Craft Lending: The Role of Small Banks in Small Business Lending

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The views expressed herein are those of the author and do not necessarily represent those of the Federal Reserve Bank of Boston or the Federal Reserve System.

Motivation

- Small banks in the U.S. exposed to increasing competition for small business borrowers from large banks
  - similar situation in Poland (although different reasons)
- Two reasons:
  - Improvements in information sharing about borrowers
  - Large banks adopt low cost lending technologies
- Question in this paper:
  - How does large banks' competition affect small banks' C&I lending?

Answer

- Competition from large banks results in "craft lending" by small banks:
  - Focus on small businesses, which value their services the most
  - Non-linear manner: small businesses that demand mid-sized loans

- Theory and empirics

Outline

1. Model of craft lending
2. Emprical implementation of the model
3. Empirical results
4. Conclusion

Model of craft lending

- Small and large banks compete for a borrower whose productivity is public information:
  - They offer loan rate that maximizes the borrower's payoff
- But the borrowers can change the risk of the project after the loan has been made
- Small and large banks differ in their lending technologies:
  - Small banks understand (observe) risks taken by their borrowers
  - Large banks have a lower marginal cost of lending but do not observe risk, so they protect themselves against it by "overcharging"

Setup - Economy

- A borrower and a number of banks; all are risk-neutral
- A borrower with known productivity θ
- Two projects: a safer ($j = S$) and riskier ($j = R$) project
- The project's return

$$\begin{cases} y_j \text{ with prob. } p_j\theta \\ 0 \text{ otherwise} \end{cases}$$

- p_j - the impact of risk choice:

$$y_R > y_S > p_R y_R > 1$$

Banks

- Banks compete in a Bertrand manner by offering loan contracts simultaneously

Timing

- Banks set loan rates (contingent on risk choices if possible)
- Borrower chooses a bank and risk of her project
- If the project succeeds, the borrower repays her loan

Small and Large Banks

- Competition between banks that differ across two dimensions:
  - "small" banks observe risk but have a higher cost of financing ρ_C
  - "large banks" cannot observe risk and have a lower cost of financing $\rho_L < \rho_C$

