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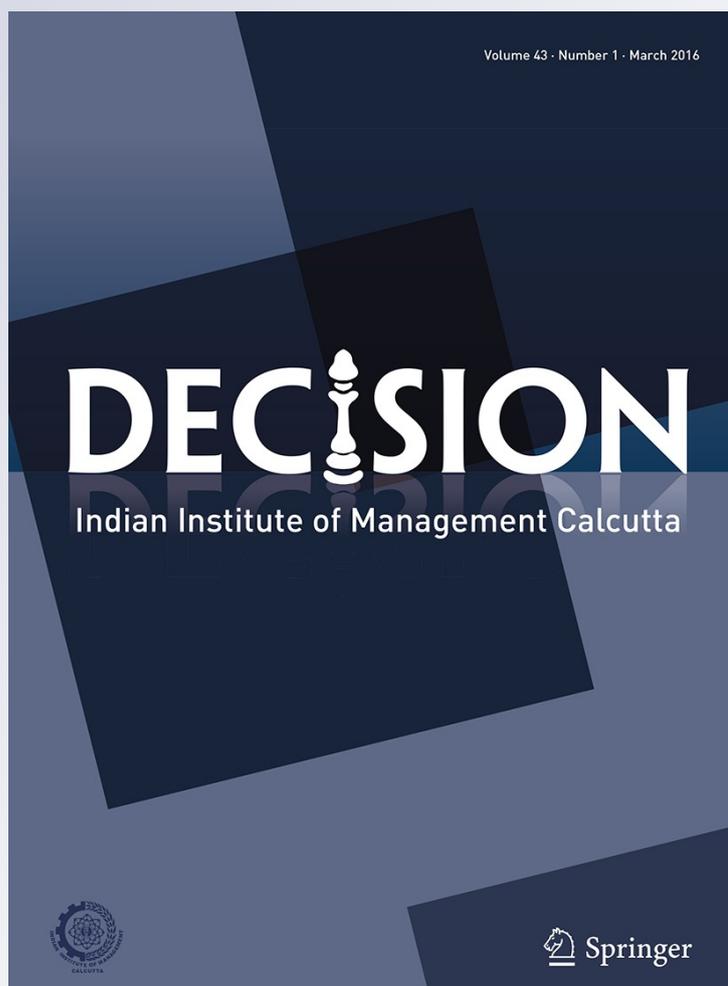
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Small business, lending relationships and crisis: evidence from Indian micro data

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Abstract Using data on Indian small and medium enterprises (SMEs) for 1996–2010, the paper investigates four issues: (a) the factors influencing lending relationships; (b) the cost of borrowings; (c) the effect of the financial crisis and (d) the impact of main bank ownership on SMEs. The findings indicate that small business typically maintain multiple banking relationships, which provide benefits in terms of lower borrowing costs. In addition, the analysis also suggests that firms associated with state-owned main banks are less likely to forge multiple lending relationships. Finally, the results indicate that the number of banking relationships drop during crisis period, especially for state-owned banks.

Keywords SMEs · Bank ownership · Lending relationship · Borrowing costs · Crisis · India

JEL Classification G21 · L25

Introduction

Small and medium enterprises (SMEs) have played a significant role all over the world in fostering

economic development of countries. It is often considered the nursery of entrepreneurship, driven by creativity and innovation, with a significant contribution to the country's GDP, manufacturing output, exports and employment generation (Ayyagari et al. 2007). However, a major constraint facing such enterprises, especially in emerging economies, is the paucity of credit, especially from banks. This assumes all the more relevance in bank-based financial systems, simply because bank finance is typically the mainstay of funding for such entities.

In this paper, we address questions related to the issue of firms' bank lending relationships, and empirically investigate these determinants for Indian SME firms. In particular, we seek to address the following questions. How many bank relationships do Indian SMEs typically maintain? Which types of firms have multiple relationships? What factors determine whether firms maintain single or multiple banking relationships? What factors drive firms' borrowings costs? And finally, does the cost of borrowing for SMEs differ during periods of crisis?

A natural explanation for the existence of firm–bank relationships is that banks serve as delegated monitors (Diamond 1984) and are well equipped to address asymmetric information problems (Ramakrishnan and Thakor 1984). In addition, banks have expertise in loan screening which enables them to learn about the quality of their borrowers, further allowing them to mitigate the asymmetric information problems.

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Given the value of firm–bank relationships, how many bank lending relationships do firms maintain? Do firms maintain single or multiple lending relationships? A disadvantage of a single lending relationship is that the bank might exploit its private information about the firm, increasing its rents and in turn generating negative effects for entrepreneurial activity (Sharpe 1990; Rajan 1992). Firms may, therefore, choose to maintain multiple bank relationships to avoid this “hold-up” problem (von Thadden 1995). Another reason for firms to initiate multiple relationships is to minimize the probability of having their finance cut off (Detragiache et al. 2000). A final explanation for firms’ multiple lending relationships is that banks themselves may require that certain firms (e.g., large exposures or financially distressed borrowers) spread their borrowing across other banks, to diversify the default risk.

India presents a compelling case among emerging markets for examining these issues in some detail. First, India is predominantly a bank-based economy and therefore, offers an ideal environment for studying the impact of lending relationships (Demirguc Kunt and Levine 2001). According to Mohan (2004), external financing in general and bank borrowings in particular, was the predominant source of finance for Indian corporates during 1997–98 to 2000–01. Subsequent analysis by Allen et al. (2012) also arrives at similar conclusions. Second, the database includes, in addition to firm financials, the ownership type of the firm and the names of banks with which the SME maintains relationships, listed in order of priority (main bank, second bank, etc.). Such a comprehensive and reliable corporate database over an extended time span makes it amenable to rigorous statistical analysis. Finally, as Berger et al. (2008) suggest, there are very few studies of bank–firm relationships which are based on developing countries, where lending relationships may be particularly important because of financial system inadequacies. And even fewer of them focus on the SME sector. By focusing on such relationships, the study is able to shed light on the issue of relationship lending in SMEs for a leading emerging economy.

The study contributes to the extant literature in a few important ways. First, it is one of the few studies to focus on relationship lending for SMEs for an emerging economy. Studies for the US find that large banks allocate a much lower proportion of their assets

to small business loans than small banks (Berger and Udell 1995; Strahan and Weston 1996). Other studies show that SMEs are less likely to receive loans from foreign banks, which are typically large (Berger et al. 2001; Mian 2006). Second, the study investigates the cost and availability of credit arising from lending relationship across firm ownership. In the case of China for instance, Chang et al. (2009) show state-owned banks typically rely on soft information while making credit assessment for state-owned firms. Third, the paper complements a growing body of empirical research that analyzes the impact global financial crisis and especially, the relevance of bank firm relationships in that milieu (de Mitri et al. 2010; Albertazzi and Marchetti 2010). And finally, our paper relates to the wider literature that examines SME financing from an emerging market perspective. Stephanou and Rodriguez (2008) find that in Colombia, institutional and policy constraints impede the growth of SME lending. Cross country analysis by Beck et al (2011) suggests that the enabling environment is more important than the size of the firm or bank ownership in shaping bank financing to SMEs. Our paper complements these findings by focusing on the factors affecting the number and probability of banking relationships.

