Information Sharing and Information Acquisition in Credit Markets

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Points of departure

- Role of banks in information acquisition
  - Banks acquire costly information and get competitive advantage
  - Hold up good borrowers and earn rents (Sharpe 1990, von Thadden 2004)
- This paper: looks at the impact of information sharing on information acquisition

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    - Sharing inside bank's data with outside banks.

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  - Recently around 70 countries introduced *private bureaus and public registers* (IFC 2009)
    - Sharing inside bank's data with outside banks.
  - Information sharing may increase competitive pressure

Main Question

Will the inside bank acquire more or less information under information sharing with other banks?

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- Other Questions
  - How will the quality of credit decisions change?
  - How will banks' information rents change?
  - How will borrower switching and interest rates change?
  - What are the welfare implications?

Hard and Soft Information

- Not all information can be shared to outside banks: **hard vs. soft** information

Hard and Soft Information

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- An important distinction: (Petersen 2004)
  - Hard information can be communicated: e.g., previous default by borrower
  - Soft information cannot be easily shared: e.g., opinions, honesty, judgement on relations with clients, suppliers, etc...
  - Only the first type is shared through credit bureaus.

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- Answer

  The bank will acquire more *soft information* (higher monitoring).

  — Soft information substitutes for lost source of hard information

  - Confirm theoretically and empirically

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    - Do not share hard information: outside bank faces only average quality
      $\Rightarrow$ defaulting borrowers get average outside rate, and switch more
      - monitoring wasted under no sharing: *less soft information*

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$\Rightarrow$ Welfare increase

Related Literature

- Recent work on hard information sharing:
  - Hauswald and Marquez (2003)
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- Impact of increased competition
  - Boot and Thakor (2000), Hauswald and Marquez (2006)

▶ This paper: Impact of information sharing

Setup

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- Two types of borrowers (continuum of size N):
  - High type: probability of success $p_H = p(> 0)$. Proportion λ in the population.
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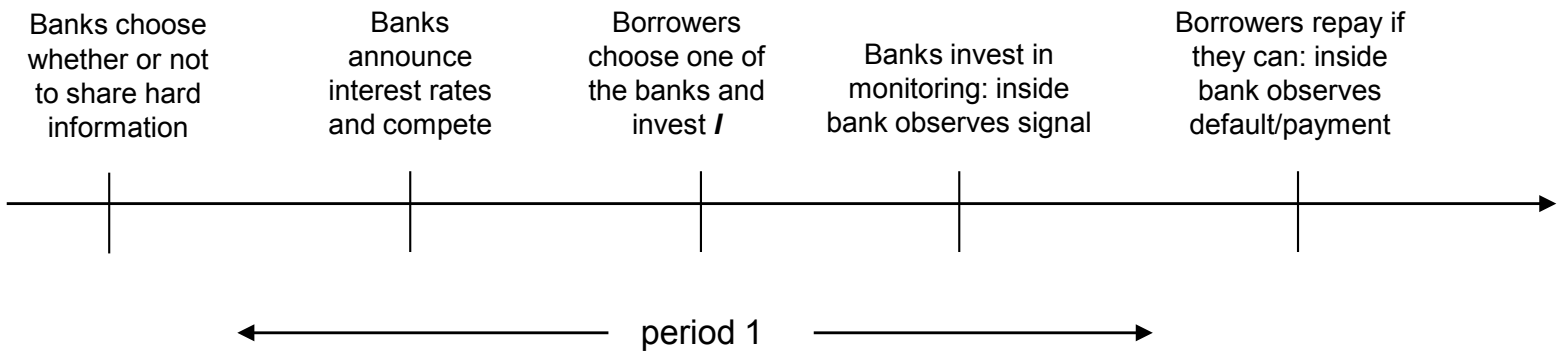
- ϕ - **informativeness** of the soft signal G or B
- Signal is costly: $c(\phi) = c(\phi - 0.5)^2$

