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# **Bank Firm Nexus and its Impact on Firm Performance: An Indian Case Study**

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## **Abstract:**

The paper examines the role of banking relationships on firm performance for a sample of Indian manufacturing firms. The two variables used to portray banking relationships are: the extent of bank borrowing and the number of banking relationships maintained by a firm. Analysis suggests that while the extent of bank borrowing has a negative impact on firm performance, the multiple banking relationships maintained by a firm positively enhances firm performance. In addition, firm performance plays an important role in influencing bank borrowing and the number banking relationships a firm maintains. While banking relationships are positively impacted by firm performance, results suggest nonlinearity between bank financing and firm performance, suggesting the possibility of a potential debt overhang concern. This implies that firms with low growth opportunities tend to borrow more from banks due to lack of other opportunities to finance their investments. However, firms beyond a certain threshold of profitability tend to employ lesser debt to finance their investments in order to prevent the wealth transfer from shareholders to creditors.

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### **Abstract:**

The paper examines the role of banking relationships on firm performance for a sample of Indian manufacturing firms. The two variables used to portray banking relationships are: the extent of bank borrowing and the number of banking relationships maintained by a firm. Analysis suggests that while the extent of bank borrowing has a negative impact on firm performance, the multiple banking relationships maintained by a firm positively enhances firm performance. In addition, firm performance plays an important role in influencing bank borrowing and the number banking relationships a firm maintains. While banking relationships are positively impacted by firm performance, results suggest nonlinearity between bank financing and firm performance, suggesting the possibility of a potential debt overhang concern. This implies that firms with low growth opportunities tend to borrow more from banks due to lack of other opportunities to finance their investments. However, firms beyond a certain threshold of profitability tend to employ lesser debt to finance their investments in order to prevent the wealth transfer from shareholders to creditors.

## **1. Introduction**

Until recent times, developing countries were largely characterized by institutional factors and government interventions which often constrained lending decisions. The reforms in the financial sector in many developing countries including India have enabled a move towards market driven allocation of resources, which, along with the deepening of financial markets, has provided greater flexibility and wider choices to firms in determination of their financial structure (Bhaduri 2000, Ghosh 2007). However, despite these changes, bank financing still remains important source of funding in many emerging countries. In India, bank credit has not only remained the most important source of funding but it has rather gained prominence over the years (Figure 1).

While there is a vast literature and empirical evidences that seek to understand the impact of banking relationships on firm performance in developed countries, yet few studies have attempted to examine the effect of bank relationship on firm performance in emerging markets. The relative paucity of studies on emerging markets is due to two main reasons: First, while most of the extant studies on developed markets conclude that direct bank borrowing gives better access to capital and more efficient monitoring on firms (Diamond, 1991), the role played by the bank in emerging markets is much more complex. Despite many disadvantages (eg. underinvestment and asset substitution), highlighted by the extant literature, in the absence of alternative means of monitoring of firms in many of these markets, bank credit has gained relevance to provide the much needed supervision to protect the interest of the stakeholders. Second, on the other hand, in many emerging markets, including India, since banks play simultaneously the role of lender as well as shareholders therefore, banks may face apparent conflict of interest and in such occasion may favor their interest at the expense of general shareholders (Bris et al.,2006;Gorton and Schmid,2000; Petersen and Rajan,1994;Santos and Rumble,2006).Further, this problem is accentuated by the weak corporate governance at banks and companies in the emerging markets(Cull andXu,2000; Tian,2004)

Therefore, new evidence on the relationship between bank borrowing and firm performance is warranted for emerging markets such as India because of institutional backgrounds (Claessens et al 1998) which contrast drastically with those of the developed markets. The paper tries to bridge the gap by studying the merits and demerits of bank borrowing and the influence of bank borrowing on firm performance in India, a leading emerging economy. In addition, this paper tries to explore the interlinkage between the number of banking relationships a firm maintains and the firm performance.

The paper contributes to the literature in two primary ways: First, it intends to fill the gap by providing new evidence regarding the role of banking relationships on firm performance by investigating the interactions between firm performance and bank financing from the perspective of emerging markets such as India. It also explores issues of underinvestment in relation with bank financing and growth opportunities of the firm. Second, this study makes contribution by exploring the role of number of banking relationships a firm maintains on the performance of a firm, an aspect which has not been dealt with in the Indian context.

The main findings of the paper suggest that while the extent of bank borrowing has a negative impact on firm performance, the multiple banking relationships maintained by a firm positively enhances firm performance. In addition, firm performance plays an important role in influencing bank borrowing and the number banking relationships a firm maintains. While banking relationships are positively impacted by firm performance, results suggest nonlinearity between bank financing and firm performance, suggesting the possibility of a potential debt overhang concern. This implies that firms with low growth opportunities tend to borrow more from banks due to lack of other opportunities to finance their investments. However, firms beyond a certain threshold of profitability tend to employ lesser debt to finance their investments in order to prevent the wealth transfer from shareholders to creditors.