The paper is organized as follows. In “SME policy in India” section, we briefly review the evolution of the SME policy in India. This is followed by a description of Indian banking with focus on SMEs. The database and the number of bank lending relationships and borrowing costs for Indian SMEs are discussed thereafter. “Empirical framework and hypotheses development” section identifies the hypotheses to be tested regarding the bank lending relationships with SMEs. The subsequent section discusses the results and robustness checks, followed by the concluding remarks.

SME policy in India

The promotion of SMEs has been an integral part of India’s development strategy. The foundations of the policy can be traced back to the Second Five Year Plan. In 1956, the government announced its second industrial policy which unambiguously chose equity as the guiding principle for small industry

development.¹ As the process of economic development led to a rebalancing of priorities, the policy focus with regard to SMEs were accordingly reoriented with focus on countering regional imbalances (1977), promoting ancillarization (1980), encouraging exports and dispersal in rural areas (1990) and subsequently, to promote small and tiny industries. During all these years, the definition of SMEs kept changing in tandem with changing ecosystem and the progress of the economy.

A turning point for the sector occurred in 1991 when, after pursuing four decades of controlled industrialization—protecting infant industry and supporting an import-substitution strategy—the economic reforms opened the sector to the forces of competition emanating from greater globalization of the economy. The new policy for small, tiny and village enterprises, announced in August 1991, sought to replace protection with competitiveness to infuse more vitality and growth to small enterprises in the face of increased competition. Supportive measures concentrated on improving infrastructure, technology and quality. A dedicated development bank, the Small Industries Development Bank of India (SIDBI), was set up in 1990 along with a technology development modernization fund to accelerate technical and financial services to the small-scale sector.

Subsequently, in 1999, the Ministry of Small and Medium Enterprises (MSME) came into being to provide focused attention to the development and promotion of the sector. The new policy package announced in 2000 sought to address the problems of credit, infrastructure, technology and marketing. A credit-linked capital subsidy scheme was launched to encourage technology upgradation in the SME sector and credit guarantee scheme was started to provide collateral free loans to micro and small entrepreneurs. Tax benefits for the sector were announced in the Federal Budget along with the introduction of a Market Development Assistance Scheme. Concurrently, in consultation with stakeholders, the list of products reserved for production in the sector was gradually reduced each year.

In 2006, the Micro, Small and Medium Enterprises Development (MSMED) Act, 2006 was passed, which sought to facilitate the development of these enterprises as also enhance their competitiveness. As per the Act, enterprises were broadly classified into manufacturing and services. Within each of these categories, the investment ceiling for classification of enterprises as 'micro', 'small' and 'medium' were delineated. The Act also provided for a statutory consultative mechanism at the national level with balanced representation of all sections of stakeholders, particularly the three classes of enterprises; and with a wide range of advisory functions. Establishment of specific funds for the promotion, development and enhancing competitiveness of these enterprises, notification of schemes/programs for this purpose, progressive credit policies and practices, preference in Government procurements to products and services of the micro and small enterprises, more effective mechanisms for mitigating the problems of delayed payments to micro and small enterprises and assurance of a scheme for easing the closure of business by these enterprises are some of the other features of the Act. From humble beginnings, the sector has come a long way. According to a recent report, the sector accounts for 8 % of the country's GDP, nearly half of its manufactured output 40 % of its exports. The sector also provides direct and indirect employment to nearly 60 million persons (Government of India 2010).

A snapshot of Indian banking with focus on SMEs

The Indian banking system is characterized by a large number of banks with mixed ownership. As at end-2010, the commercial banking segment comprised of 28 state-owned banks (SOBs) in which Government has majority ownership of over 51 %, 22 domestic private banks, and 32 foreign banks (which operate as branches). Total bank assets constituted over 90 % of GDP. State-owned banks had a 70 % share in banking sector assets in 2010, while domestic private and foreign banks constituted the remaining. In 1991, public sector banks share in the total assets of the banking system was a little over 90 % (See, for instance, Chairlone and Ghosh 2009).

Prior to the inception of financial sector reforms in 1992, the financial system essentially catered to the needs of planned development. A complex structure of interest rates prevailed, emanating from economic and

¹ The Second Five Year Plan (1956–61) had the following observation to make regarding SMEs: "small scale industries provide immediate large scale employment, offer a method of ensuing a more equitable distribution of national income and facilitate an effective mobilization of resources of capital and skill which might otherwise remain unutilised".

Table 1 Bank credit to SSI (Rs. billion)

Year	Gross non-food bank credit	Credit to SSIs	Gross non-food bank credit/GDP	Credit to SSI/gross non-food bank credit
1980	191	26	15.2	13.8
1992	1213	182	18.0	15.0
1996	2221	319	18.1	14.4
2000	3751	528	18.7	14.1
2005	9998	746	30.8	7.5
2010	30,400	2060	46.4	6.8
Compound growth (1996–2010)	20.6	14.3		

Source: based on Reserve Bank of India (2008)

social concerns of providing concessional credit to certain sectors. This, in turn, led to ‘cross subsidization’ which implied that higher rates were charged from non-concessional borrowers. On the expenditure front, rigid branch licensing policies and inflexible management structures constrained the operational independence and functional autonomy of banks and raised overhead costs. The net effect of these developments was distortion of interest rates and an inefficient allocation of bank credit.

The financial sector reforms initiated in 1992 was motivated by the underlying philosophy of making the banking system more responsive to changes in the market environment. Accordingly, over a period of time, interest rates were deregulated, competition was enhanced and the hitherto state-owned banking system was opened to private participation. Salient among the measures introduced included, *inter alia*, liberalizing the interest rate regime first on the lending and subsequently on the deposit side; infusing competition by allowing more liberal entry of foreign banks; introduction of prudential measures such as capital adequacy requirements, income recognition, asset classification and provisioning norms for loan classification; diversifying the ownership base of state-owned banks by enabling them to raise up to 49 % of their capital from the market and, mandating greater disclosures in the balance sheets as a move towards transparency and market discipline.