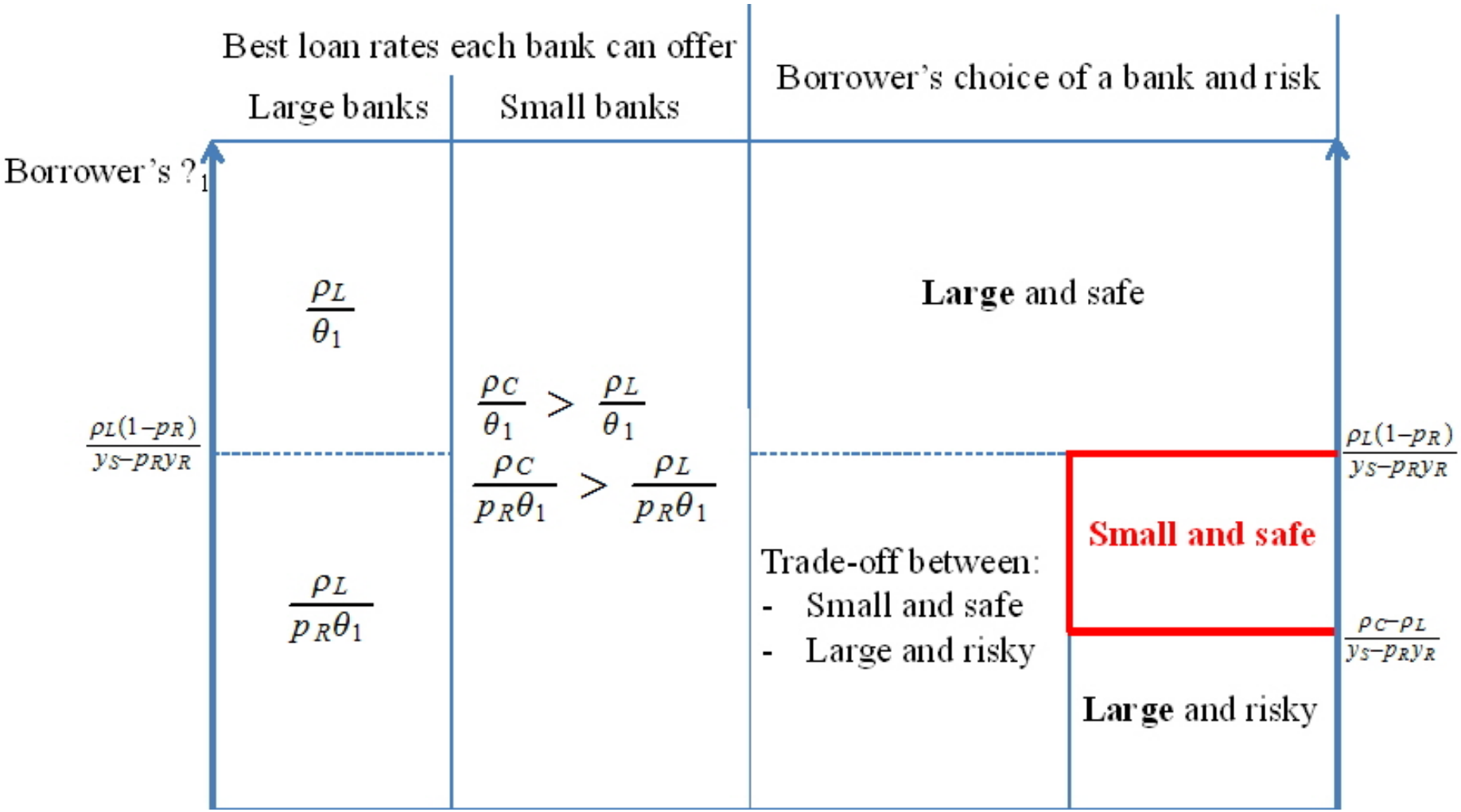
- More than one type of each bank

Intuition

- No moral hazard:
  - for lowest productivity: these borrowers always shift risk for any offerred loan rate
  - for highest productivity: these borrowers always take safe project for any offerred loan rate
- Largest banks capture these borrowers:
  - no moral hazard but cheaper loans

Intuition

- Intermediate-productivity borrowers:
  - Caught between a rock and hard place
  - Shift risk if a loan rate is high - large banks charge it because they anticipate risk shifting
  - Small banks have no moral hazard but have a higher cost of financing


Best loan rates each bank can offer
Large banks
Small banks
Borrower's choice of a bank and risk
Borrower's $?_1$
$\frac{\rho_L}{\theta_1}$
$\frac{\rho_C}{\theta_1} > \frac{\rho_L}{\theta_1}$
$\frac{\rho_C}{p_R\theta_1} > \frac{\rho_L}{p_R\theta_1}$
$\frac{\rho_L(1-p_R)}{y_S-p_Ry_R}$
$\frac{\rho_L}{p_R\theta_1}$
Large and safe
Small and safe
Trade-off between:
- Small and safe
- Large and risky
Large and risky
$\frac{\rho_L(1-p_R)}{y_S-p_Ry_R}$
$\frac{\rho_C-\rho_L}{y_S-p_Ry_R}$

Model of craft lending

- Borrowers face a trade-off:
  - Small banks do not face moral hazard but have a higher unit cost of lending
- Craft lending:
  - The most and least productive borrowers borrow from large banks (the largest and smallest loans)
  - The rest of borrowers borrows from small banks (mid-sized loans)
- Hypothesis to be tested:
  - As competition from large banks increases, the small banks focus more on mid-sized loans

Empirical Implementation

- **A large bank**: assets $>$ \$10 Billion
- **A small bank**: assets $<$ \$1 Billion (we will work with single- and multi-market banks)

Empirical Implementation

Increase in large bank competition (Summary of Deposits)

- ENTRY: A large bank establishes at least one branch in a given market
- HHI: HHI of large banks' deposits in the market (controlling for total and other banks HHI)
- DISTANCE: The closest distance between the small banks' branches and large bank's established branch

Empirical Implementation

C&I lending (Call Reports)

- Three buckets: 0-100K, 100-250K, 250K-1M; "above 1M"=total C&I−sum of the three buckets
- We use annual data between 1994-2007
- We use log-levels and shares of the buckets to total C&I

Empirical Implementation

- We have a lot of specifications
  - For log-levels and shares of the buckets
  - Three proxies for competition: entry, HHI of large banks deposits, distance
  - Two combinations of fixed effects

- I will show only regressions for levels

Loan Volumes and Entry

	Single-market	Multimarket	All
Large Bank Entry * 0-100K loans	-0.0734***	-0.0867***	-0.0862***
	(0.0150)	(0.0260)	(0.0132)
Large Bank Entry * 100-250K loans	0.0185	0.0292*	0.0250***
	(0.0116)	(0.0172)	(0.00968)
Large Bank Entry * 250K-1M loans	0.0718***	0.0836***	0.0772***
	(0.0142)	(0.0223)	(0.0120)
Large Bank Entry * +1M loans	0.0343	0.0175	0.0253
	(0.0288)	(0.0424)	(0.0241)
Bank Controls	Yes	Yes	Yes
Market Controls	Yes	Yes	Yes
Loan size category FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	79,005	48,398	127,433
R-squared	0.686	0.721	0.707