The remainder of the paper is organised as follows: Section two describes the literature survey. Section three describes the data base used for the analysis. Section four provides the empirical specification, variables and hypothesis tested in the paper. Section five interprets the results, and section six concludes the paper.

## **2. Literature Survey**

The literature on corporate finance widely recognises the role of banks in determining the availability and cost of credit. Banks as financial intermediaries, try to reduce capital market frictions that arise due to informational asymmetries, by channelling funds from investors to profitable business opportunities. There are several facets associated with these relationships that develop between firms and banks: First, banks monitor in order to ensure that the managers of their client firms take efficient business action, (Diamond 1984). Bank monitoring can also reduce the deleterious impact of the managerial agency costs by compelling managers to be productive and ensure that they align their incentives with those of the shareholders. Banks influence the investment decisions of their client firms through forceful tools of intervention like threat not to renew credit (Stiglitz and Weiss, 1983). This reduction of the agency problems (that often takes the form of asset substitution and underinvestment) can potentially improve firm value. Second, banks screen the loan applications of prospective clients in order to assess the credit worthiness of the firms (Diamond, 1991). Thus, an approval of bank loan also facilitates reputation-building for firms. This certification of creditworthiness further helps in raising funds from public markets in the future (Diamond, 1991). Third, public debt financing involves incurring of information costs (Fama, 1985). These costs can be avoided by bank loan financing as firms would not have to disclose information to public and thereby also reduce the risk of private information being revealed to rival firms (Yosha, 1995). The reduction in such disclosure costs is likely to enhance firm performance. Finally, as suggested by Sharpe (1990), bank reputation leads to reduction in inefficient allocation of resources. Efficient mobilization and allocation of funds, lowers the cost of capital to firms, boosts capital formation, as well as stimulates productivity and growth (Ross, 2004).

The literature however suggests that while bank monitoring improves corporate governance of the firm and ensures more efficient business actions, this better governance often comes at the cost of an informational advantage that banks have over other providers of capital. Banks can pursue rent seeking activities by exploiting the private information it acquires from the firm. This informational monopoly over firms strengthens the bargaining position of the banks. The bank can use this control to cut-off a firm's loan or even charge a high interest rate. In extreme case, the bank can also influence the choice of projects, levy compensating balances, or refuse to relax covenants when the credit rating improves. This accentuates the asset substitution and under investment problem (Rajan, 1992) thereby reducing the value of the firm. Further, it is not easy for firms to terminate their relationship with opportunistic banks as firms have to incur an extra search cost in order to look for other banks or other sources of financing. Firms can also face a loss of reputation amongst other banks if they discontinue banking relationship which could create a potential impediment of access to finance (Castelli, et al, 2006). Hoshi, Kashyap and Scharfstein (1990) have conjectured that bank-firm relationship weakens due to increased monitoring costs and other costs associated with bank financing. The reserve requirements and less liquidity of bank debt in comparison to publicly traded debt translate into increased required rate of return on firms' investments.

Further, some of the empirical evidences also corroborates that this conflict of interest between banks, managers and firm owners distort investment policies as well as lowers profits. Weinstein and Yafeh (1998), in their study of Japanese firms find that though banks facilitate greater access to credit, little benefits accrue to firms due to the conduct of rent seeking behaviour by banks who also pressurize clients to pursue less profitable and less risky investments in order to insulate themselves from risks. Broadly consistent with this, are results found by Agarwal and Elston (2000) who investigate the impact of bank influence on financing decisions and firm performance in Germany and find that bank influence leads to increased access to capital but does not improve firm performance or growth.

However, according to Von Thadden (1992) and Rajan (1992), firms can engage in multiple banking relationships in order to mitigate the rent seeking behaviour arising

from the informational monopoly due to single bank engagement thereby reducing the hold-up cost. This leads to a strand of literature that brings out the merits and demerits associated with multiple banking relationships. Much of the literature on bank financing is based on the premise that firms borrow from single banks (Sharpe 1990, Diamond 1991 a, Rajan 1992). Single banking relationships, as often argued in the literature, help in reducing transaction costs that arise because of the duplication in screening and monitoring costs (Diamond, 1984). Secondly, it reduces information costs as it prevents the publicizing of private information which in turn reduces the possibility that confidential information can be revealed when a firm deals with a single bank (Von Rheinbaben and Ruckes, 1998). Thirdly, the free rider problem is less in the case of a single banking relationship, as a single creditor has a stronger incentive to monitor its borrowers and thus can exert a positive impact on the firm's performance (Bolton and Scharfstein, 1996).