Notwithstanding this revised policy framework, one perennial concern for this sector has been the lack of availability to adequate and timely credit. According to the third All India Census of Small Scale Industries (SSIs),² out of the 11.5 million SSIs in India, over 99 % of

them are ‘micro’ enterprises (Government of India 2002) and less than 1 % of them are registered. Only around 10 % of the registered units have access to institutional finance. Over the period beginning 1996 through 2010, the compound growth rate of credit to SSIs has been around 14 % as compared to overall growth in bank credit of over 20 % (Table 1). In terms of shares as well, the share of bank credit to SSIs has halved from around 15 % in 1996 to 7 % in 2010 (Reserve Bank of India 2008). More recently, the International Finance Corporation (2012) has estimated the overall finance gap for SMEs to be of the order of Rs. 21 trillion (\approx USD 320 billion), of which the debt gap is estimated at Rs. 19 trillion (\approx USD 290 billion). Even if credit is available, the costs are prohibitively high in order to conduct any meaningful business. Evidence proffered by the National Small Industries Commission appears to indicate that, the costs of finance for SMEs are around 15–16 %, double the figures for manufacturing sector. The shortage of capital along with the high cost of credit has been the primary reasons behind the sickness. The Working Group Report on the rehabilitation of sick SSIs reports that, out of the total of over 1 million SSI (registered and unregistered) units, nearly 150,000 were identified as ‘sick’ (Reserve Bank of India 2008).³ As a result, SSIs have been forging relationships with banks in order to function as an ongoing concern.

³ The definition of ‘sickness’ as per the Report is the following: (a) any of the borrowal accounts of the unit remains substandard for more than six months i.e., principal or interest, in respect of any of its borrowal accounts has remained overdue for a period exceeding one year; or (b) there is erosion in the net worth due to accumulated cash losses to the extent of 50 % of its net worth during the previous accounting year; and (c) the unit has been in commercial production for at least 2 years.

² SSI is the manufacturing segment of SMEs, the other being services.

Data sources

For the purpose of the analysis, we use the *Prowess* database, generated and maintained by the Centre for Monitoring the Indian Economy (CMIE), a leading private think-tank in India. The *Prowess* is a firm-level database, akin to the *Compustat* database for US firms and the Financial Analysis Made Easy (FAME) database for UK and Irish public and private limited companies. This database is being increasingly employed for micro-level analysis on Indian firms (See, for example, Chibber and Majumdar 1999; Bertrand et al. 2002; Ghosh 2006; Goldberg et al. 2010; Khandelwal and Topalova 2011).

The database contains detailed information on the financial performance of companies culled out from their profit and loss accounts, balance sheets and stock price data. The database also includes information on the ownership type of the firm and the names of the banks with which the firm maintains relationships.

An important issue in this context is the composition of Indian SMEs. As observed earlier, the overwhelming majority of SMEs units are micro enterprises, with no balance sheet details. Even within this category, a significant proportion is very small and this includes cottage industries and artisans. After excluding the ‘services’ SMEs, a small proportion actually constitutes what can be termed as modern SSI sector, within which only a fraction are likely to be registered. Even within the registered category, only a handful is likely to have a well-defined balance sheet. Therefore, our number of SSIs would need to be viewed in this context.

Following from the definition of SSIs as provided by the Indian Ministry of Small-scale Industries, we choose all firms for the period 1996–2010.⁴ This provides us with a total of 336 firms. We subsequently delete several firms from the sample. First, we exclude 27 firms which do not report their main bank, lowering the sample firms to 309. Further, we drop SSIs which exhibit main bank relationships with development and

cooperative banks as well as off-shore foreign banks for some or all of the sample years, since comparable bank data on these institutions are not available (we use only domestic variables of foreign bank branches), further reducing the sample to 294. Finally, to moderate the influence of outliers, we winsorized all variables at 1 % at both ends of the sample. This filtering criterion reduces the final sample to 253 firms. Out of this, 15 (or, 6 %) are ‘micro’ enterprises, 44 % (or, 111) are ‘small’ enterprises and the rest are ‘medium’ enterprises. With an average of around 4.2 years of observations per firm, we have a maximum of 1065 firm-years. Owing to the use of lagged values of several of the independent variables, 1 year of observation is lost from the sample, lowering the maximum firm-years to 811. In Table 2, we provide the definitions of the relevant variables along with the summary statistics.

The relevant information on the average number of banking relationships is provided in Table 3. All the three SSI categories—micro, small and medium—appear to maintain multiple banking relationships. The number of banking relationships are the lowest for medium enterprises and the highest for small enterprises, with most firms having multiple (as opposed to single) banking relationships. In most cases, the differences in the number of banking relationships are statistically significant at the 0.01 level.

Another important focus of our analysis is the role of borrowing costs, an aspect widely cited as an important factor impeding the growth of the sector. We define the borrowing cost as:

$$r_{j,t} = \frac{IP_{j,t}}{D_{j,t}} \quad (1)$$

where IP is the aggregate interest paid on all credit facilities availed, including those from both banks and non-banks, and D is the total debt to credit institutions of firm j , which includes both bank and non-bank debt. As a result, $r_{j,t}$ represents the average interest paid by firm j at time t across all credit facilities, and not just bank debt. As a result, the average interest rate might over-(or, under state) the actual interest rate paid by the firm, depending on the share of bank debt in total debt. To the extent that bank debt comprises over 95 % of total debt over the sample period, it seems fair to assume that the average interest rate would be fairly representative of the actual interest rate on bank debt paid by firms (Vig 2013).

⁴ As per the definition, micro enterprises are those with investment in plant and machinery upto USD 50,000, for small enterprises these numbers are above USD 50,000 and upto USD 1,000,000, while medium enterprises are those with investments in excess of USD 1,000,000 and upto USD 2,000,000.

Table 2 Variables—summary statistics and data source

Variable	Empirical definition	Data source	No. obs	Mean (SD)
<i>Firm-specific</i>				
Relation 1	Dummy = 1, if a firm exhibits multiple banking relationships, else zero	Prowess	2517	0.738 (0.439)
Relation 2	Total number of banking relationships for a firm	Prowess	2517	3.446 (2.934)
Interest	Interest paid on all credit facilities by the firm/total credit facilities taken by the firm	Prowess	2856	0.113 (0.090)
Asset	log(total firm asset)	Prowess	3015	1.889 (0.613)
Age	Log (1 + number of years since incorporation)	Prowess	3665	1.181 (0.348)
RoA	Net profit/firm asset	Prowess	2998	0.112 (0.654)
Leverage	Borrowings/asset	Prowess	3015	0.304 (0.192)
Micro	Dummy = 1 if plant and machinery is upto USD 50,000	Prowess	1065	0.049 (0.217)
Small	Dummy = 1 if plant and machinery is above USD 50,000 and upto USD 1,000,000	Prowess	1065	0.495 (0.500)
Medium	Dummy = 1 if plant and machinery is above USD 1,000,000 and upto USD 2,000,000	Prowess	1065	0.455 (0.498)
<i>Industry-level</i>				
H-branch	Herfindahl index of bank branch concentration, where $H = \sum_j s_j^2$, where $s = (\text{number of branches of a bank in a year}/\text{total bank branches in that year})$	RBI	3825	0.057 (0.002)
<i>Macroeconomic</i>				
GDPGR	Growth rate of real GDP	RBI	3825	0.071 (0.018)
<i>Main bank characteristics</i>				
Bank asset	Log (total bank asset)	RBI	2517	4.902 (0.589)
CRAR	Total capital (tier-I + tier-II)/Bank asset	RBI	2517	0.118 (0.026)
NPL	Non-performing loans/total loans	RBI	2517	0.084 (0.064)
<i>Main bank ownership</i>				
State-owned	Dummy = 1, if a bank is state-owned, else zero	RBI	2517	0.863 (0.344)
Dom. private	Dummy = 1, if a bank is domestic private, else zero	RBI	2517	0.069 (0.254)
Foreign	Dummy = 1, if a bank is foreign, else zero	RBI	2517	0.067 (0.250)

