
Bank Ownership Type and Banking Relationships

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Motivation

- Banking relationships play a key role in resolving information problems and reducing financial market imperfections.
- Few studies have directly addressed the role of bank ownership type (foreign, state owned and private domestic banks) on banking relationships.
- Also, few studies are applied to data on developing countries, where relationships may be very important because of financial system inadequacies:
 - Underdeveloped capital markets.
 - Inadequate legal / regulatory infrastructures.
 - Fragile banks and financial systems.

Summary

Using data for 3,422 non-financial Indian firms for the year 2001:

1. We test for the kind of firms that establish relationships with the different bank ownership types (foreign-owned, state-owned and private).
2. We investigate the impact of bank ownership type on the likelihood of multiple banking and on the number of banking relationships.
3. We investigate the impact of bank ownership type on the likelihood of diversification across bank ownership types.

Summary (cont.)

1. Types of firms that establish relationships with the different bank ownership types:

Hypotheses

- a) Foreign banks most likely to serve transparent firms (large, listed, foreign firms).

Rationale: comparative advantage at processing hard information.

Results: ✓

- b) State-owned banks may have banking relationships with small firms with limited credit access, state-owned firms or rural firms.

Rationale: comply with mandate.

Results: ≈

Summary (cont.)

2. Likelihood of multiple banking and the number of banking relationships.

Hypotheses

- a) Firms with relationships with foreign banks may be more likely to maintain multiple relationships.

Rationale: Extend concept of fragility beyond financial performance.

Relationships with foreign banks might be perceived as weaker because foreign banks have weaker ties to nation, greater number of alternative business opportunities and can easily exit the market.

Results: ✓

- Firms banking with state-owned banks are less likely to have multiple relationships

Rationale: relationships with state-owned banks are perceived as sturdy.

Fear of withdrawal of services is less of a concern because of government support.

Results: ✓

Summary (cont.)

3. Likelihood of diversification across bank ownership types.

Hypotheses

- a) Firms banking with foreign banks are more likely to diversify relationships across bank ownership types.

Rationale: same as for multiple banking.

Results: ✓

- Firms with state-owned banking relationship are less likely to diversify.

Rationale: same as for multiple banking.

Results: ✓

Literature Review

Studies on banking relationships:

- Focus on relationship lending to informationally opaque firms.
 - Large banks generally base their decisions on hard information and tend not to lend to opaque firms.
 - E.g., Cole, Goldberg, and White (2004); Berger, Miller, Petersen, Rajan, and Stein (2005).

- Investigate the impact of banking relationships on credit availability and contract terms.
 - Credit availability increases but contract terms do not necessarily improve.
 - E.g., Petersen and Rajan (1994,1995); Berger and Udell (1995); Cole (1998); Elsas and Krahen (1998); Harhoff and Körting (1998); Machauer and Weber (2000).

Literature (cont.)

Studies on performance effects of bank ownership types:

Findings on foreign banks:

- Greater efficiency and more competitive national banking system in developing countries.
 - See Claessens et al. (2001), Bonin et al.(2004), Claessens and Laeven (2004), Martinez Peria and Mody (2004)
- Effect on credit availability is not clear.
 - See Clarke et al. (2002), Berger et al. (2001), Haber and Musacchio (2005), and Mian (2006).
 - For India, Gormley (2006) finds that foreign bank entry had a negative impact on access to credit.

Findings on state-owned banks:

- Exhibit low efficiency and high nonperforming loans.
- Lend to politically connected firms in particular during elections (see Dinc, 2005; Cole, 2004)
- Have a negative impact on financial development (Caprio et al., 2001; La Porta et al., 2002; Beck et al., 2004; Berger et al., 2005).

Literature (cont.)

Studies on Multiple Banking Relationships and Motives:

- 1) Because one bank cannot provide all the needs of a firm.
 - Evidence that the likelihood of multiple banking relationships increases with firm size (see Detragiache et al., 2000; Ongena and Smith, 2000; Berger et al., 2001; Farinha and Santos, 2002).
- 2) To avoid hold up problems (see Sharpe, 1990; Rajan, 1992; Von Thadden, 1992; Boot, 2000)
 - The likelihood of a firm switching from a single relationship to a multiple one increases with the duration of that relationship. (Farinha and Santos, 2002).
 - Contrary to what is expected, a cross country study finds that firms maintain a higher number of relationships in unconcentrated banking sectors (Ongena and Smith, 2000).
- 3) In response to the “soft-budget constraint” problem.
 - Ongena and Smith (2000) find a higher number of banking relationships in countries with inefficient judicial system and poor enforcement property rights.

Literature (cont.)