On the other hand, multiple banking relationships may enhance the performance of the firms due to several reasons. Firstly, the information monopoly or the hold-up problem can be eliminated by maintaining multiple banking relationships which reduces the interest rate charged by the inside banks (Rajan, 1992). Secondly, maintaining single banking relationships can expose a firm to problems such as future unavailability of credit required to be reinvested. This problem might be faced by firms if the bank concerned is affected by liquidity shocks. Further, firms can also be faced with adverse selection problems. This makes sourcing funds outside of the relationship difficult. Therefore, firms may want to diversify such risks by maintaining multiple banking relationships. (Detragiache et al., 2000). Thirdly, maintaining multiple banking relationships can reduce strategic default (which occurs when managers of firms try to divert the cash to themselves) as the borrowing firms will have to negotiate with multiple creditors which would reduce the firms' incentives to strategic default (Bolton and Scharfstein, 1996).

Some empirical studies find evidences in favour of negative relationship between number of bankers and firm profitability. Degryse and Ongena, (2001) have found a negative relationship between the number of bankers and firm profitability for a set of Norwegian



firms for a period of 1975-1995. Broadly consistent with these results is evidence found by Fok, et. al, (2004) where a negative relationship is found between number of domestic bankers and firm performance for Taiwanese firms during the Asian financial crises 1997.

Therefore, a complete understanding of the nature and dynamics of the relationship between bank borrowing and firm performance is one of the most challenging issues in the literature of corporate finance. However, due to existence of various competing hypotheses the issue still remains unresolved. Hence, it is important to develop empirical models to validate the theories with contrasting institutional backgrounds.

### **3. Data and Sample**

The study uses an unbalanced panel data for the period 2002 to 2009 drawn from the Capital line database. Capital line database provides a comprehensive record of accounting and financial information of a large number of Indian firms. Since the focus of this study is on manufacturing establishments, attention here is restricted to a smaller subset of firms listed in this database. Based on the availability of data, the final sample contains financial information for 957 companies (with 4307 year observations) which are listed on the stock exchanges. The sample set, being a composite and heterogeneous mix of firms, offers considerable scope for cross sectional variation in data. In addition to the fact that the firms under consideration come from a broad spectrum of industries, this heterogeneity of the sample makes itself apparent in the spread of distribution of the firms over age and size, as suggested in Table 1. The details of number of banking relationships of the firm for the sample are collected from the Centre for Monitoring Indian Economy (CMIE)'s electronic database called "PROWESS". This data set,<sup>3</sup> which has not been exploited before in best of our knowledge, enables us to investigate whether or not there exists a significant difference in firm performance between firms that maintain single banking and those who maintain multiple banking relationships. There are three important observations that emerge from our preliminary analysis: As

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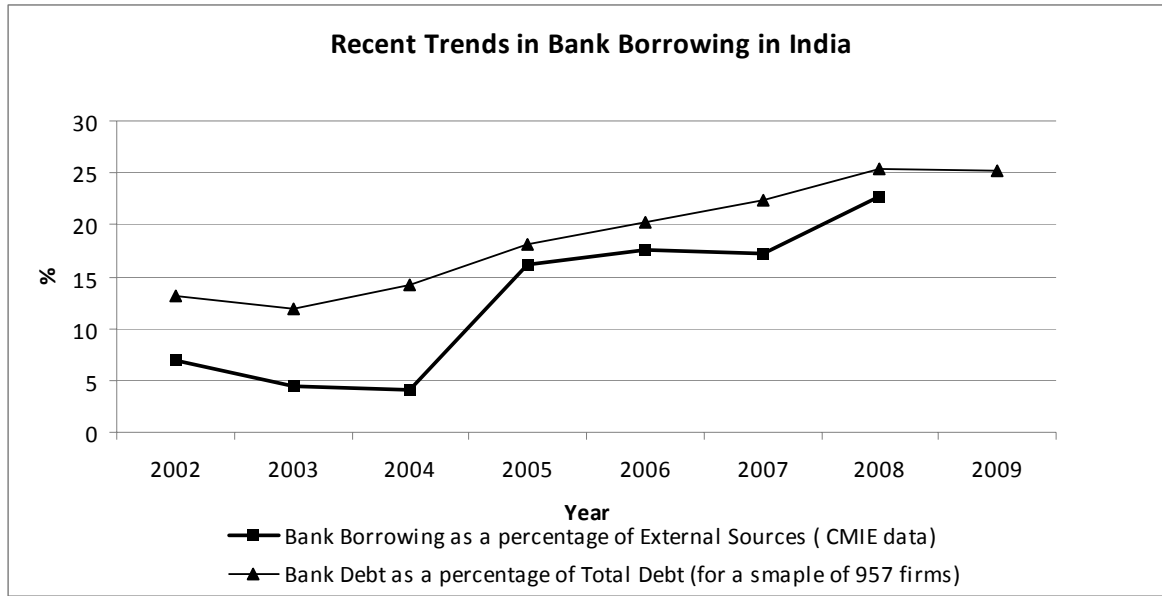
<sup>3</sup> Merging both prowess and capital line database

