Bank Credit and Firm Default Risk: an Implicit Contract Perspective

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1: MOTIVATION

- Canonical models with firms assume they can borrow at a **zero-profit loan pricing schedule:**

$$\mathrm{R}(z, b', k') = R^F + PD(z, b', k')$$

For exposition: (i) I assume zero recovery rate, (ii) I display the expression in rates rather than in bond prices, which is an approximation (exact for low PD).

➡ Implies one-to-one mapping between risk and lending rates
- How accurate is this in an economy with banks?

2: DATA

- Near-universe of bank loans in Mexico (R04)
- Monthly data, 2004-2022

- *Probability of Default* reported by banks for each loan
  - Combines hard and soft information
  - Strongly predictive of actual delinquencies

3: EMPIRICS

- Main goal: map $\mathrm{R}(z, b', k')$ to the data
  - *Stayers*: Large deviations from zero-profit schedule

Pass-through:
- Strong dampening of idiosyncratic risk
- Some dampening of aggregate risk and monetary policy shocks

History-dependence:
- Default Risk at relationship onset matters for subsequent loans

Exogenous switchers:
- Heckman selection model
- Instruments:
  - Bank credit supply shocks
  - Local bank subsidiaries open/closure

5: QUANTITATIVE MODEL

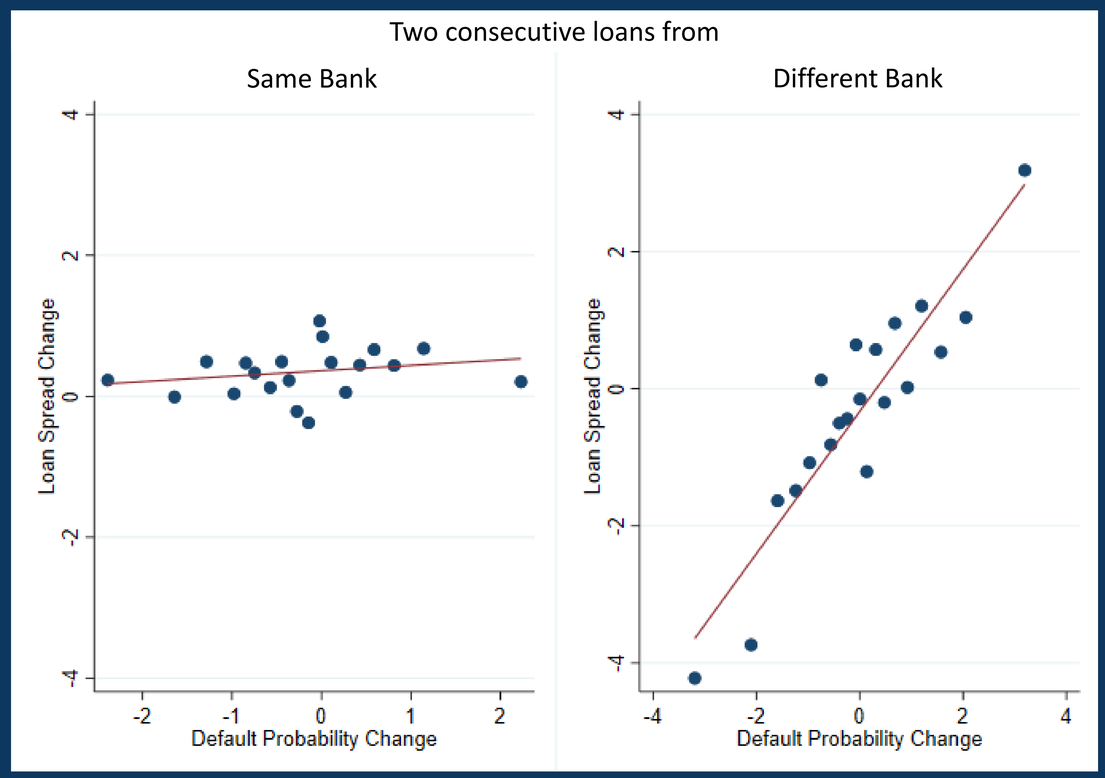
– Work in progress –

- Canonical heterogeneous firms setup **enriched with banks**
- Two limiting cases:
  1. $\psi^{F,B} \to 0$, Non-contingent debt (with evergreening): *implicit promises never bind*
  2. $\psi^{F,B} \to \infty$, Complete Markets: *implicit promises always bind*
- Intermediate cases: partial insurance

➡ We can isolate **insurance** from **evergreening**

- Monetary Policy Transmission with banks and heterogeneous firms?