- 5) Because of the costs and benefits to the firm from bank monitoring (Carletti, 2004).
- 6) To insure themselves against a premature withdrawal of services due to financial distress.
 - Detragiache et al.(2000) - bank fragility has a negative effect on the likelihood of borrowing from multiple banks but positive impact on the number of relationships.
 - Berger et al. (2001) - the likelihood of multiple banking increases with fragility
 - Ongena and Smith (2000) – no consistent impact of fragility on multiple banking.

Our hypotheses about the effects of bank ownership type on multiple relationships and diversification are extensions of this last motive but we apply a broader notion of fragility.

The Indian Banking Sector

Banks

State Bank of India & associates: state-owned banks in operation since 1955 with the purpose of serving rural and small clients.

Nationalized banks: taken over by government in 1969 and 1980 to redirect credit to underserved sectors. Still, retain some private management and staff.

Private Indian Banks: mostly created after 1990. 25 established between 1990-2000.

Foreign Banks: most entered after process of liberalization that began in 1990s. Operate local branches and until changes in 2002 most did not purchase shares in Indian banks due to restrictions on % ownership and control rights. Between 1994-2000, 21 foreign banks were established.

The Indian Banking Sector (cont.)

| | # Banks | # Branches | # Accounts | Total Deposits (million US \$) | Total Assets (million US \$) |
|--------------|---------|------------|------------|-----------------------------------|---------------------------------|
| Foreign | 46 | 251 | 26,830 | 12,544 | 21,579 |
| SBI | 8 | 13,550 | 989,850 | 66,146 | 85,381 |
| Nationalized | 20 | 32,579 | 2,346,410 | 115,979 | 132,856 |
| Private | 36 | 5,524 | 290,800 | 28,963 | 34,625 |

Data as of 2001

- Foreign banks are most numerous, but they have relatively few branches and accounts and also fewer deposits.
- Nationalized banks are the largest type as measured by number of branches, accounts, deposits and assets.
- State-owned banks (nationalized + SBI) dominate the banking sector with about 80% of deposits and assets.

Data

- Data on firms and names of banks with which they have relationships come from *Prowess*, an electronic database produced by the Center for Monitoring the Indian Economy.
 - Full database includes balance sheet, income statement and other financial information for over 7000 firms over time.
 - Firms in the data base are (a) listed on a national exchange, (b) all unlisted public companies with sales or assets greater than \$4.23 million (at 2001 exchange rates).
 - Dropping financial firms, firms with missing financials, firms with no banking relationships or with relationships with unregulated financial institutions we end up with 3, 422 firms.
- Balance sheet and income statement data on banks comes from the Reserve Bank of India.
- Local market characteristics such as the number of banks in state come from RBI branching statistics and data on population density come from Census India 2001.

Data

| Variable | Mean | Mn. | Max. |
|--|--------|------|----------|
| Panel A: Firm Characteristics | | | |
| <i>Firm Size and Age</i> | | | |
| Log Assets | 277.95 | 0.02 | 54918.89 |
| Log Age | 26.62 | 2 | 178 |
| <i>Firm Access to External Finance</i> | | | |
| Listed | 0.25 | 0 | 1 |
| Business Group | 0.36 | 0 | 1 |
| <i>Firm Ownership</i> | | | |
| Foreign firm | 0.06 | 0 | 1 |
| State-owned firm | 0.04 | 0 | 1 |
| <i>Firm Operations</i> | | | |
| ROA | 0.04 | -0.5 | 0.39 |
| Leverage | 0.39 | 0 | 2.45 |
| R&D expenses | 0.16 | 0 | 43.91 |

| Variable | Mean | Mn. | Max. |
|---|---------|----------|-----------|
| Panel B: Banking Relationships and Relationship Bank Characteristics | | | |
| <i>Banking Relationships</i> | | | |
| Multiple banks dummy | 0.6 | 0 | 1 |
| Number of banking relationships | 2.73 | 1 | 26 |
| Diversification | 0.49 | 0 | 1 |
| <i>Relationship Bank Size and Fragility</i> | | | |
| Bank size | 839,418 | 2,950.46 | 3,156,442 |
| Bank liquidity | 0.19 | 0.04 | 0.55 |
| <i>Relationship Bank Ownership</i> | | | |
| At least 1 Foreign | 0.19 | 0 | 1 |
| At least 1 Nationalized | 0.73 | 0 | 1 |
| At least 1 SBI | 0.49 | 0 | 1 |
| At least 1 Private | 0.33 | 0 | 1 |

Methodology

Model 1: Analysis of the determinants of the ownership type of the firm's banking relationships.