depicted in the Figure 1, the sample data, over the years depicts a rising trend in the use of bank debt. This rising trend also conforms to the trend in bank borrowing as a percentage of external funds for a relatively larger data set of non financial firms published by CMIE report on the corporate sector. This growing eminence of bank debt as a source of financing in India necessitates an analysis which seeks to find out if bank financing bears an impact on firm performance. Second, the share of firms that maintain single, multiple and varying banking relationships in Table 2 indicate that 25% of the Indian firms maintain single banking relationships, while 64% of the firms maintain multiple banking relationships and 10% of the firms switch between single and multiple banking relationships during the sample period. The descriptive statistics in Table 1 suggests that the median number of banking relationships for the 957 firms across time is 2 and 75<sup>th</sup> percentile for the same is 4. In contrast, when compared with developed countries such as US, 44.5%<sup>4</sup> of the US firms rely on single banking relationships while the median number of banking relationships is two. These statistics seem to indicate that Indian firms tend to rely more on multiple banking relationships whereas firms in the US rely more on single banking relationships. This paper seeks to find out the prospective reasons for why more firms in India rely on multiple banking relationships and provides explanation for cross sectional variation in the number of banking relationships.

### **Figure 1 Recent Trend in Bank Borrowing in India**

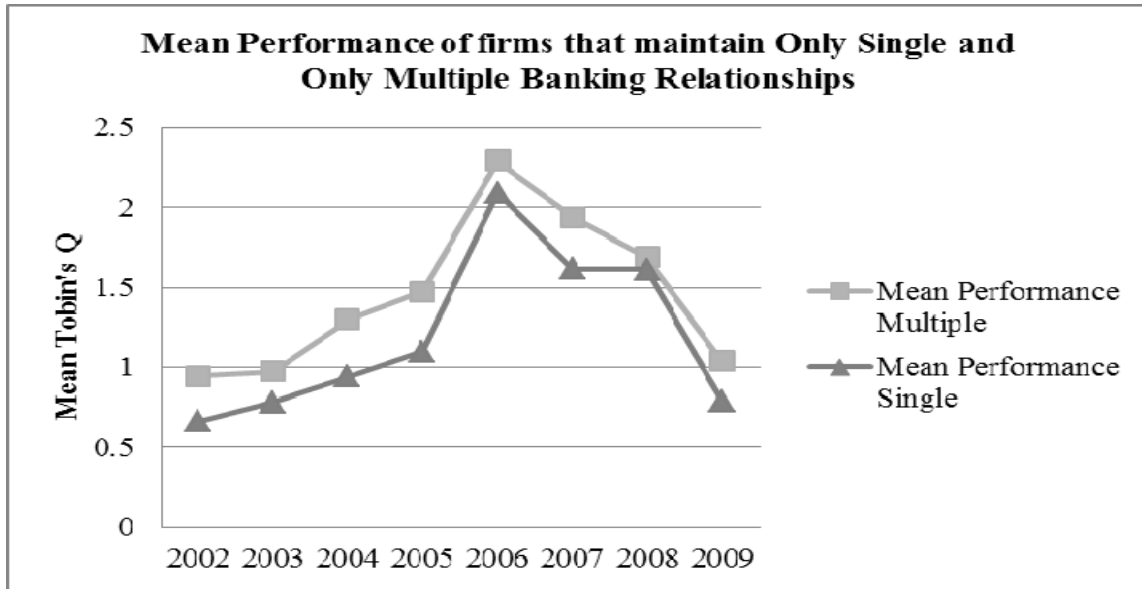
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<sup>4</sup> The statistics on US has been taken from the paper titled Multiple Vs Single banking relationship: Theory and Evidence authored by Enrica Detragiache, Paolo Garella, Luigi Guiso, June 2000.



Finally, we focus on the data on number of bankers to a firm which enables us to investigate whether there is a significant difference in firm performance between firms that maintain single banking and firms that maintain multiple banking relationships. In order to get an initial insight into the data we have looked at the trends in performance, measured by Tobin's Q by segregating the data set into two: Firms which maintain only single banking relationships and firms which maintain only multiple banking relationships during the sample period. The results of the t-test indicate that there exists a significant difference between the average values of the Tobin's Q of the two samples. On an average, Tobin's Q (1.44) of firms that maintain only multiple banking relationships is significantly more than the Tobin's Q (1.01) of firms that maintain only single banking relationship. This significant difference in average Tobin's Q of firms that maintain only single and only multiple banking relationships is also persistent over years. As can be seen in figure two, the mean Tobin's Q of the firms that maintain only multiple banking relationships is consistently higher than the mean Tobin's Q of the firms that maintain single banking relationships across years. This further motivates an analysis that looks at the factors that affect firm value in a multivariate framework.