Timing

First period



– Banks acquire both hard and soft information

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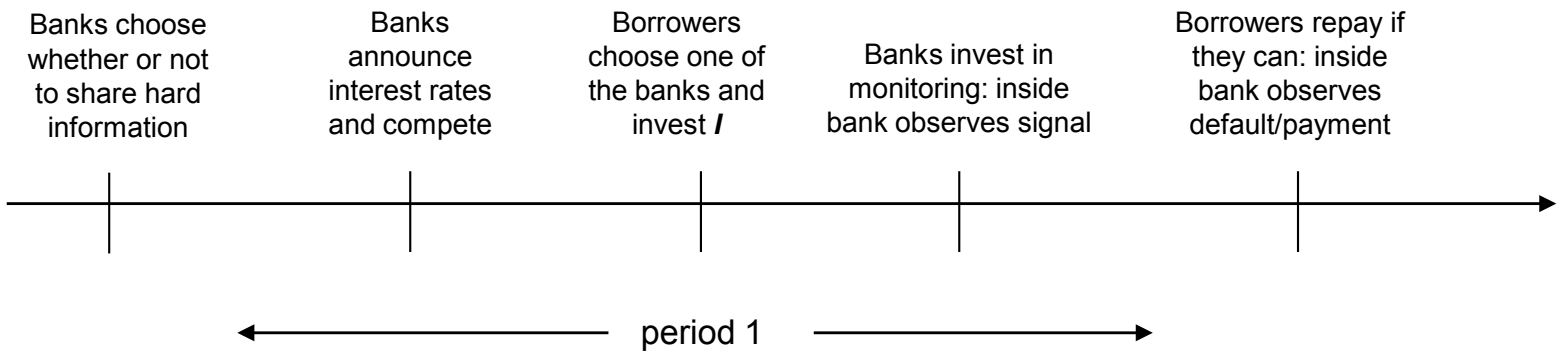

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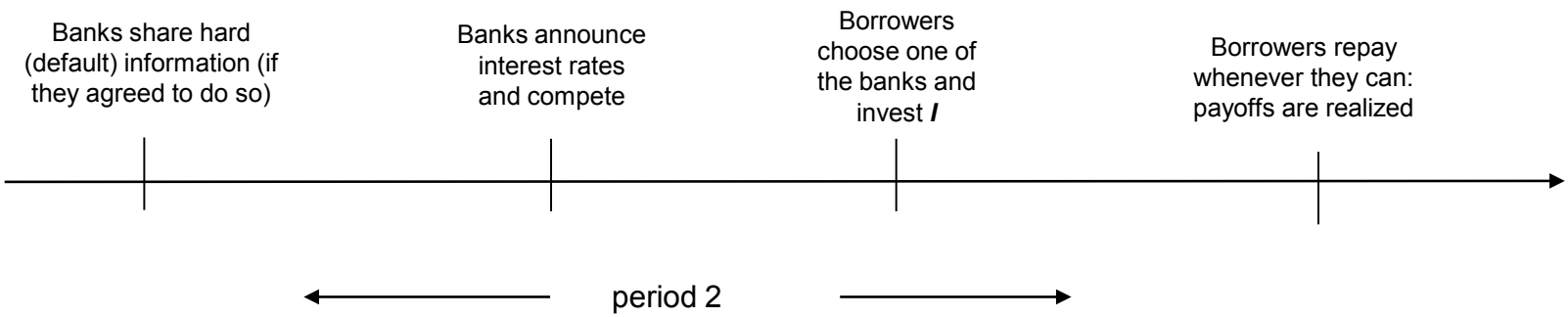
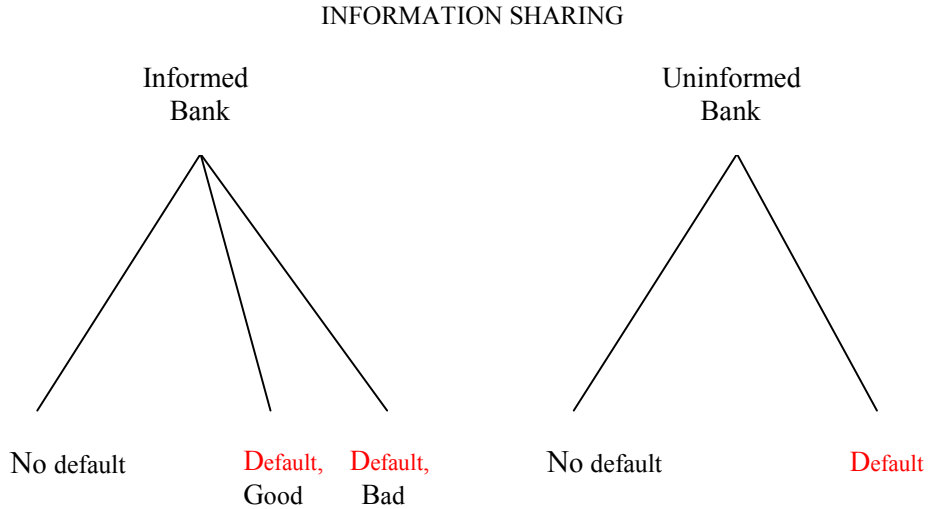
Second period