Bank

ownership type = f {Firm characteristics, Local market characteristics}



Dummies = 1 if one or more of relationships banks is of a given type and 0 otherwise



Firm size, age, whether listed, whether in a business group, ownership type, financial performance (return on assets, debt to assets, R&D expenses), regional location, industry type.



Presence of a foreign bank and population density in the firms' state

Probit Model to determine the likelihood that at least 1 bank is foreign, SBI, nationalized or private.

Goal: test whether foreign banks tend to serve more transparent firms, while state-owned banks serve small and rural clients

Methodology (cont.)

Model 2: Test for effect of bank ownership type on whether the firm has multiple banking relationships and on the number of these relationships.

- Estimation includes a two-step Heckman selection model to study the likelihood of multiple relationships and a Poisson model to study the number of banking relationships.
- Four separate models are estimated constraining all coefficients except for those on bank ownership and tests for equality of coefficients on bank ownership types are conducted.

Multiple Relationships = g {At least one bank of ownership type i , where i =foreign, SBI, nationalized, or private, Firm characteristics, Bank fragility indicators, Local market characteristics}

↓
Dummy or actual number

Goal: test the hypotheses that firms with foreign banks tend to have multiple and more numerous relationships, while firms banking with state-owned banks are the least likely to do so.

Methodology (cont)

Model 3: Investigates the effect of bank ownership type on whether firms diversify the ownership type of their banking relationships.

- 4 probit models for separate bank ownership types constraining remaining regressors to have same coefficient.

Diversification=



Dummy for whether firm has relationships with banks of different ownership types

h {At least one bank of ownership type *i*, where *i*=foreign, SBI, nationalized, or private, Firm characteristics, Banks fragility indicators, Local market characteristics}

Goal: to test whether firms that bank with foreign banks are more likely to diversify across ownership types, while firms banking with state-owned banks are less likely to do so.

Results: Determinants of Bank Ownership Type

Foreign banks tend to provide banking services to transparent firms. SBI not found to be more likely to serve small, young and private firms, but appears to serve rural and government-owned firms. Nationalized: not likely to serve small, opaque firms, but more likely to serve low profitability firms.

| | -1 At least one bank foreign | -2 At least one bank SBI | -3 At least one bank nationalized | -4 At least one bank private |
|-------------------------------------|---------------------------------|-----------------------------|--------------------------------------|---------------------------------|
| <i>Firm characteristics</i> | | | | |
| Log of assets | 0.046 [8.06]*** | 0.068 [9.16]*** | 0.023 [3.73]*** | 0.063 [8.99]*** |
| Log of age | -0.007 [0.75] | 0.026 [1.95]* | 0.046 [4.02]*** | -0.064 [5.12]*** |
| Listed | 0.063 [3.51]*** | 0.06 [2.36]** | 0.082 [3.84]*** | 0.103 [4.35]*** |
| Business group | 0.054 [3.38]*** | 0.044 [2.04]** | -0.007 [0.41] | -0.005 [0.27] |
| Foreign-owned | 0.331 [10.59]*** | -0.044 [1.13] | -0.118 [3.38]*** | -0.027 [0.78] |
| Government-owned | -0.09 [2.77]*** | 0.382 [6.57]*** | -0.012 [0.26] | -0.162 [3.68]*** |
| Return on assets | 0.056 [0.80] | 0.057 [0.61] | -0.262 [3.33]*** | 0.118 [1.35] |
| Debt to total assets | -0.112 [3.28]*** | 0.078 [2.69]*** | 0.006 [0.24] | -0.053 [1.85]* |
| <i>Local market characteristics</i> | | | | |
| Log population density | 0.012 [1.32] | -0.033 [2.59]*** | 0.017 [1.56] | 0.028 [2.21]** |
| At least one foreign bank present | 0.102 [2.49]** | -0.084 [1.54] | 0.059 [1.19] | 0.117 [2.39]** |
| Observations | 3422 | 3422 | 3422 | 3422 |
| Pseudo R-squared | 0.17 | 0.1 | 0.04 | 0.09 |

Results: Multiple Banking

Firms with relationships with foreign or private banks are more likely to maintain multiple banking relationship and have a higher number of relationships relative to firms banking with state-owned banks.