**Figure 2: Mean performance of firm that maintain only single and only multiple banking relationships**



**Table 1: Descriptive Statistics of the Sample**

Variables	Median	75 <sup>th</sup> Percentile of Bank Relations
Number of Bank Relations	2	4
Size	84.61 <sup>5</sup>	237.96
Age	23	39.99
Tobin's Q	0.77	1.04
<b>Sub-Sample Statistics: Multiple Vs Single Banking Firms</b>		
Variables	Multiple Bank	Single Bank
Tobin's Q	1.44 (0.96)	1.01* (0.72)
Age	31.73 (29.99)	22.66 (21)
Size	242.42(235.31)	39.04 (33.82)

Note: Size Age and Tobin's Q are reported at the beginning of the sample. "\*" indicate a significant difference in mean at 1% level of significance. The sub-sample statistics report mean and median values (given in the parenthesis) of Size and Age of the respective groups. However, the Tobin's Q values for the sub-sample are reported across years.

<sup>5</sup> The figures are in Crores.

**Table 2: Share of firms with single, multiple and varying banking relationships**

<b>Number of Bank Relations for a sample of 869 Manufacturing Firms in India</b>	<b>Share</b>
Share of firms with Single Banking Relationship	221 (25.43%)
Share of firms with Multiple Banking Relationship	558 (64.21%)
Share of firms with varying Banking Relationships	90 (10.36%)

Note: Table reports the share of firms that maintain only single, only multiple and firms that switch between maintain single and multiple banking relationships across years. The total number of firms considered for this analysis is 869. The values within the parenthesis refer the percentage share of firms maintaining single, multiple and varying banking relationships.

#### 4. Empirical Model Specification and Variables

As has been argued earlier, the purpose of this analysis is to test the net impact of banking relationships on firm performance. In order to formulate an empirical framework, we allow the banking relationship and firm performance to be jointly determined, using a simultaneous equation model. Specifically, the paper uses the following simultaneous equation models:

*Performance Equation 1:*

$$TQ_{it} = \alpha + \beta_1(TBD/TA)_{it} + \beta_2(Age)_{it} + \beta_3(Size)_{it} + \beta_4(CE)_{it} + \beta_5(Sales\ Growth)_{it} + \beta_6(LNNUM)_{it} + \varepsilon_{it}$$

We have used two distinct specifications to capture the bank relationship with firm performance:

*Bank Relationship Equation 1:*

$$(TBD/TA)_{it} = \alpha + \beta_1 TQ_{it} + \beta_2(TQ\ Square)_{it} + \beta_3(CF)_{it} + \beta_4(Sales\ Growth)_{it} + \beta_5(TA)_{it} + \beta_6(Size)_{it} + \beta_7(Age)_{it} + \varepsilon_{it}$$

*Bank Relationship Equation 2:*

$$LNNUM_{it} = \alpha + \beta_1(TQ)_{it} + \beta_2(Age)_{it} + \beta_3(Size)_{it} + \beta_4(Leverage)_{it} + \beta_5(Coverage)_{it} + \varepsilon_{it}$$

Performance of the firm is measured by the Tobin's Q (TQ) which is measured as the ratio of the book value of debt plus the market value of equity to total assets. While, the

intensity of borrower-lender relationship is portrayed by using two measures: (a) The magnitude of bank debt which is measured as total bank borrowing scaled by the total assets of the firm (TBD/TA); (b) Number of bankers to a firm captured by the natural logarithm of number of banking relationships to a firm (LNUM). This leads to two alternative bank relationship equations. All the models are estimated using a three stage least square methods (3SLS). Since the nature of our data involves an unbalanced panel, in order to incorporate for the unobserved effects, ideally models should be estimated either with the fixed effect or the random effect. However, given the complexity involved in conducting a 3SLS panel using fixed effects, a two step approach is adopted for this analysis: First, the data is manually demeaned to purge the unobserved heterogeneity followed by running a 3SLS on the transformed variables.

#### **4.1 Empirical Model 1**

The first model jointly determines Performance Equation 1 and Bank Relationship Equation 1. The overall impact of bank financing on firm performance depends upon the benefits and costs associated with bank financing. If bank debt acts as a monitoring agent then it is likely to enhance efficiency and performance of the firm. Alternatively, if rent seeking activities are pursued by banks, it can adversely affect firm performance. Therefore, the impact of bank financing on firm performance is ambiguous.

The control variables used in the performance equation are: CE (capital expenditure defined as change in net fixed assets as scaled by total assets), LNNUM (Number of banking relationship defined as natural logarithm of number of banking relationship), Size (defined as natural logarithm of total assets), Age (as natural logarithm of Age), and TA (Tangible Assets as scaled by total assets).