– Perfect Bayesian Equilibrium under sharing/no sharing.

Bidding: Information Sharing



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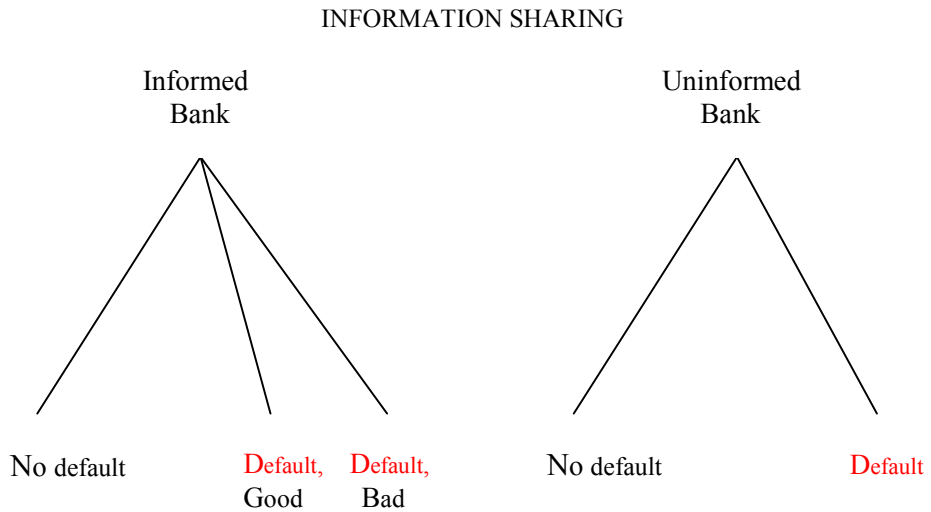
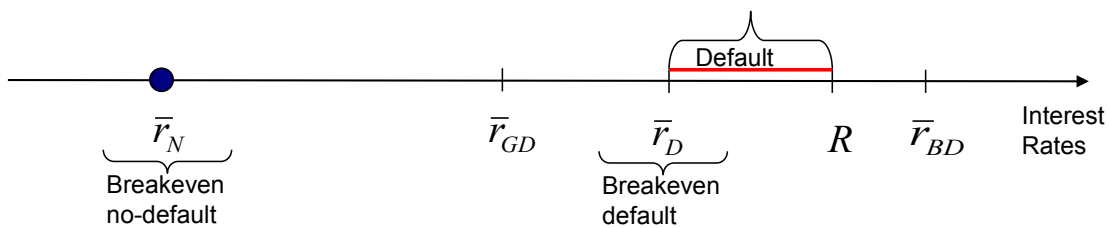


- Mixed strategy (von Thadden 2004)