| | 1st stage Heckman | | 2nd stage Heckman | | Poisson | |
|--|--------------------------------|----------------------|---------------------------------|---------------------|---------------------------------|---------------------|
| | Likelihood of multiple banking | | Number of banking relationships | | Number of banking relationships | |
| | -1 | -2 | -3 | -4 | -5 | -6 |
| <i>Relationship bank characteristics</i> | | | | | | |
| Average log size of relationship banks | -0.019 [4.19]*** | -0.007 [1.54] | -0.41 [4.07]*** | -0.256 [4.02]*** | -0.138 [10.34]*** | -0.113 [8.54]*** |
| Average liquidity of relationship banks | -0.62 [7.56]*** | -0.695 [8.39]*** | -9.283 [4.36]*** | -7.27 [5.59]*** | -2.253 [9.48]*** | -2.28 [10.10]*** |
| At least 1 bank foreign | | 0.333 [38.5]*** | | 3.864 [11.61]*** | | 1.481 [16.89]*** |
| At least 1 bank SBI | | 0.193 [17.51]*** | | 2.442 [11.22]*** | | 0.981 [17.19]*** |
| At least 1 bank nationalized | | 0.17 [17.34]*** | | 2.04 [10.84]*** | | 0.788 [17.97]*** |
| At least 1 bank private | | 0.309 [34.9]*** | | 3.609 [12.3]*** | | 1.394 [20.72]*** |
| <i>Difference tests on relationship bank types</i> | | | | | | |
| At least 1 bank foreign - At least 1 bank SBI | | 0.139 [8.73]*** | | 1.422 [5.09]*** | | 0.501 [4.99]*** |
| At least 1 bank foreign - At least 1 bank nationalized | | 0.163 [10.05]*** | | 1.824 [6.71]*** | | 0.693 [7.67]*** |
| At least 1 bank foreign - At least 1 bank private | | 0.024 [2.83]*** | | 0.255 [0.95] | | 0.087 [0.63] |
| At least 1 bank SBI - At least 1 bank nationalized | | 0.024 [2.00]** | | 0.401 [2.14]** | | 0.193 [2.82]*** |
| At least 1 bank SBI - At least 1 bank private | | -0.115 [8.47]*** | | -1.167 [4.89]*** | | -0.414 [4.99]*** |
| At least 1 bank nationalized - At least 1 bank private | | -0.139 [10.78]*** | | -1.568 [6.87]*** | | -0.606 [8.28]*** |

Results: Diversification

Firms that bank with foreign banks are more likely to diversify relative to firms banking with state-owned banks.

| | Probit model | | Heckman Probit Model (2 nd stage) | |
|--|---------------------|----------------------|--|----------------------|
| | All firms | | Firms with multiple banks | |
| | -1 | -2 | -3 | -4 |
| <i>Relationship bank characteristics</i> | | | | |
| Average log size of relationship banks | -0.003 [0.58] | 0.012 [2.13]** | 0.013 [2.45]** | 0.049 [5.29]*** |
| Average liquidity of relationship banks | -0.384 [4.15]*** | -0.492 [5.12]*** | -0.083 [0.78] | 0.177 [1.03] |
| At least 1 bank foreign | | 0.459 [18.41]*** | | 0.408 [16.18]*** |
| At least 1 bank SBI | | 0.302 [22.24]*** | | 0.327 [26.01]*** |
| At least 1 bank nationalized | | 0.227 [19.39]*** | | 0.22 [17.46]*** |
| At least 1 bank private | | 0.438 [27.50]*** | | 0.405 [19.27]*** |
| <i>Difference tests on relationship bank types</i> | | | | |
| At least 1 bank foreign - At least 1 bank SBI | | 0.157 [9.24]*** | | 0.081 [6.31]*** |
| At least 1 bank foreign - At least 1 bank nationalized | | 0.232 [11.92]*** | | 0.188 [11.28]*** |
| At least 1 bank foreign - At least 1 bank private | | 0.021 [2.71]*** | | 0.003 [1.95]* |
| At least 1 bank SBI - At least 1 bank nationalized | | 0.075 [5.62]*** | | 0.107 [6.10]*** |
| At least 1 bank SBI - At least 1 bank private | | -0.136 [10.33]*** | | -0.078 [6.20]*** |
| At least 1 bank nationalized - At least 1 bank private | | -0.211 [15.21]*** | | -0.185 [13.18]*** |

Conclusions

- We formulate and test hypotheses about the links between bank ownership and relationships.
- Results are consistent with all of the hypotheses with regard to foreign banks.
- Firms with relationships with foreign banks are:
 - More likely than other firms to be transparent
 - To have multiple banking relationships
 - To diversify across bank ownership types

Conclusions

- Data are also consistent with the hypotheses that firms with relationships with state-owned banks are less likely than other firms:
 - To maintain multiple banking relationships.
 - To diversify across ownership types.
 - However, there is only mixed support for the hypothesis that state-owned banks establish relationships with the kinds of firms they are mandated to serve.
 - State-owned banks do have more relationships with state-owned firms and rural firms, but not with smaller, more opaque firms.