Table 3 Single versus multiple banking relationship

	Overall period		Single relation	Multiple relation
	Firms (No. obs)	Mean (SD)	Firms	Firms
Micro	15 (26)	2.15 (1.46)	2	13
Small	111 (420)	2.68 (1.95)	53	58
Medium	128 (478)	2.42 (2.01)	78	93
<i>t test of difference</i>				
Micro versus small	1.573			
Micro versus medium	2.443**			
Small versus medium	-1.966*			

***, ** and * Statistical significance at 1, 5 and 10 %, respectively

Table 4 presents the average interest costs paid by firms for the entire period as also by single and multiple banking relationships. Without loss of

generality, it appears that costs are uniformly higher for single as compared to multiple banking relationships. To see this, note that for small enterprises, the

Table 4 Borrowing costs across lending relationships

	Overall period Mean (SD)	Single relationship Mean (SD)	Multiple relationships Mean (SD)	<i>t</i> test of difference Single versus multiple
Micro	0.103 (0.081)	0.112 (0.065)	0.064 (0.081)	2.164**
Small	0.108 (0.089)	0.150 (0.131)	0.121 (0.114)	2.184**
Medium	0.134 (0.088)	0.142 (0.094)	0.137 (0.092)	0.577
<i>t</i> test of difference				
Micro versus small	−2.314**	−2.349**	−2.806***	
Micro versus medium	−2.951***	−2.195**	−3.696***	
Small versus medium	1.885**	−0.619	1.739*	

***, ** and * statistical significance at 1, 5 and 10 %, respectively

overall costs of borrowing are around 10.8 %; the costs under multiple banking relationships is 12.1 % as compared to 15 % obtaining under single banking relationship. The difference is statistically significant at the 0.05 level.

Likewise, there are also significant differences in borrowing costs across firm categories. For the entire period, the overall costs of borrowing progressively increased as the size of the entity (micro, small and medium) increases and in most cases, these differences in borrowing costs are statistically significant. Only in case of small versus medium firms with single banking relationship, the differences in borrowing costs are not significant at conventional levels.

Besides data on firm-specific variables, we also use data on industry-level and macroeconomic variables which are sourced from the *Statistical Tables Relating to Banks in India*, an annual publication by the Indian central bank which provides bank-wise details on asset and liabilities as well as income–expenditure details. Finally, the macroeconomic variables are obtained from *Handbook of Statistics on Indian Economy*, a yearly publication by the Indian central bank which provides time-series data on macroeconomic variables.

Empirical framework and hypotheses development

The previous analysis appears to suggest that SMEs on average, maintain multiple banking relationships; the costs of banking relationships are lower for such firms. These univariate tests, however, do not take on board, the influence of various banking characteristics or for that matter, even banking industry features that might influence relationship lending.

As observed earlier, relationships might differ by firm size, since bigger firms might multiple banking relationships, which come at a lower cost. Likewise, the structure of banking markets might influence the need for firms to forge multiple banking relationships. Degryse et al. (2004) for instance, argue that consolidation in the banking sector in Belgium along with the increase in concentration might be of the reasons for the decline in the number of banks with which a firm maintains relationships. Ongena and Smith (2000) report findings from a cross country study containing 20 countries. They show that firms in countries with stable and unconcentrated banking systems maintain more bank lending relationships, while firms in countries with strong judicial systems and stronger creditor protection maintain fewer relationships. Pagano and Volpin (2006) provide some additional support for these findings, reporting a negative relationship between the number of bank relationships maintained by firms and the degree of shareholder legal protection. Taking these observations on board along with the previous discussion, we posit several hypotheses relating to relationship lending.

Information asymmetries are the most important concern for opaque firms. Small firms and especially SMEs are considered especially opaque owing to paucity of reliable information on their operations. As well, the opacity of smaller firms can also be traced to their less stringent reporting requirements. Another category of firms that are considered opaque is young firms, owing to the fact that banks are not able to obtain adequate information about these firms (Petersen and Rajan 1995; Farinha and Santos 2002). That being the case, it appears likely that these firms will be less able to attract bank finance. As a result, the

number of banking relationships for such firms would be lower.

Hypothesis I: Younger and smaller (and hence, informationally opaque) firms maintain fewer banking relationships.

Less profitable firms might be more inclined to engage in multiple bank relationships so as to increase the likelihood that at least one bank will obtain a positive signal about their creditworthiness and continue providing finance. Often, in case firms are associated with one bank, they may need to discontinue their investment projects, in case the lender experiences liquidity problems (Detragiache et al. 2000). In order to reduce this ‘liquidity risk’, firms may initiate multiple bank relationships, as the likelihood that all informed banks would be hit by a liquidity shock is lower than the likelihood that a single bank lender would be hit. This leads us to our second hypothesis:

Hypothesis II: Less profitable firms are more likely to opt for multiple lending relationships.

Previous studies for India had observed that firms with foreign main banks are more likely to have multiple banking relationships and importantly, foreign banks typically lend based on ‘hard’ information (Berger et al. 2008). In India, domestic banks are mandated to lend 7.5 % of their bank credit to SMEs, a requirement which is not applicable to foreign banks. Extant research for India also appears to suggest that state-owned banks rely more on ‘soft’ information as part of lending relationships as opposed to ‘hard’ information that is more typical of foreign banks. Taking these observations on board, it can be hypothesized that domestic banks are more likely to maintain lending relationships with SMEs as opposed to foreign banks. Accordingly, we postulate:

Hypothesis III: Bank ownership matters for relationship lending.

Prior evidence for India suggests that, on average, a firm maintains lending relationships with an average of 3.4 banks (Berger et al. 2008). A firm might opt for multiple bankers as a response to the hold-up problem. For example, a relationship bank might consider using the acquired private corporate information to extract rents, thereby distorting entrepreneurial incentives and causing inefficient investment choices (Sharpe 1990,

and Rajan 1992). By maintaining additional relationships, the firm can increase the likelihood that at least one informed bank would be able to continue providing services, reducing the costs of bankruptcy or financial distress for the firm.