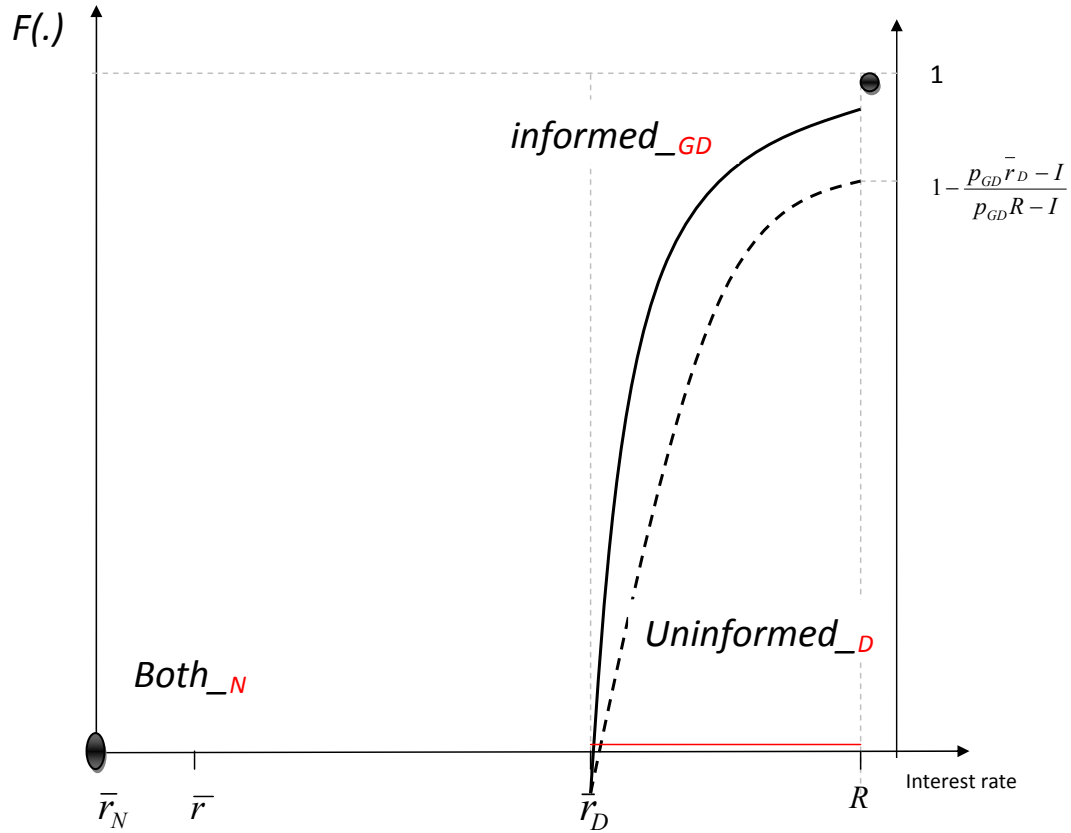
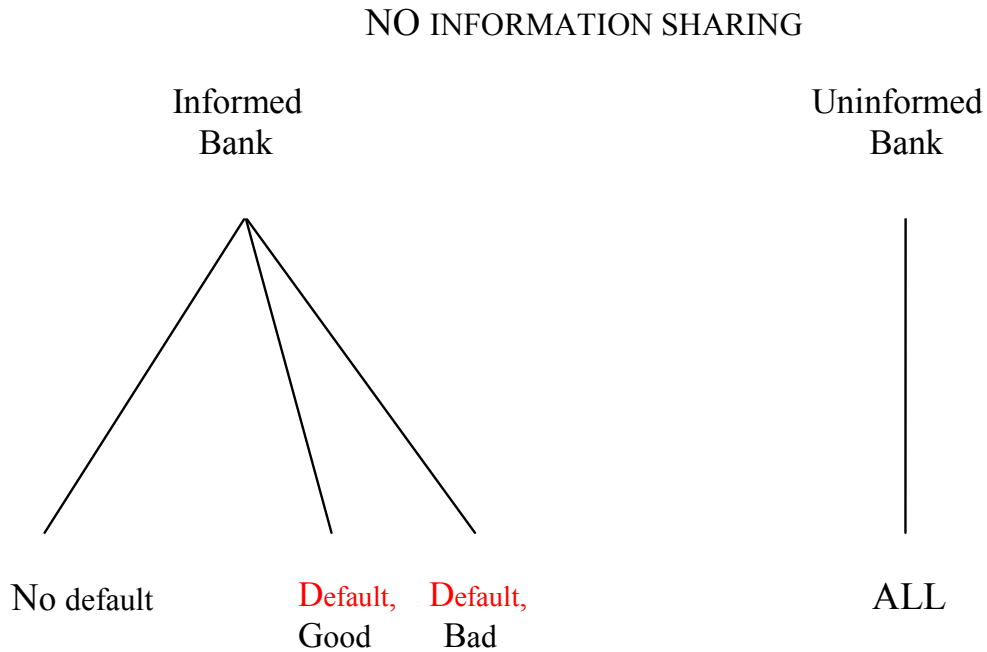


