

# Credit Allocation When Private Banks Distribute Government Loans

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# Background

## *Bank credit to firms in Brazil*

### ➤ Free-market credit

- Average spreads high
- Main types: working capital, receivables discounting
- Typically, short-term

### ➤ Earmarked credit

- Interest rates regulated: frequently below monetary policy rates
- Via BNDES-direct lending or via commercial banks
- **Indirect BNDES loans:**
  - Commercial banks select recipient firms
  - Funding from BNDES
  - Commercial banks bear default risk, but can charge a risk spread
- Main types: infrastructure, machinery, agriculture
- Typically, long-term

# What we do

- Study the effects of earmarked lending on spreads in the free market
- Use rich loan-level data on Brazilian firms spanning 12 years
  - Exploit interest rate variation over time for the same bank-firm pair
- With this data, we try to answer these questions:
  - What kind of firm gets earmarked loans ?
  - Is there a bundling of working capital and earmarked loans?
  - **Do private banks increase spreads on working capital loans after the 1<sup>st</sup> earmarked loan?**

# Our preliminary findings

- Private banks are strategic in their selection of earmark recipients
  - Banks select firms that are more difficult to lock-in
  - These firms are larger and with longer relation with the bank
  - Bundle earmarked loans with working capital loans
- After receiving an earmarked loan, recipient firms pay higher spreads ( $\sim 0.3$  pp) in the free market with this bank
  - Results are stronger for high-risk firms, firms with relationship with only one bank, and in concentrated markets

# Data

## 1. Loan-level panel on 'free-market' loans to firms by private commercial banks

- Focus on working capital loans from 2005 to 2016
- Only bank-firm relationships that started after 2005
- Detailed information of bank, firm and loan characteristics

## 2. Earmarked credit relation of firms with private banks

- Timing of firm-bank earmarked credit relation

Characterization of the firms that  
receive earmarked loans



## What kind of firm ?

- Recipients of earmarked loans are firms that:
  - Are larger
  - Are older
  - Have longer relation with the bank
- Unrelated to credit risk

**Table 2. Determinants of earmarked credit relationship**

	(1)	(2)	(3)
Firm size <sub>fy</sub>	0.026*** (0.004)	0.026*** (0.004)	0.017*** (0.003)
Firm age <sub>fy</sub>	0.004** (0.001)	0.002 (0.001)	0.004** (0.002)
BF Relation <sub>fby</sub>	0.025*** (0.008)	0.027*** (0.009)	0.017*** (0.005)
BF Provisions <sub>fby</sub>	0.005 (0.006)	0.005 (0.006)	0.005 (0.006)
Top3Bank <sub>by</sub>	0.005* (0.002)		
BF Relation <sub>fby</sub> * Firm size <sub>fy</sub>			0.005** (0.002)

Is there a bundling of working capital and earmarked loans?

➤ Banks bundle earmarked loans with free-market loans for firms

- Larger
- That have longer relation with the bank
- With higher credit risk (Working capital)

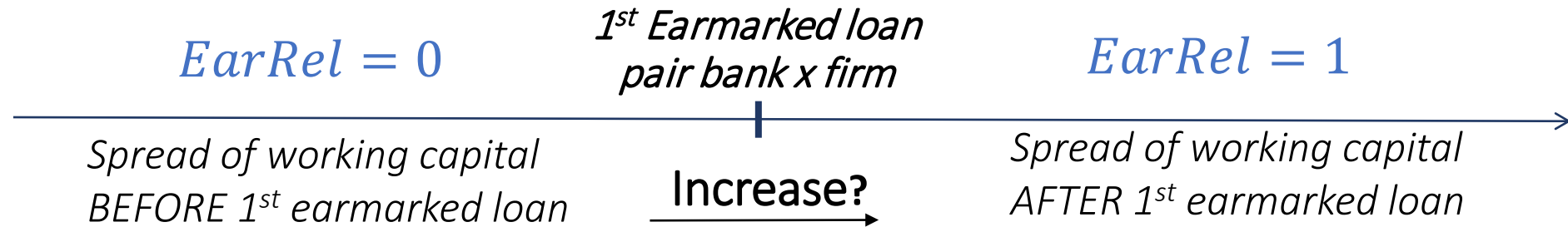
	Panel A. Bundling with working capital loans		Panel B. Bundling with vehicle financing loans	
	(1)	(2)	(1)	(2)
Firm size <sub>f</sub>	0.007*** (0.002)	0.005*** (0.001)	0.013*** (0.003)	0.012*** (0.004)
Firm age <sub>f</sub>	-0.005 (0.003)	-0.004 (0.003)	-0.005 (0.004)	-0.005 (0.004)
BF Relation <sub>fb</sub>	0.009*** (0.003)	0.007*** (0.002)	0.017*** (0.002)	0.015*** (0.003)
BF Provisions <sub>fb</sub>	0.021*** (0.007)	0.021*** (0.007)	-0.010 (0.006)	-0.010 (0.006)
Top3Bank <sub>fb</sub>	0.057* (0.029)	0.056* (0.030)	-0.003 (0.008)	-0.003 (0.008)
BF Relation <sub>fb</sub> * Firm size <sub>f</sub>		0.001* (0.001)		0.001 (0.001)

What do banks gain by giving earmarked loans to these firms?