Sales growth is expected to be a positive determinant of the Tobin's Q, because higher market power and efficiency should result in improved firm performance. Further, older firms may face lower communication costs and therefore have better access to capital which could lead to better performance. Therefore, performance of the firm is likely to improve as it matures. At the same time, older firms maybe in the later stages of their life cycles. This may restrict investment opportunities of such firms since these firms could be characterised by rigid administration and bureaucracy. Hence a negative relationship

may also be expected between age and firm performance. Therefore, the net impact of age on firm performance could be ambiguous. Large firms may enjoy greater market power and they may face lesser informational asymmetries and thereby have better access to capital, which could translate into better firm performance. At the same time, large firms may be characterized by problems such as diseconomies of scale and agency problems, which could negatively impact firm performance. Hence, the net impact of size on firm performance could also be ambiguous. As argued by Houston and James (1996), capital expenditures influence future growth opportunities of the firm and hence, it is expected that capital expenditure could be a positive determinant of Tobin's Q. Finally, the over-all impact of the number of banking relationships on firm performance is complex and depends on the dynamics between costs and benefits of the nature of the banking relationships. While, on the hand, multiple banking relationships may dilute the role of bank monitoring causing severe informational problems and thereby increasing the cost of coordinating with lending banks which could negatively impact firm performance, on the other hand, it could also mitigate the problem of premature liquidation and hold up costs which is conducive to better firm performance. Therefore, the net impact of number of banking relationship of a firm on firm performance is an intriguing issue.

In the paper, we have used two distinct specifications to capture the bank relationship with the firm performance. The first bank relationship equation is specified as follows:

$$(TBD/TA)_{it} = \alpha + \beta_1 TQ_{it} + \beta_2 (TQ \text{ Square})_{it} + \beta_3 (CF)_{it} + \beta_4 (Sales \text{ Growth})_{it} + \beta_5 (TA)_{it} + \beta_6 (Size)_{it} + \beta_7 (Age)_{it} + \varepsilon_{it}$$

Several control variables are introduced in the specification. Since bank borrowing entails monitoring over the firm by the bank, which reduces the opportunistic behavior of the managers, the growing firms (defined by Tobin's Q) with significant potential investment opportunities tend to increase their borrowing from the bank. However, firms during their early stages of growth have low level of credibility and credit worthiness and hence find difficulty in getting access to other financing options and tend to depend on bank for financing.

On the contrary, firms experiencing higher level of growth could avoid bank borrowing as they could be subjected to more severe agency problems which might involve a disproportionate transfer of wealth from shareholders to creditors arising from profitable investment opportunities. This might lead to a more complex and non-linear relationship between bank borrowing and growth of a firm.

The other control variables used in the model are: CF (cash flow defined as net income and depreciation scaled by total assets), TA (tangible assets), SIZE, AGE, and Sales Growth. Cash flow is used a proxy for liquidity of the firm. The Pecking Order theory argues that a firm characterized by high internal cash flow would rely less on outside sources for financing for its capital requirements and hence the cash flows variable is likely to be negatively related to bank financing. Since more profitable, matured and growing firms (captured through Sales growth) have capacity to borrow more and also the firms with higher sales growth are likely to face low default risk, therefore, a positive association is expected between sales growth and bank borrowing.

Similarly, since tangible assets owned by firms serve as collateral for most of the secured bank borrowings, the proportion of tangible assets is expected to have a positive impact on the firms' capacity of bank borrowing.

The existing literature considers size as an important determinant of capital structure choice. Firms that are larger in size tend to be more diversified and are in a better position to take more debt as opposed to smaller firms. They are also less likely to be subjected to failures and therefore, tend to assume more bank borrowing. Therefore; a positive relationship is expected between size and bank financing. Similarly, older firms are likely to have a greater reputation and face lesser informational asymmetry in the market which enables them to have easier access to bank debt finances. Hence, a positive association is expected between age and bank financing.

## **4.2 Empirical Model 2**

The second model jointly determines the number of banking relationships a firm maintains (LNNUM) and firm performance (TQ).



The performance equation is specified as follows:

$$TQ_{it} = \alpha + \beta_1(LNNUM)_{it} + \beta_2(Age)_{it} + \beta_3(Size)_{it} + \beta_4(CE)_{it} + \beta_5(Sales\ Growth)_{it} + \beta_6(Leverage)_{it} + \varepsilon_{it}$$

As argued earlier in the paper, the multiple banking relationships might reduce efficacy of bank monitoring, causing more severe informational problem and increasing the cost of coordinating with lending banks, therefore a negative relationship is expected between firm performance and bank relationship. On the contrary, a positive association would imply that the multiple banking relationships help to mitigate the problem of premature liquidation and hold up costs.

As described earlier the other control variables used in the specification are: CE (Capital Expenditure), Size, Age, Leverage and Sales Growth. It is often argued that the debt can reduce the opportunistic incentives of the manager and prevent sub-optimal investments. These reductions in non-value maximising activities can potentially enhance firm performance (Jensen, 1986). However, firms facing high financial risk or less reputation may find it hard to funds required for pursuing profitable investments which can reduce firm performance. Hence, the impact of leverage on firm performance is likely to be positive. The other control variables have the same interpretation as used in the performance equation of model one.