Figure: Interest rate strategies; information sharing

No information sharing

- Uninformed bank has no information



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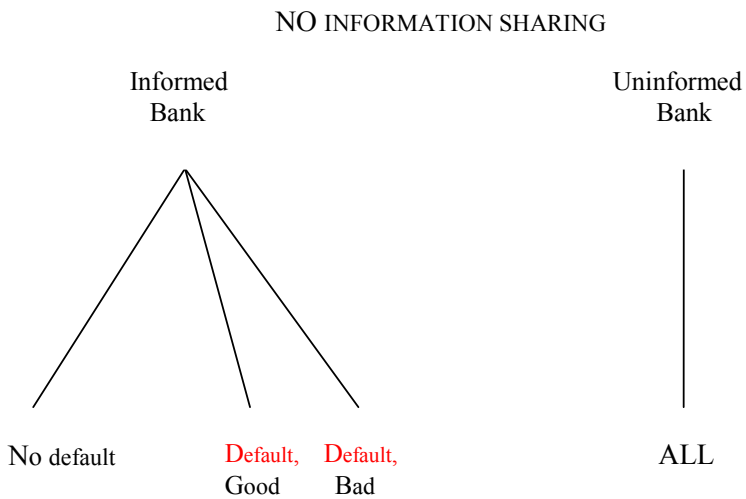
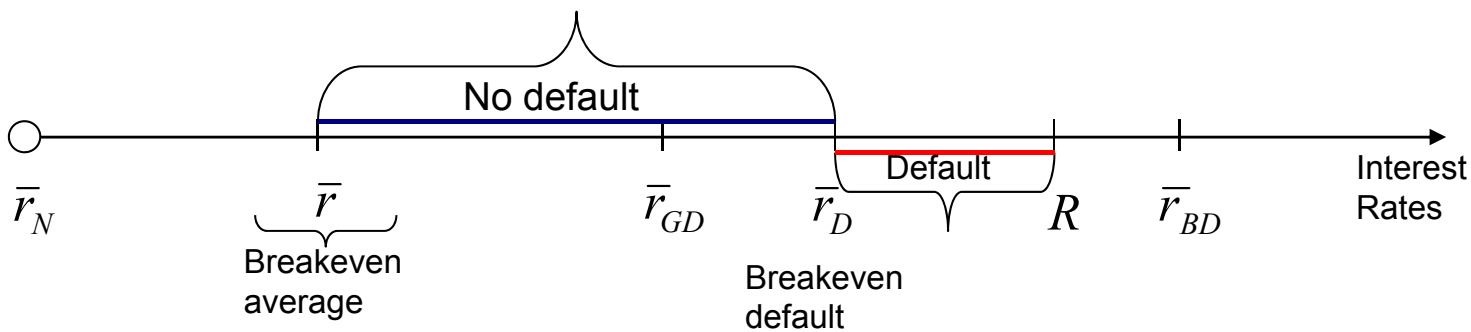