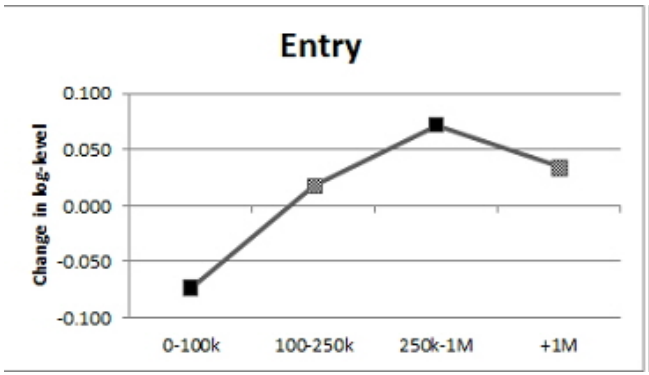
Loan Volumes and Large Bank Deposit HHI

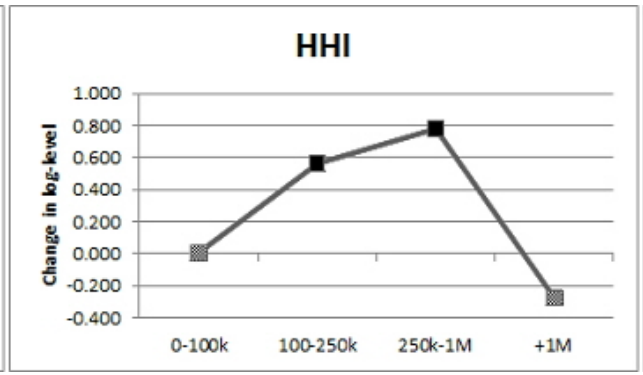
	Single-market	Multimarket	All
Large Bank Deposit HHI * 0-100K loans	0.00765	-0.270	-0.0348
	(0.248)	(0.236)	(0.167)
Large Bank Deposit HHI * 100-250K loans	0.564**	0.363*	0.565***
	(0.229)	(0.201)	(0.146)
Large Bank Deposit HHI * 250K-1M loans	0.780***	0.425**	0.712***
	(0.249)	(0.212)	(0.158)
Large Bank Deposit HHI * +1M loans	-0.273	0.226	0.0546
	(0.285)	(0.263)	(0.197)
Total Deposits HHI	-0.320	-0.113	-0.298**
	(0.240)	(0.200)	(0.147)
Mid Bank Deposit HHI	-0.0244	0.00590	0.000258
	(0.198)	(0.190)	(0.129)
Bank Controls	Yes	Yes	Yes
Market Controls	Yes	Yes	Yes
Loan size category FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	79,005	48,342	127,377
R-squared	0.686	0.722	0.708

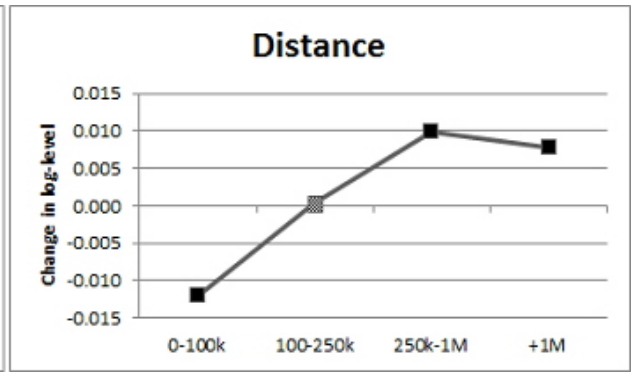
Loan Volumes and Distance to Large Bank

	Single-market	Multimarket	All
(-)Min. Distance to Large Bank * 0-100K loans	-0.0151***	-0.00904***	-0.0120***
	(0.00146)	(0.00156)	(0.00110)
(-)Min. Distance to Large Bank * 100-250K loans	-0.00209	0.000299	0.000286
	(0.00139)	(0.00113)	(0.000885)
(-)Min. Distance to Large Bank * 250K-1M loans	0.0119***	0.00719***	0.00984***
	(0.00173)	(0.00140)	(0.00112)
(-)Min. Distance to Large Bank * +1M loans	0.0138***	0.00524**	0.00775***
	(0.00377)	(0.00262)	(0.00219)
Bank Controls	Yes	Yes	Yes
Market Controls	Yes	Yes	Yes
Loan size category FE	Yes	Yes	Yes
Bank FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	65,993	45,137	111,153
R-squared	0.686	0.722	0.707

Craft Lending (All Banks)







Conclusion

- Craft lending: theory and evidence
- Comments welcome!