*Literature on switching costs, locking-in firms*

- Banks may lock-in firms via initially offering low interest rates, and later increase as the relationship with the firm evolves
  - Empirical evidence from Bolivia: Ioannidou and Ongena (JF 2010)
  - Empirical evidence from Brazil: Ornelas et al. (BCB Working Paper 512, 2020)
  - Strategy consistent with existence of switching costs in bank-firm relations
  
- Do earmarked loans help private banks to lock-in firms?

# Empirical strategy: WC spreads after obtaining an earmarked loan



## Regressions estimated using Working Capital Loans only with firms that ever had a n earmarked loan

$$spread_{lfbt} = \alpha_1 EarRel_{fbt} + \alpha_2 BF Rel_{fbt} + \alpha_{bt} + \alpha_{fb} + \gamma C_{b,f} + u_{lfbt}$$

Annotations for the regression equation:

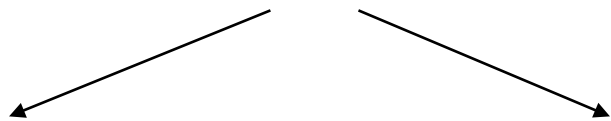
- $EarRel_{fbt}$ : equals 1 if firm  $f$  obtained earmarked loan from bank  $b$  before  $t$
- $BF Rel_{fbt}$ : Years of relation of  $f$  and  $b$  at  $t$
- $\alpha_{bt}$ : bank x time fixed effects
- $\alpha_{fb}$ : firm x bank fixed effects
- $C_{b,f}$ : Loan level control variables

Do banks increase spreads on working capital loans after the 1<sup>st</sup> earmarked loan?

**Effect of earmarked relations on interest rate spreads of working capital loans**

Dep Variable: <b>Spreads</b>	(1)	(2)	(3)	(4)
EarmarkRel <sub>fbt</sub>	0.341*** (0.114)	0.236*** (0.059)	0.334*** (0.100)	0.589** (0.247)
Observations	397,427	297,406	264,639	112,586
R-squared	0.723	0.797	0.839	0.891
Mean interest rate spread	27.13	26.98	27.81	28.56
Firm x Bank FE	Yes	Yes	Yes	Yes
Bank x Month FE	Yes	Yes	Yes	Yes
Loc x Sector x Month FE	No	Yes	No	-
Firm x Year FE	No	No	Yes	-
Firm x Quarter FE	No	No	No	Yes

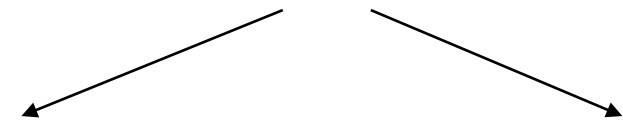
**Heterogeneity - Credit Risk**



**High-risk firms**

**Low-risk firms**

**Heterogeneity - Local Concentration**



**High concentration**

**Low concentration**

(1)	(2)	(3)
1.190***	0.850***	0.487***

(4)	(5)	(6)
0.339	0.280	0.184

(1)	(2)	(3)
0.420**	0.327***	0.378***

(4)	(5)	(6)
0.226**	0.065	0.212**

# Heterogeneity by Number of Bank Relationships

Firms with multiple bank relations		
All locations	Locations with high banking concentration	Locations with low banking concentration
(4)	(5)	(6)
0.246**	0.225	0.160*

Firms with single bank relations		
All locations	Locations with high banking concentration	Locations with low banking concentration
(1)	(2)	(3)
0.410**	1.029***	0.295**

*Why firms might not switch after the first earmarked loan, despite higher interest rates in new free-market loans?*

- There is a lot of persistence on earmarked lending. 90% of firms obtain more than one earmarked loan
- Among these, 95% obtain the second earmarked loan with the same bank
- The median time between consecutive earmarked loans is 9 months (13 months on average)

*Possible answer: because of the likelihood of getting more 'cheap' earmarked credit*

# Final Remarks

- Study the effects of earmarked lending on spreads in the free market
- Banks are able to increase spreads on working capital loans by ~0.3 percentage point after the 1<sup>st</sup> earmarked loan
- Firms keep the relationship with the bank possibly because of the likelihood of getting more earmarked loans with low interest rates



Thank You

Does relationship duration sensitivity change after the 1<sup>st</sup> earmarked loan?

BF sensitivity to relationship length:

- Non-recipient firms: +0,497
- Earmarked, **before**: +0,004
- Earmarked, **after**: 0,178

BF Rel before 1<sup>st</sup> earmarked loan

BF Rel after 1<sup>st</sup> earmarked loan

	(5)	
EverEarmark <sub>fb</sub>		
EarmarkRel <sub>fbt</sub>	0.425** (0.207)	
BF Rel <sub>fbt</sub>	0.497*** (0.185)	+ 0,004
BF Rel <sub>fbt</sub> *EverEarmark <sub>fb</sub>	-0.493*** (0.032)	
BF Rel <sub>fbt</sub> *EarmarkRel <sub>fbt</sub>	0.174*** (0.035)	
Observations	3,905,486	
R-squared	0.724	
Sample	All Firms	
Firm FE		
Firm-Bank FE	Yes	
Bank-Year FE	Yes	
Firm-Year FE	No	

0,178

# Variables of interest

1. Spreads of loans in the free-market ( $Spread_{fbt}$ )
  - Spreads of loans in the free-market for the three products we observe
2. Ever earmarked ( $EverEarmark_{fb}$ )
  - =1 for all firms  $f$  that received or will receive an earmark from bank  $b$
3. Firm earmarked relation ( $EarmarkRel_{fbt}$ )
  - = 1 if firm  $f$  has earmarked loan with bank  $b$  at any period before  $t$
  - our POST dummy