- Two sources of profits



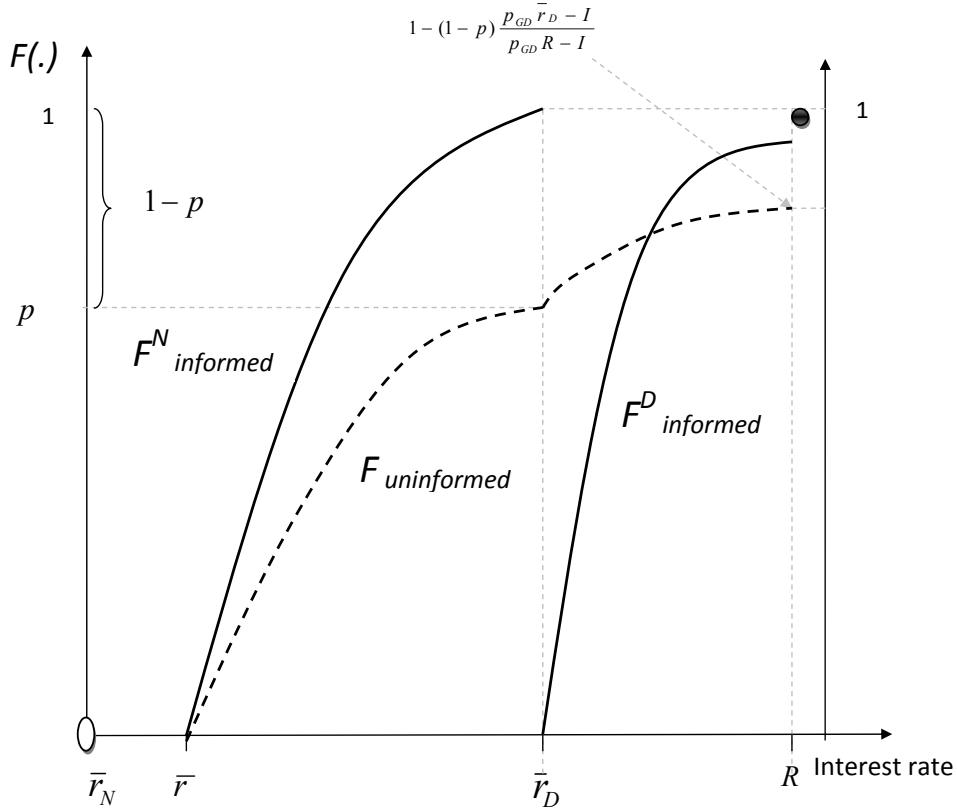


Figure: Interest rate bidding strategies; No information sharing

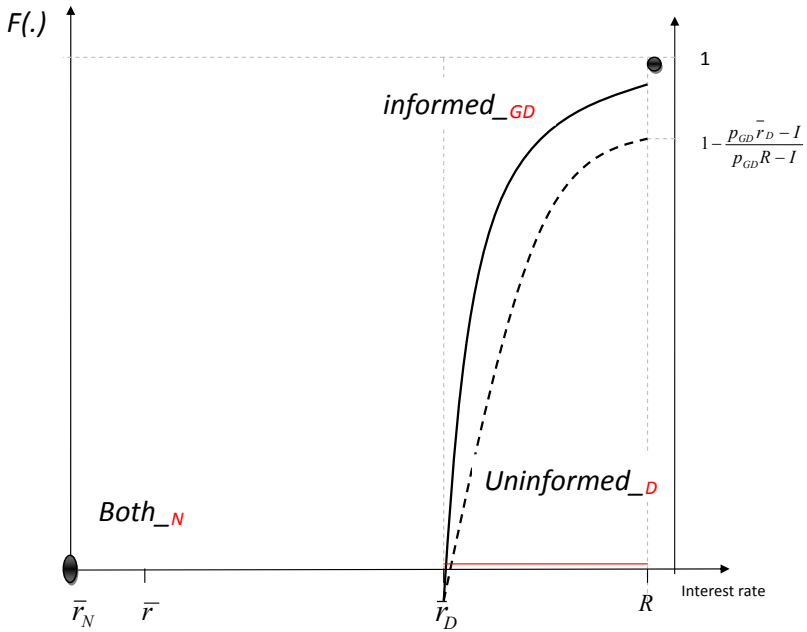


Figure: sharing

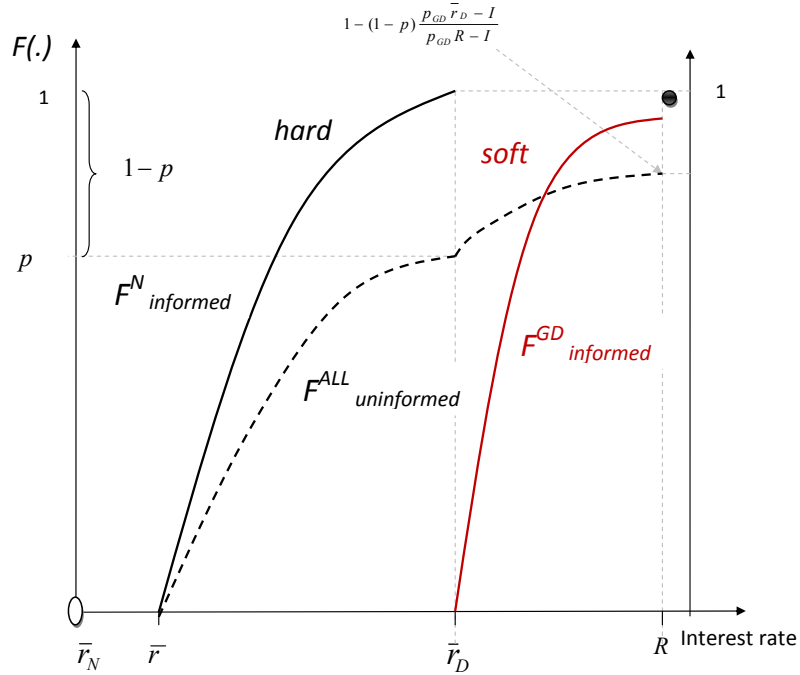


Figure: no sharing

- Sharing profits: $\pi_{share} = \underbrace{I(1-\lambda)(2\varphi-1)}_{\text{Soft Info rents}} - c\varphi^2$
- No sharing profits:
  $\pi_{noshare} = \underbrace{Ip(1-\lambda)}_{\text{Hard Info rents}} + I(1 \underbrace{-p}_{\text{switch}}) \underbrace{(1-\lambda)(2\varphi-1)}_{\text{Soft info rents}} - c\varphi^2$

Optimal soft information

- $c(\varphi) = c(\varphi - 0.5)^2$
  - Optimal Level Sharing

$$\varphi_{share} = 0.5 + \frac{I}{c}(1 - \lambda)$$

  - Optimal Level No Sharing

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- **Proposition** *Marginal returns to monitoring are higher under information sharing. Banks invest more in monitoring.*

$$\varphi_{share} > \varphi_{noshare}$$

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- $\pi_{share} > \pi_{noshare}$ if c is low enough

Results

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  - higher marginal returns
  - substitution
  - Relationship banking

Data

- Firm level survey data: EBRD **BEEPS** 2002, 2005(Brown et al. 2009)
- Covering 26 economies: changes in information sharing
- More soft information
  - In countries with established credit bureaus (hard information sharing)
  - Introduce three measures of soft information acquisition (borrower level)