Hypothesis IV: Costs of borrowing are lower for firms with multiple banking relationships.

To test the first three hypotheses, we employ regressions to examine the determinants of single *versus* multiple bank lending relationships. Accordingly, we postulate the following specification as given by Eq. (2):

$$\begin{aligned} \text{Multiple banking relationships (Dummy or Number)}_{j,t} \\ = \alpha_j + \gamma_1 X_{j,t-1} + \gamma_2 Y_t + \gamma_3 Z_t + \gamma_4 [\text{FC}]_t \\ + \gamma_5 [\text{MBC}]_{j,t} + \gamma_6 [\text{MBO}]_{j,t} + \mu_{j,t} \end{aligned} \quad (2)$$

In (2), the dependent variable takes a value of 1 if a firm has multiple banking relationships, else zero. The logit regression tests whether the independent variables exert a statistically significant impact on the estimated probability that the firm will have multiple lending relationships. The variables for which the sign is positive (and statistically significant) positively affect the probability that the firm has multiple relationships; for variables with negative signs, the logic is the reverse.

In (2), \mathbf{X} is a vector of firm-specific variables, such as firm size, age, profitability and leverage; \mathbf{Y} denotes the industry-level variables; \mathbf{Z} controls for the business cycle, such as GDP growth and \mathbf{FC} are the firm characteristics.⁵ We run the model with and without the main bank characteristics (\mathbf{MBC}) and ownership (\mathbf{MBO}) variables in order to enable us to ascertain if these factors affect relationship lending (e.g., state-owned banks are more likely to lend to small firms). Finally, μ is the error term. The firm-specific variables are lagged 1 year, motivated by the fact that banks can only observe the previous year’s balance sheet when negotiating the loan. Lagging the firm-specific

⁵ We also control for the industry to which the firm belongs, although we do not report them in the regressions. Following from Government of India (1994, 2005) classification, the industry groups considered are food, textiles, engineering, chemicals and pharmaceuticals, electronics and computer software, leather and leather products, paper and paper products and others.

variables also enables us to circumvent the endogeneity problems.

In addition, to examine the robustness of the results, we also estimate the model by Poisson regression to ascertain the factors influencing the *number* of bank–firm relationships. As earlier, we assume that the number of banking relationships is a function of firm characteristics, other characteristics and main bank characteristics as given by (2) above. However, given the possibility of over-dispersion in the data, we also estimate the model using negative binomial regression.

Subsequently, to test hypothesis IV, we employ regressions similar to (2), except for the fact that the dependent variable is the cost of borrowing, as mentioned earlier. Accordingly, the regression specification is given by (3), according as:

$$r_{j,t} = \alpha_j + \beta_1 [\text{Relation}]_{j,t} + \beta_2 X_{j,t-1} + \beta_3 Y_t + \beta_4 Z_t + \beta_5 [\text{FC}]_t + \beta_6 [\text{MBC}]_{j,t} + \beta_7 [\text{MBO}]_{j,t} + \mu_{j,t} \quad (3)$$

where all variables are the same as earlier. The coefficient of interest is *Relation*. We measure this variable in two ways. The first—*Relation 1*—is a dummy which equals one if a firm exhibits multiple banking relationship, else zero. The second—*Relation 2*—equals the number of banking relationships for a given firm. If a higher number of banking relationships leads to a lowering of borrowing costs for the firm, the coefficient on *Relation* would be negative.

We estimate the impact of explanatory variables on borrowing costs by fixed effects panel regressions. This method of estimation provides better estimators than simple OLS when the explanatory variables are correlated with the error term. It is quite straightforward to argue that there could be probably significant correlation between unobservable individual characteristics of firms (which are captured by the error term of the OLS regression) and some of the explanatory variables. As a result, employing OLS could render biased coefficients. Using a fixed effects model can solve the problem of correlation. In the fixed effects specification, the differences across banks are captured by the differences in constant term (Greene 1993). In this case, inference is based on standard errors that are clustered at the firm-year level (i.e., two-way clustered standard errors), which provide much more robust inferences (Cameron et al. 2011).

Discussion of the findings

In this section we test Hypotheses I–III for SMEs for the period 1996–2010. In addition to identifying the variables which influence whether firms maintain single versus multiple lending relationships, we are also interested in investigating the cost of banking relationships and whether such behavior differs across bank ownership during periods of crisis.

Banking relationships

Table 5 presents the results of the logit regressions. Although not reported, industry dummies have been included. In column 1, the coefficient on size and age are positive and significant at conventional levels. This offers support for Hypothesis I: there exists a positive and statistically significant relationship between firm age and the probability of maintaining multiple bank relationships, as well as between size and the probability of maintaining multiple relationships.

Besides their statistical significance, they are economically significant as well. To note this, we calculate the marginal effects. Thus the marginal effect of firm age, evaluated at the mean value of the variable, equals 0.192: in other words, when age increases by 1 year, the probability of having multiple relationships improves by 0.19 % points. Likewise, the marginal effect of firm size on the probability of multiple banking relationships is 0.24. Therefore, an increase in firm size from its mean value of 1.89 to the 75th percentile value of 2.24, holding all other variables at their mean values, would raise the probability of having multiple relationships to rise by roughly 5 %.

However, the results do not lend credence to Hypothesis II: the coefficient on RoA is negative, but not significant. In other words, in case of SMEs, profitability is not an important consideration for banks for engaging in lending relationships.

In column 2, we test whether main bank ownership matters for banking relationships, especially for SSIs. The coefficient on state-owned is negative and significant, which indicates that firms with state-owned main banks are less likely to forge multiple lending relationships, consistent with previous evidence for India (Berger et al. 2008). The results support Hypothesis III that bank ownership is an important factor driving relationship lending.