Banks do not adjust lending rates to reflect changes in borrowers' default risk



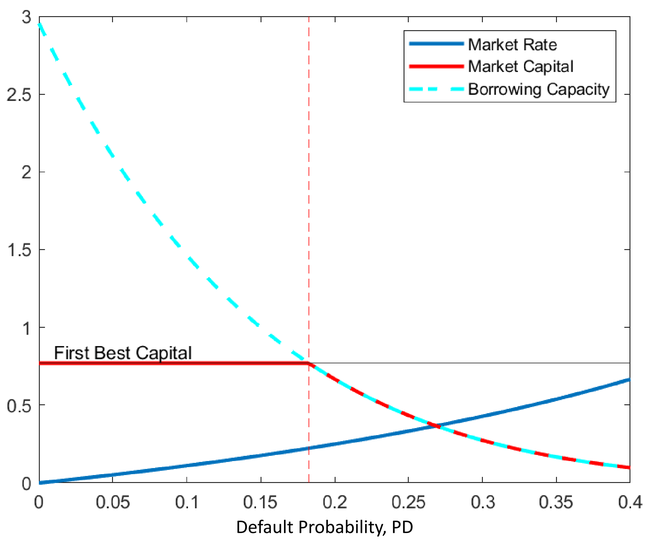
Source: Mexico Credit Registry (R04C), 2004-2022.
Changes are computed between two consecutive uncollateralized loans of the firm. Left panel: two loans originated by the same bank. Right panel: two loans originated by different banks. **Default Probability** reported by banks, figure excludes 5 percent right tail. **Spread** between loan rate and TIIA28.

4: STYLIZED CONTRACTING MODEL

- Optimal firm size: constant
- Exogenous default risk *PD*
  - affects borrowing capacity

Cash Flows:	Lender	Firm
$(1 - PD_t)$: No Default	Rk	$y(k) - Rk$
PD_t: Default	0	$y(k)$

- Market lenders:
  - Follow zero-profit loan pricing

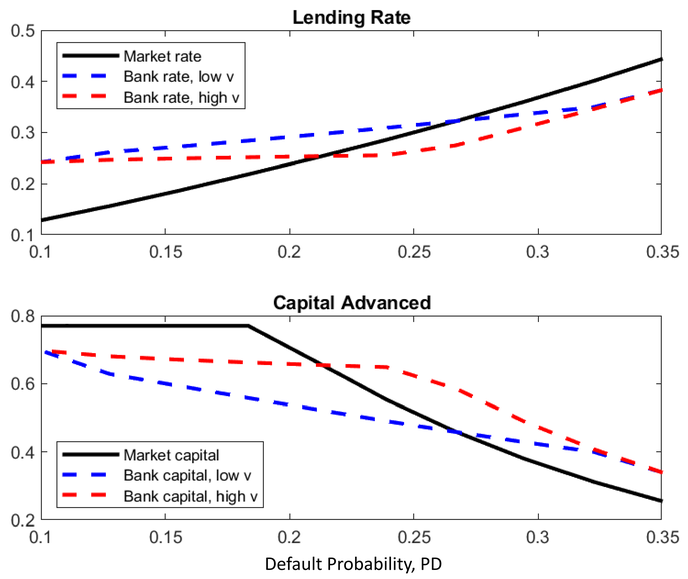


➡ Banks provide **insurance** through **long-term implicit contracts**
- Smooth lending rates
- Reduces Misallocation

$$W(PD, v) = \max_{\{R,K,v'(PD')\}} \pi^B(PD, R, K) + \beta W(PD', v'(PD''))$$

$$\begin{aligned} &\pi^F(PD, R, K) + \beta v'(PD') > v \quad (PK) \\ &v' > v^M - \psi^F \quad (PC\ Firm) \\ &W(PD', v') > \psi^B \quad (PC\ Bank) \end{aligned}$$

Mechanism:
- Subsidize constrained firms
- Overcharge unconstrained firms
  - Enforceable with switching costs



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The results are part of the project "Bank-Firm Relationship and Lending Conditions in the cross-section". External researcher: Francesco Beraldi. Banco de Mexico internal responsible researcher: Carlos Santiago Bazdresch Barquet.