The alternative banking relationship equation is specified as follows:

$$LNNUM_{it} = \alpha + \beta_1(TQ)_{it} + \beta_2(Age)_{it} + \beta_3(Size)_{it} + \beta_4(Leverage)_{it} + \beta_5(Coverage)_{it} + \varepsilon_{it}$$

Firms that are more profitable find lesser informational problems and also find it is easier to establish relationship with many banks. Therefore, a positive relationship is expected between number of banking relationships and firm profitability. The control variables are Coverage (defined as earning to interest payment ratio), Leverage (defined as total debt to asset ratio), Size and Age.

According to Diamond (1991), old firms are likely to be more reputable and face less adverse selection problems in seeking finance from non-relationship banks and therefore, will face lesser need to raise finances by maintaining multiple banking relationships. On the other hand, establishing relationships with multiple banks may take time and therefore, a positive relationship is expected between age and number of banking relationships. Further, according to Houston and James (1996), firms with longer operating histories may tend to maintain multiple banking relationships. Therefore, the relation between age and number of banking relationships could be ambiguous.

Large firms are more likely to borrow from high-quality banks, and have relationships with more banks in order to diversify credit risk and hence size is expected to be a positive determinant of number of banking relationships. Johnson (1997) conjecture that firms which is highly leveraged are prone to greater credit risks and therefore, the monitoring role of the banks becomes important. Hence, highly leveraged firms may borrow from multiple prominent banks, although high quality banks may be reluctant to lend to firms with high credit risks. Detragiache et al (2000) however, on the contrary, find a significant and negative relation between leverage and the number of bank relationships. This may be because firms that are highly leveraged may be more prone to greater financial risks and thus, may find it difficult to explore new bank relationships. Therefore, the literature suggests that impact of leverage on number of banking relationships can be ambiguous.

The coverage ratio reflects firms' repayment ability. According to Foglia, Laviola and Reedtz (1998), when a borrower, borrows from multiple lenders, interest rates decline in favour of the borrower and therefore, as the coverage ration increases, the

financial structure of the firm improves. Hence, higher the coverage ratio, the firm will be able to borrow from greater number of banks. Firms with high liquidity positions face lesser probability of financial distress. More liquid firms may depend upon fewer banking relationships and fewer bank loans. Hence greater liquidity as measured by coverage is expected to be associated with lesser number of banking relationship to a firm. Therefore, the impact of coverage on number of banking relationships is ambiguous.

## **5. Empirical Results**

The paper examines the impact of banking relationships on firm performance using an empirical framework that allows the banking relationship and firm performance to be jointly determined, using a simultaneous equation model. The empirical models are estimated using a 3SLS estimation technique after a one-way demeaning of the variables used in the models<sup>6</sup>.

### **Model 1: Empirical Results**

Table 3 sets out the results of the nonlinear 3SLS estimates for the simultaneous equation model defined by Eqs. (1) – (2). One can see that both methods (Column Two and Three of table 3) give quite consistent results with regard to the signs and significance of coefficients of variables except Tobin's Q and Age in the bank financing equation. Further it can be seen from Table 4, both bank debt to assets ratio and Tobin's Q is statistically significant in equations (1) and (2) respectively. This suggests a possibility of simultaneous effect in the models and hence, the interpretation using 3SLS method is more accurate than that using OLS method. Therefore, in the following section, we only focus on the 3SLS results.

The estimates suggest a significant two-way causal relationship between firm profitability and bank debt. The negative estimate on bank financing in the performance equation implies that that firms with greater bank debt financing are less profitable. This suggests that the demerits associated with bank financing such as rent seeking activities (that

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<sup>6</sup> Note that the set of simultaneous equations in the two models are exactly identified

arising out of informational monopoly that banks have over other providers of capital) have a negative impact on firm performance.

Turing to the bank financing equation, the positive coefficient on the Tobin's Q and negative coefficient on Tobin's Q square respectively suggests a non-linear relationship between bank financing and firm performance. A positive association between the Tobin's Q and bank financing implies that firms with low growth opportunities tend to depend more on bank debt due to lack of other alternatives. However, beyond certain threshold values of Tobin's Q the relationship turns to a more conventional inverse association. One plausible explanation for the observed inverse "U" shaped relationship between Tobin's Q and bank debt could be attributed to a variant of potential debt overhang problem<sup>7</sup>, wherein low growth firms take on more bank borrowing due to lack of other financing options and firms that operate at or beyond the threshold level of performance, reduce the amount of bank financing in order to prevent the transfer of funds from shareholders to creditors.