Table 5 Determinants of number of banking relationships

Firm characteristics, lagged	Logit		Poisson		Negative binomial
	(1)	(2)	(3)	(4)	(5)
Ln Asset	1.069 (0.342)***	1.023 (0.319)***	0.329 (0.099)***	0.319 (0.101)***	0.328 (0.100)***
Ln Age	0.842 (0.469)*	0.867 (0.469)*	0.157 (0.182)	0.130 (0.178)	0.144 (0.168)
Firm performance, lagged					
Ln (1 + RoA)	-0.446 (0.914)	-0.057 (0.839)	-0.056 (0.264)	-0.087 (0.269)	0.071 (0.262)
Leverage	0.179 (0.848)	0.351 (0.857)	0.395 (0.206)**	0.461 (0.213)**	0.451 (0.208)**
Firm type					
Small	-2.023 (1.326)	-2.268 (1.394)*	-0.144 (0.226)	-0.109 (0.294)	-0.158 (0.292)
Medium	-2.019 (1.316)	-2.152 (1.379)	-0.263 (0.223)	-0.214 (0.285)	-0.264 (0.282)
Micro (control category)					
Industry-level					
H-branch	-0.639 (0.514)	-0.976 (0.791)	-0.225 (0.133)*	-0.425 (0.231)*	-0.411 (0.224)*
Macroeconomic					
GDPGR	1.548 (3.904)	1.336 (4.092)	-0.799 (1.164)	-1.172 (1.208)	-0.922 (1.154)
Main bank characteristics					
Ln Asset		0.051 (0.299)		-0.049 (0.085)	-0.048 (0.083)
Ln CRAR		-0.535 (4.619)		-1.099 (1.746)	-1.067 (1.661)
Ln NPL		1.992 (2.914)		0.525 (1.009)	0.574 (1.006)
Main bank ownership					
State-owned		-1.730 (0.903)**		0.346 (0.254)	-0.369 (0.251)
Domestic private		-0.549 (0.982)		-0.363 (0.253)	-0.379 (0.252)
Foreign (control category)					
Constant	3.874 (3.723)	6.568 (5.721)	1.746 (0.878)**	3.457 (1.557)**	3.378 (1.531)**
Industry dummies	YES	YES	YES	YES	YES
Period	1996–2010	1996–2010	1996–2010	1996–2010	1996–2010
Firms; no. obs	191; 812	191; 812	191; 812	191; 812	191; 812
Log pseudo likelihood	-485.52	-472.31	-1491.69	-1478.62	-1467.30
McFadden R-squared	0.095	0.120	0.059	0.062	0.040
Goodness of fit: prob > χ^2	0.15	0.17	0.14	0.37	

Table 5 continued

Firm characteristics, lagged	Logit		Poisson		Negative binomial
	(1)	(2)	(3)	(4)	(5)
LR test of $\alpha = 0$ (prob > χ^2)					25.48 (0.00)

Standard errors (clustered by firm) are within parentheses

***, ** and * statistical significance at 1, 5 and 10 %, respectively

The coefficient on branch is negative and significant. This supports previous research that the structure of the banking market exerts a negative impact on lending relationships (Degryse and Ongena 2005). The business cycle does not appear to exert any perceptible influence on the cost of borrowings.

In the Poisson regression, the coefficient on firm size is positive and statistically significant, as earlier. The estimated incidence rate ratio for the size variable equals 1.38 [i.e., $\exp(0.33)$]. In other words, a 1 % increase in size raises the estimated incidence rate by a factor of 1.38, or about 38 % increase in the probability of having multiple banking relationships. The positive coefficient on leverage indicates that firms with greater leverage have greater number of banking relationships than those with lower leverage. Inclusive of ownership, the coefficients on the ownership dummies are not statistically significant, suggesting that bank ownership is not a key factor driving the number of lending relationships.

For sake of completeness, we also estimate the model by negative binomial regression, given the over-dispersion of the data (the mean number of banking relationships is roughly thrice the variance). The results confirm previous findings.

Borrowing costs

Next, we test hypothesis IV regarding the cost of borrowings. The results are presented in Table 6. The coefficient on Age is positive, while that on Size and Leverage are negative. These results resonate across all specifications. In terms of magnitude, an increase in age by 10 % would raise borrowing costs by roughly 0.4 percentage points (Col. 1). With mean firm age in the sample equal to 12 years, this implies that an increase in firm age by one additional year, i.e., from 12 to 13, would raise average borrowing costs from its mean value of 11.2 % to nearly 11.3 %.

The coefficient on Asset is negative and statistically significant, consistent with previous research (Harhoff and Korting 1998; Bharath et al. 2011). For example, holding all else constant, as compared to a firm at the 25th percentile of size, the interest costs for a firm at the 75th percentile of size would, on average, be lower by roughly 1.5 percentage points.⁶ The negative coefficient on leverage with a point estimate equals to -0.04 . Put differently, a 10 % rise in leverage lowers interest cost by 0.4 percentage points. Dedola and Lippi (2005) interpret leverage as an indicator of borrowing capacity, consistent with the finding that more leveraged firms tend to obtain loans at better terms.

In terms of Hypothesis IV, the results provide weak evidence: the coefficient on *Relation 1* is not significant, whereas the coefficient on *Relation 2* is positive (and significant) in column 3. This, in effect, would suggest that an increase in the number of banking relationships actually ends up raising borrowing costs. The magnitude is, by no means, small: a 10 % increase in the number of banking relationships raises borrowing costs by 0.2 percentage points. To get an idea of the magnitudes, consider a firm with interest costs equal to USD 0.196 million—the median for the sample—with corresponding number of banking relationships equal to 2. With unchanged interest rates, a 50 % increase in the number of banking relationships, equal to 3, would raise interest costs to USD 0.198 million. Therefore, the number of banking relationships exerts a non-negligible impact on the costs of borrowings.

Coming to ownership, the results suggest that borrowing costs are typically higher for firms that have domestic private main banks. One way to interpret these would be to suggest that private banks are more concerned with profit maximization and as a result,

⁶ The value of LnAsset at the 25th percentile is 1.48 and at the 75th percentile is 2.24. The difference is 50 %.

Table 6 Determinants of costs of banking relationships

	(1)	(2)	(3)	(4)
Relation 1	−0.003 (0.008)	−0.0009 (0.008)		
Relation 2			−0.019 (0.010)***	−0.0002 (0.017)
Firm characteristics, lagged				
Ln Asset	−0.029 (0.010)***	−0.028 (0.011)***	−0.023 (0.009)***	−0.028 (0.010)***
Ln Age	0.036 (0.015)**	0.035 (0.014)***	0.026 (0.014)*	0.034 (0.015)**
Firm performance, lagged				
Ln (1 + RoA)	0.023 (0.031)	0.015 (0.029)	0.027 (0.026)	0.015 (0.029)
Leverage	−0.037 (0.021)*	−0.039 (0.019)**	−0.040 (0.018)**	−0.039 (0.019)**
Firm type				
Small	0.073 (0.023)***	0.079 (0.024)***	0.057 (0.021)***	0.079 (0.023)***
Medium	0.076 (0.021)***	0.081 (0.021)***	0.061 (0.021)***	0.081 (0.021)***
Micro (control category)				
Industry-level				
H-branch	0.847 (0.159)***	1.092 (0.234)***	0.921 (0.175)***	1.095 (0.228)***
Macroeconomic				
GDPGR	0.004 (0.189)	0.006 (0.199)	0.081 (0.206)	0.006 (0.200)
Main bank characteristics				
Ln Asset		0.016 (0.009)*		0.016 (0.009)*
Ln CRAR		−0.056 (0.168)		−0.056 (0.170)
Ln NPL		−0.032 (0.108)		−0.032 (0.107)
Main bank ownership				
State-owned		0.029 (0.023)		0.030 (0.022)
Domestic private		0.053 (0.031)*		0.053 (0.030)*
Foreign (control category)				
Constant	−0.438 (0.101)***	−0.675 (0.139)***	−0.489 (0.097)**	−0.677 (0.137)***
Industry dummies	YES	YES	YES	YES
Period	1996–2010	1996–2010	1996–2010	1996–2010
Firms; no. obs	185; 752	185; 752	211; 1002	185; 752
R-squared	0.0932	0.1063	0.0960	0.1065