Soft information=Days. Number of days used to approve a loan application

OLS estimation results			
Dependent variable	**Days** needed until loan approved		
	(1) base	(2) small	(3) large
hard information	**3.523****	**4.065*****	1.689
	(1.489)	(1.280)	(3.079)
creditor rights	-6.405**	-8.881***	4.420
	(2.886)	(2.631)	(5.595)
concentration	-0.215	-0.217	-0.2100
	(0.153)	(0.131)	(0.300)
bank reform index	-1.426	-0.368	-10.334
	(5.685)	(5.539)	(8.958)
foreign bank share	0.381***	0.366***	0.498*
	(0.142)	(0.134)	(0.230)
non performing loans	0.271*	0.238*	0.387
	(0.131)	(0.112)	(0.240)
R-squared	0.12	0.10	0.22
Number of obs.	2064	1638	426

- Hard information=index of information sharing depth (0-5)

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- Does your firm have a Checking account (yes/no)

Soft information=React. *If you default, what will your bank do? sue you(1), increase rate(2), do nothing (3)*

OLS estimation results			
Dependent variables	**Reaction** *by bank to default*		
	(1) base	(2) small	(3) Large
hard information	**0.102*** **	**0.120*** **	0.030
	(0.039)	(0.044)	(0.056)
creditor rights	-0.056	-0.082	0.036
	(0.067)	(0.074)	(0.081)
bank reform index	-0.692***	-0.629***	-0.896***
	(0.175)	(0.194)	(0.231)
foreign bank share	0.013***	0.013***	0.009
	(0.003)	(0.003)	(0.005)
R-Squared	0.04	0.03	0.08
Number of obs.	1937	1511	426

Switching

- Sign of soft information (good or bad)
  - Good signal borrowers switch less than bad signal borrowers
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- Soft signal (1): Bad(good)= "Problems (No problems) with non-financial factors"
- Soft signal (2): "Bad(good) management quality"

Switching from the main bank

Probit estimation results				
Dependent variables	**Switching** from the main bank			
	(1) Base	(2) Small	(4) Base	(5) Small
soft signal (1)	**-0.239***	**-0.274****	**-0.249****	**-0.289****
	(0.123)	(0.132)	(0.123)	(0.133)
soft signal (2)			-0.074***	-0.069***
			(0.026)	(0.021)
hard information	-0.011	-0.013	-0.008	-0.009
	(0.025)	(0.028)	(0.026)	(0.028)
bank reform index	0.256**	0.258**	0.242**	0.240*
	(0.119)	(0.130)	(0.119)	(0.131)
foreign bank share	-0.010***	-0.010***	-0.010***	-0.010***
	(0.002)	(0.002)	(0.002)	(0.002)
R-squared	0.02	0.02	0.02	0.02
Number of obs.	3531	2984	3490	2945

How problematic is Cost of capital

Probit estimation results				
Dependent variables	Cost of capital for the firm			
	(1) All	(2) Small	(3) All	(4) Small
soft signal (1)	**-2.771*** **	**-2.818*** **	**-2.775*** **	**-2.827*** **
	(0.102)	(0.110)	(0.103)	(0.111)
soft signal (2)			-0.040**	-0.040*
			(0.020)	(0.022)
hard information	-0.107***	-0.104***	-0.106***	-0.102***
	(0.020)	(0.022)	(0.020)	(0.022)
creditor rights	-0.096***	-0.087***	-0.092***	-0.082**
	(0.030)	(0.032)	(0.030)	(0.032)
bank reform index	0.679***	0.642***	0.659***	0.616***
	(0.092)	(0.099)	(0.092)	(0.100)
R-squared	0.11	0.11	0.11	0.11
Number of obs.	3643	3102	3601	3062

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- Structure of the banking system:
  - Will relationship banking survive competition?
  - Yes! The focus on it will increase (Boot and Thakor 2000).
- Borrower interest rates and switching.
  - Overall inconclusive.

Summary

- Higher investment in soft information when hard information is shared.
- This is because the marginal benefit from investing in soft information is higher when hard information is shared.
- More accurate credit decisions, higher welfare