME_f + \gamma_5 PreviousLoan_F_{f_{it}} \bullet SME_f \quad (2) \\ & + \lambda_1 \mathcal{F}_{it} \bullet PreviousLoan_D_{f_{it}} \bullet SME_f + \lambda_2 \mathcal{F}_b \bullet PreviousLoan_F_{f_{it}} \bullet SME_f \\ & + \theta'_b Bank_{bt-1} + F_{it} + M_t + \epsilon_{f_{it}} \end{aligned}$$

- 3 The authors use: **linear probability models on pooled data** to test their hypothesis, and control for **unobserved heterogeneity** using several fixed effects specifications related to bank's, firm's, time's

Main findings (1)

- 1 There is evidence that FBs overcome borrower information asymmetries by relying on their PDBs peer behavior, as expected due to the differential ability of the latter to process SMEs soft information.
- 2 The increase in the probability that a loan is granted by foreign banks in comparison to domestic ones due to the existence of past new loans with domestic banks amounts to 2.5 p.p. for SME rms (and null for large rms). This is equivalent to an increase by 22% of the foreign bank unconditional probability of granting a loan.

Main findings (2)

What about GOBs? Are they a source of reliable information?

- 1 The answer is **NO**. All of the coefficients associated to interactions that include previous loan from a GOB are not statistically significant in all columns.
- 2 These findings suggest for the authors that public banks are not efficient in reading information from their borrowers.
- 3 Also and more importantly, the existence of past loans with public banks doesn't provide additional valuable information for foreign banks' decisions (in comparison to private domestic ones) to grant loans to noncurrent borrowers, either SMEs or large firms.

Main implications

The main implications from this paper are interesting to catch:

- 1 FBs rely on DPBs information to grant a credit.
- 2 FBs do not rely on GOBs, maybe because the latters are not so good to read information.
- 3 Risk sharing in the aggregate is a complex network that now relies in the capacity to read "each others" information.

Theoretical framework (1)

Providing liquidity (in terms of credit and loans) is hard and costly, particularly no free lunch when you are a intertemporal-risk sharing risk-neutral firm!

At least we have two mechanisms of "banking costs" the intermediaries are looking to minimize optimally in terms of a "loan contract":

- 1 **Transaction costs:** Monti-Klein (1972) and I-O banking approach.
- 2 **Informational costs** (the usual suspects: adverse selection and moral hazard):
 - 1 *Ex-post:* Townsend's (1979) Costly State Verification.
 - 2 *Interim:* Diamond's (1984) Monitoring Costs.
 - 3 *Ex-ante:* Wang and Williamson (1998): Costly Screening.

Theoretical framework (2)

A good theoretical model could help to gather information regarding the relevant margins where information "bytes" and thus help the authors to identify the effects they are searching:

- 1 What sort of information is read through the use of others decision? Hard, soft, all, none, reputation?
- 2 Is this a efficient equilibrium? Constrained Pareto optimal? What mechanism of risk sharing does it imply?
- 3 Could this informational equilibrium induce a "**herd behavior**" bad outcome? How ofthen? Should we care?
- 4 If PDBs "know better" in local markets, up to what extent do they use this market power to attract more clients?
- 5 Finally, how diffuse is information on the firm size? Can we get a "measure" of this difussion and how this might affect banks behavior?

Empirical Specification and identification

- Larger problems in applied econometrics comes from the lack of identification in terms of an empirical strategy that does not provide correct model specification toward a theoretical expected behavior.
- Could you recover a structural model information costs play a role in terms of the binary decision: yes/no?
- Can this structural model guarantee identification using a proxy for costs, and a linear approximation?
- If so, ok! if not, check the non-linear alternatives (discontinuous regression for instance).

Estimation methodology

Conditional on a probability model, then the following comments might interest you:

- Check the **estimation methodology**:
 - If Pooled OLS: check the basic non-spherical disturbance corrections, and potential structural change (if any) as source of identification.
 - If MLE (such as Probit/Tobit): check non-linear marginal effects.
- Check the **data structure**: selection bias on where do firms apply for a credit might play a huge role on the expected estimation.
- Can we get more information on the firm's side, to control for that unobserved heterogeneity and how hard could it be to read?

Policy and regulation

The main implications from this paper are interesting to catch, but worrisome to read from a policy maker perspective:

- 1 FBs rely on DPBs soft information to grant a credit. Are all DPBs equally reliable? If who are the "bests" in the local market?
- 2 FBs do not rely on GOBs, but maybe not because they have worse information, but because they do not risk-share equally as PDBs.
- 3 FBs can risk-share better than DPBs, where in the loan-size the information reliability "bites"? How a change in monetary policy rate might affect this mechanism?
- 4 Risk sharing in the aggregate is a complex network that now relies in the capacity of PDBs for reading information. If every time a diffuse reading of information is done (*proxy* of a *proxy*), asymmetric information externalities are exacerbad!

To conclude

It is a very interesting empirical paper, with a long list of questions to address, and a quite challenging result from a risk-sharing perspective:

- Check your **theoretical framework**: theory is a guideline toward what to expect on the data, and what are the implications of the results. If the "information of others" is an equilibrium: what does it imply on risk management and risk sharing in a banking system? Who can share the risk the most: **PDBs** or **FBs**?
- Check the **identification strategy**: is the "expected value" the relevant one for the margin of interest, or is a "quantile analysis" a better approach.
- Check the **estimation methodology**:
 - If Pooled OLS: check the basic non-spherical disturbance corrections.
 - If MLE (such as Probit/Tobit): check non-linear marginal effects.
- Check the **data structure**: selection bias on where to firms apply for a credit might play a role.



¡Thank you!