Standard errors (clustered by firm and year) within parentheses

***, ** and * statistical significance at 1, 5 and 10 %, respectively

have to cover for the costs of information deficiencies in SMEs by charging higher rates. This contrasts with the behavior of state-owned banks, who often rely on soft information as part of lending relationships. The results also appear to suggest that bigger banks charge higher interest rates. Ideally, one would expect bigger banks to be associated with lower costs, arguably because of scale economies. However, provided that bank size implies control of the market especially in the deposit and loan segments, a positive relationship between interest rate spreads and bank size could be likely. This is what we observe in our analysis.

Contextually, Were and Wambua (2014) report evidence in favor of a positive relation between size and interest expenses for commercial banks in Kenya.

Impact of crisis

An important issue of relevance in this regard is the impact of the financial crisis on relationship lending and borrowing costs, an aspect hitherto unattended in the literature. Towards this end, we employ a dummy variable (*Crisis*) which equals one for the years 2008 and 2009, else zero. If the crisis had a negative impact

Table 7 Determinants of costs of banking relationships—robustness

Estimation strategy	(1) Poisson	(2) Logit	(3) Fixed effects	(4)
<i>Dependent variable</i>	<i>No. bankers</i>	<i>Dummy_banker</i>	<i>Interest cost</i>	<i>Interest cost</i>
State-owned	−2.314 (0.439)***	−8.242 (1.445)***		
Domestic private	−2.304 (0.563)***	−6.536 (1.895)***		
State-owned × Crisis	−0.137 (0.019)***	−0.501 (0.135)***		
Dom. private × Crisis	−0.050 (0.039)	−0.422 (0.659)		
State-owned × Ln Asset	0.626 (0.167)***	2.160 (0.552)***		
State-owned × Ln Age	0.729 (0.230)***	2.552 (0.995)***		
State-owned × Leverage	−0.440 (0.337)	−0.267 (1.059)		
Dom. private × Ln Asset	0.691 (0.245)***	1.505 (0.994)		
Dom. private × Ln Age	0.429 (0.319)	2.712 (1.379)**		
Dom. private × Leverage	0.233 (0.474)	1.045 (2.873)		
Small			0.089 (0.025)***	0.084 (0.026)***
Medium			0.071 (0.023)***	0.072 (0.023)***
Small × Crisis			−0.001 (0.0009)	−0.0007 (0.001)
Medium × Crisis			0.003 (0.004)	0.004 (0.006)
Small × Relation 1			−0.019 (0.015)	
Medium × Relation 1			0.013 (0.008)	
Small × Relation 2				−0.001 (0.003)
Medium × Relation 2				0.003 (0.001)**
Other controls	YES	YES	YES	YES
Constant	1.651 (1.435)	1.274 (6.387)	−0.700 (0.139)***	−0.708 (0.132)***
Industry dummies	YES	YES	YES	YES
Pseudo log likelihood	−1423.18	−434.46		
Period	1996–2010	1996–2010	1996–2010	1996–2010
Firms; no. obs	191; 812	191; 812	185; 752	185; 752
R-squared	0.0838	0.1901	0.1121	0.1094

In cols. (1)–(2), standard errors are clustered by firm; in cols. (3)–(4), they are clustered by firm-year

***, ** and * statistical significance at 1, 5 and 10 %, respectively

on the number of banking relationships across bank ownership or firm types, then the coefficient on this variable would be negative. Throughout, we include the entire set of control variables as well as industry dummies, although for brevity, we do not report them in the regressions.

Table 7 (column 1) indicates that, as compared to foreign banks, state-owned banks have higher number (as well as probability) of multiple banking relationships and as expected, lower banking relationships during periods of crisis. The effect of the crisis variable is quite large. To see this, consider the difference in the number of banking relationships of an average state-owned bank and an average foreign bank when firm size equals 1.89, the average in the sample.

Ignoring the impact of the crisis, the point estimates in column 1 yield a difference of approximately −4.2 % points ($−8.24 + 1.89 \times 2.16 = −4.16$). However, if this is a crisis year, the point estimates in column 2 yield a difference of nearly 4.7 % points ($−8.24 + 1.89 \times 2.16 − 0.50 = −4.66$), a 12 % increase with respect to the no-crisis benchmark. In other words, the results indicate that the number of banking relationships drop during crisis period, especially for state-owned banks. In contrast, column 2 shows that the crisis makes no difference for the lending relationships of domestic private banks.

Columns 3 and 4 repeat the same exercise, but instead, employ firm characteristics to examine how relationship lending affects their borrowing costs. In

both columns, the coefficient on small and medium are positive and significant, suggesting that these firm categories have higher borrowing costs, consistent with our univariate results. However, there does not appear to be any discernible effect of either the crisis or lending relationships on their costs of borrowings, since the coefficients on these variables are not significant.

Conclusions

This paper has analyzed the determinants of firm–bank lending relationships and borrowing costs for small and medium-size firms in India. Using information from the publicly available firm-level database, we investigate several hypotheses relating to relationship lending.

The findings indicate that small business typically maintain multiple banking relationships, which provides them with benefits in terms of lower borrowing costs. The multivariate regression, which takes into account several controls, supports the fact that smaller and younger firms maintain fewer lending relationships, a finding similar to those obtained for developed banking markets. Unlike results obtained for other countries, we find that lending relationships are not affected by firm profitability. This result contrasts with the hypothesis that low profitability firms choose to have multiple lending relationships in order to reduce the probability of having their finance cut off.

An important concern of the study is to understand the role of main bank ownership in influencing lending relationships. The findings indicate that firms associated with state-owned main banks are less likely to forge multiple lending relationships. The results support previous research which suggests that bigger, levered firms have lower borrowing costs. The results also lend credence to the fact that an increase in the number of banking relationships lowers borrowing costs. Finally, the results indicate that the number of banking relationships drop during crisis period, especially for state-owned banks.

The study has exploited Prowess database to classify firms as SMEs and understand their relationship lending behavior. Given that these firms are typically credit constrained, it would be useful to have a micro database on SMEs, including their lending and borrowing costs so as to analyze their behavior in greater detail.

