

# Trade Credit in a Developing Country: the Role of Large Suppliers in the Production Network

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*Broad research question: how does trade credit interact with bank credit?*

- Trade credit is a main source of financing, especially for firms with limited access to bank finance (Petersen and Rajan (1997))
- Supply of trade credit linked to clients' financing conditions
- Recent interest in role of TC for the macroeconomy (Luo (2020), Altinoglu (2021), Bocola & Bornstein (2023), Reischer (2024))
- Existing models and numerical analysis are at the sectoral level

*This paper:*

- Motivating loan-level micro evidence on the role of trade credit/bank credit on the supply chain
- Model of firm-to-firm trade credit in production network, using firm-to-firm transaction data
- TC mitigates propagation of financial shocks and reduces loss from frictions, but role declines with lower dispersion

*Why is Brazil interesting?*

# Bank interest rates in Brazil are highly dispersed!

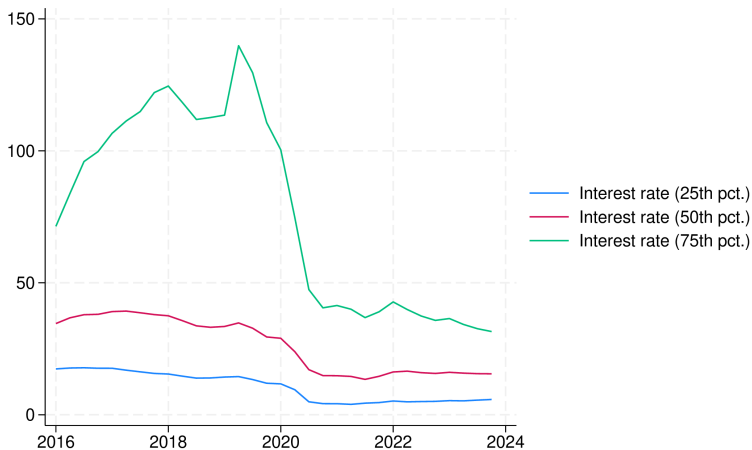


Figure: Quartiles of bank interest rates for short-term loans to firms

# Listed companies face lower interest rates (than their clients)

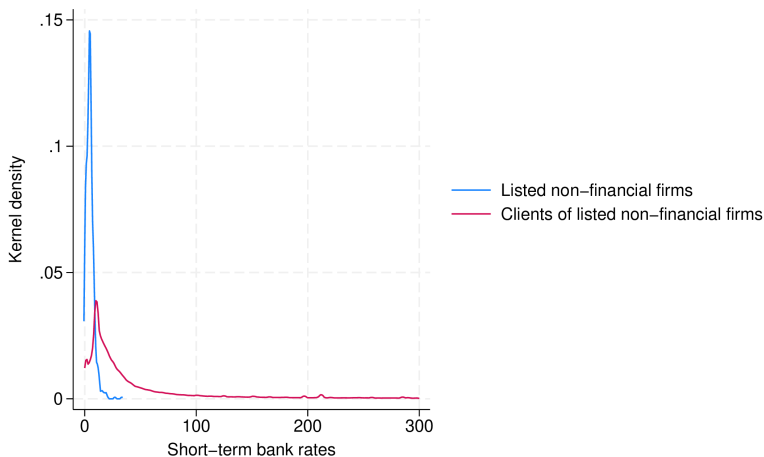


Figure: Distribution of interest rates: listed companies VS their clients (2019).

- 1 Balance sheet data for listed non-financial companies (almost 300)
- 2 Firm-to-firm transactions data from the BCB payment registry
  - We build the network using 2019 data
  - Transfers between accounts in different banks + boletos
  - Average (median) number of clients of listed firms is 16000 (1031)
  - Average (median) value of transaction is BRL 512 (3.4) thousands
- 3 Bank interest rates and size of loans from CBB credit registry
  - We focus on contracts with 1 year maximum duration

Table: Effect of clients' interest rates on accounts receivable

	log AR			AR/CA		
	OLS	1st Stage	2nd Stage	OLS	1st Stage	2nd Stage
$\bar{r}_{n,t}^c$		0.321*** (0.063)			0.321*** (0.063)	
$\bar{r}_{n,t}^c$	-0.003 (0.002)		0.043** (0.019)	0.001 (0.001)		0.006* (0.003)
<i>firm FE</i>	Y	Y	Y	Y	Y	Y
<i>year FE</i>	Y	Y	Y	Y	Y	Y
<i>F-stat</i>		25.88			25.88	
<i>Observations</i>	3620	3620	3620	3620	3620	3620

Notes: Quarterly data for 2019-2023. Standard errors are clustered at the firm level.

\*  $p < 0.1$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

- Input-output network model at the firm level
- Firms face a working capital constraint
- Markets are decentralized: each firm-to-firm link decides on prices, quantities and trade credit share
- Firms can default at a fixed probability (to distinguish financial frictions from risk)
- TC carries an opportunity cost but firm has incentives to give more credit if client is more constrained
- Calibrate the model with transaction and client data for the 100 largest Brazilian firms
- Use 2019 as a baseline and then recalibrate for 2020-2023



# Output gain with TC: comparing with first-best benchmark

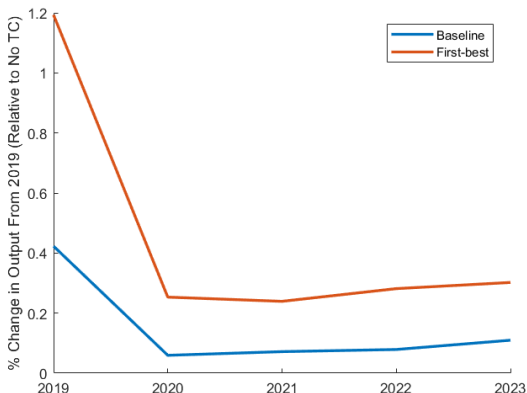
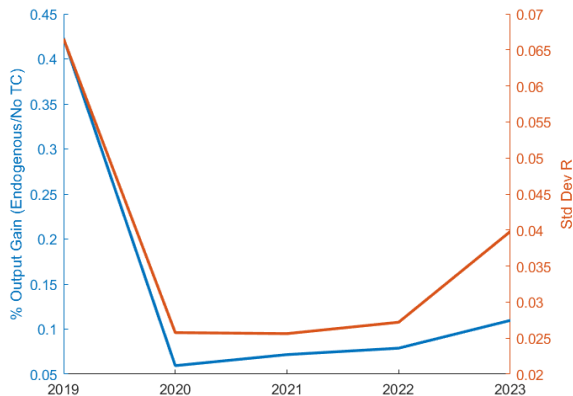


Figure: Evolution of output gain (2019-2023).

# Role of trade credit and interest rate dispersion



**Figure:** Relative output (endogenous VS no trade credit) and estimated dispersion of  $R_n$ .

- We built a model of endogenous trade credit in a firm-to-firm network
- In line with micro evidence, trade credit increases with the interest rate of buyers
- Trade credit can smooth interest rate shocks
- Endogenous trade credit is particularly beneficial when the "frictional" interest rate spread between buyers and sellers gets larger
- The importance of TC in Brazil has declined in the last 4 years because of a reduction in bank rates' dispersion