Our results have useful implications for policy. More specifically, relationship lending seems to play an important role during periods of economic downturn. During such periods, SME lending tends to get depressed, hampering the subsequent recovery. In this setup, maintaining relationships with multiple banking could prove useful, so that the information deficiencies on the borrower by one bank can be significantly negated. As well, such firms can be induced to seek long-term banking relationships, so as to provide the bank with more ‘soft’ information that can help them tide over credit deficiencies. Addressing these aspects in greater detail comprise elements of future research.

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References

- Albertazzi U, Marchetti DJ (2010) Credit supply, flight to quality and evergreening: an analysis of bank–firm relationships after Lehmann. Bank of Italy Discussion Paper No. 756. Bank of Italy, Rome
- Allen F, Chakrabarti R, De S, Qian J, Qian M (2012) Financing firms in India. *J Financ Intermediation* 21:409–445
- Ayyagari M, Beck T, Demircuc Kunt A (2007) Small and medium enterprises across the globe. *Small Bus Econ* 29:415–434
- Beck T, Demircuc Kunt A, Martinez Peria MS (2011) Bank financing for SMEs: evidence across countries and bank ownership types. *J Financ Serv Res* 39:35–54
- Berger AN, Udell G (1995) Relationship lending and lines of credit in small firm finance. *J Bus* 68:351–381
- Berger AN, Klapper L, Udell G (2001) The ability of banks to lend to informationally opaque small businesses. *J Bank Finance* 25:2127–2167
- Berger A, Klapper L, Martinez Peria MS, Zaidi R (2008) Bank ownership type and banking relationships. *J Financ Intermediation* 17:37–62
- Bertrand M, Mehta P, Mullainathan S (2002) Ferreting out tunneling: an application to Indian business groups. *Quart J Econ* 117:121–148
- Bharath S, Dahiya S, Saunders A, Srinivasan A (2011) Lending relationships and loan contract terms. *Rev Financ Stud* 24:1141–1203
- Cameron C, Gelbach J, Miller D (2011) Robust inference with multi-way clustering. *J Bus Econ Stat* 29:238–249
- Chairlone S, Ghosh S (2009) India. In: Ferri G, Chairlone S, Bagliani P (eds) *Emerging Banking Systems*. McMillan, Palgrave, pp 32–50
- Chang C, Liao G, Yu X, Ni Z (2009) Information from relationship lending: evidence from China. CentER Discussion Paper No. 39. CentER, UK

- Chibber PK, Majumdar S (1999) Foreign ownership and profitability: property rights, control, and the performance of firms in Indian industry. *J Law Econ* 42:209–238
- De Mitri S, Gobbi G, Sette E (2010). Relationship lending in a financial turmoil. Bank of Italy Discussion Paper No. 772. Bank of Italy, Rome
- Dedola L, Lippi F (2005) The monetary transmission mechanism: evidence from the industry data of five OECD countries. *Euro Econ Rev* 49:1543–1569
- Degryse H, Ongena S (2005) Distance, lending relationships and competition. *J Finance* 60:231–266
- Degryse H, Masschelein N, Mitchell J (2004) Belgian SMEs and bank lending relationships. *Natl Bank Belg Financ Stab Rev* 2:121–133
- Demirguc Kunt A, Levine R (2001) Bank-based versus market-based financial systems: cross-country comparisons. In: Demirguc Kunt A, Levine R (eds) *Financial structure and economic growth: a cross-country comparison of banks, markets and development*. MIT Press, Cambridge
- Detragiache E, Garella PG, Guiso L (2000) Multiple versus single banking relationships: theory and evidence. *J Finance* 55:1133–1161
- Diamond DW (1984) Financial intermediation and delegated monitoring. *Rev Econ Stud* 51:393–414
- Farinha L, Santos JAC (2002) Switching from single to multiple bank lending relationships: determinants and implications. *J Financ Intermediation* 11:124–151
- Ghosh S (2006) Did financial liberalization ease financing constraints? Evidence from Indian firm-level data. *Emerg Mark Rev* 7:176–190
- Goldberg PK, Khandelwal AK, Pavcnik N, Topalova P (2010) Imported intermediate inputs and domestic product growth: evidence from India. *Quart J Econ* 125:1727–1767
- Government of India (1994) *Handbook of industrial statistics 1993*. Ministry of Industry, New Delhi
- Government of India (2002) *Annual Report*. Ministry of Small and Medium Enterprises, New Delhi
- Government of India (2005) *Handbook of industrial policy and statistics 2003–05*. Ministry of Industry, New Delhi
- Government of India (2010) *Annual Report*. Ministry of Small and Medium Enterprises, New Delhi
- Greene W (1993) *Econometric Analysis*. Prentice Hall, New Jersey
- Harhoff D, Körting T (1998) Lending relationships in Germany: empirical results from survey data. *J Bank Finance* 22:1317–1353
- Khandelwal A, Topalova P (2011) Trade liberalization and firm productivity: the case of India. *Rev Econ Stat* 93:995–1009
- Mian A (2006) Distance constraints: the limits of foreign lending in poor countries. *J Finance* 61:1465–1505
- Mohan R (2004) Finance for industrial growth. *RBI Bulletin* (March), 319–339
- Ongena S, Smith D (2000) What determines the number of bank relationships? Cross-country evidence. *J Financ Intermediation* 9:26–56
- Pagano M, Volpin P (2006) Shareholder protection, stock market development and politics. *J Euro Econ Assoc* 4:315–341
- Petersen MA, Rajan RG (1995) The effect of credit card competition on lending relationships. *Quart J Econ* 110:406–443
- Rajan RG (1992) Insiders and outsiders: the choice between informed and arms length debt. *J Finance* 47:1367–1400
- Ramakrishnan R, Thakor A (1984) Information reliability and a theory of financial intermediation. *Rev Econ Stud* 51:415–432
- Reserve Bank of India (2008) *Report of the working group on rehabilitation of sick SMEs*. RBI, Mumbai
- Sharpe S (1990) Asymmetric information, bank lending and implicit contracts: a stylized model of customer relationships. *J Finance* 45:1069–1087
- Stephanou C, Rodriguez C (2008) Bank financing to small and medium enterprises in Colombia. *World Bank Policy Research Working Paper No. 4481*. The World Bank, Washington, DC
- Strahan PE, Weston J (1996) Small business lending and bank consolidation: is there cause for concern? *Current Issues in Economics and Finance*. Federal Reserve Bank of New York
- Vig V (2013) Access to collateral and corporate debt structure: evidence from a natural experiment. *J Finance* 68:881–928
- von Thadden EL (1995) Long-term contracts, short-term investment and monitoring. *Rev Econ Stud* 62:557–575
- Were M, Wambua J (2014) What factors drive interest spread of commercial banks? Empirical evidence from Kenya. *Rev Dev Finance* 4:73–82