In terms of the exogenous variables age carries a positive significant coefficient in the performance equation, suggesting that firms that are likely to survive for longer are more profitable. The coefficient on age is a positive determinant of bank financing, implying that firms that are older face lesser asymmetry of information problem and thus are likely to be more leveraged. Similarly, tangible assets are a positive determinant of bank borrowing. Higher tangible assets are a source of collateral to the firm which enables the firm to take on more debt. The coefficient of cash flow is negative, which is consistent with the argument of the pecking order theory. This suggests that a firm characterized by high internal cash flow would rely less on outside sources for financing for its capital requirements. Sales Growth is positively related to bank borrowing. The result suggests that firms that are more growing and profitable tend to be more leveraged. Also consistent with the sales accelerator model, sales growth has a positive significant

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<sup>7</sup> Debt over hang describes a situation in which the existing debt discourages firm to undertake new investment because any benefits from the new investment will go to the creditors rather than the owners.

coefficient in the performance equation. Similarly, as expected the capital expenditure also has a significant, positive coefficient on firm performance.

Size is a positive determinant of the firm performance which implies that larger firms tend to be more diversified and help reducing bankruptcy costs. However, its impact on firm performance is statistically insignificant. Large firms exhibit a significantly positive impact on bank financing as firms that are large are more diversified and are less subject to financial distress and therefore, tend to accumulate more bank debt.

In contrast to our earlier findings which suggest that bank borrowing has a negative impact on firm performance, the positive coefficient for the number of bankers suggests that borrowing from multiple banks however, result in improved firm performance. As we will see later, this is consistent with the results of our second set of models which captures the relationship between number of banking relationships and firm performance. These findings are consistent with Rajan's (1992) argument that borrowing from multiple sources reduces the bank's ability to pursue rent seeking activities, without compromising on its ability to control and monitor firm performance.

In order to test the robustness of our findings, we have estimated several other alternative specifications. Column 3 of table 3, presents one such specification, where natural logarithm of number of bankers to a firms is replaced by an interactive variable, which is defined as a product of natural logarithm of number of bankers to a firms and bank borrowing. The positive statistically significant coefficient on the interactive variable further corroborates our claim that borrowing from multiple banks mitigates the adverse impact of bank borrowing on firm performance.

Table 4 presents the 3SLS results (of our model 2) which examines the relationship between firm performance and the number of banking relationships that a firm enjoys. The results suggest a significantly positive two-way causal relationship between firm profitability and number of banking relationship, indicating that firms with multiple

banking relationships are more profitable and those profitable firms maintain multiple banking relationships.

In the performance equation, the positive sign on the natural logarithm of the number of bankers to a firm coefficient implies that multiple banking relationship positively impacts firm value. This suggests that hold up costs that are usually attributed to maintaining single banking relationships, are mitigated by maintaining multiple banking relationships and therefore, firms do not experience erosion of profitability due to costs arising from single banking relationships. This may also be consistent with Von Rheinbaben and Ruckes (1998) suggesting that firms maintain multiple banking relationships will have lower cost of credit and face less stringent loan terms and hence, facilitate firm performance.

This result contrasts with those reported for several developed markets, where a negative relationship is found between the number of banking relationships and performance (Ongena and Smith, 2000, Fok Cheng Lee, 2004)

Developing economies are often characterized by weak banking competition, creditor rights and poor disclosure/accounting standards, leading to significant market power shared amongst fewer banks, worsening soft budget constraint problems and high cost of monitoring. In such circumstances, firms in **poor conditions** may be unable to incur the cost of losing access to bank financing. These motives therefore create strong incentives for firms to maintain multiple banking relationships (Berger et. Al, 2005)

In the bank relationship equation, a positive sign on the Tobin's Q variable reiterates the expectation more profitable firms face lesser adverse selection problems and find it is easier to establish relationships with multiple banks.

Turning to the exogenous variables, we find that number of banking relationships is positively related to firm age. This is consistent with (Houston and James, 1996) who state that firms with longer operational histories tend to maintain relationships with

multiple banks. However, the coefficient of age on the firm performance equation is negatively statistically significant, which is inconsistent with our earlier results.

Large firms are more likely to borrow from high-quality banks, and maintain relationships with more banks in order to diversify credit risk hence size is a positive determinant of number of banking relationships. Larger firms may also suffer from greater agency costs and therefore profitability is negatively impacted by firm performance. A negative relation between leverage and the number of bank relationship suggests that having more leverage makes firms more prone to financial risks and therefore, it may be difficult for firms with high financial risks to find new bank relationships.

## **6. Conclusion**

In this paper, we examine the role of bank relationship on firm performance for a sample of Indian manufacturing firms. Our analysis suggests that banking relationships as measured by the number of banking relationships a firm maintains and quantum of bank financing have a significant impact on firm performance. However, the direction of the impact on firm performance varies. While quantum of bank financing has a negative influence on firm performance, number of banking relationships maintained by a firm, positively impact the firm performance. In addition, we find that bank borrowing from multiple sources has a positive influence on firm performance. This implies that borrowing from multiple sources reduces the bank's ability to pursue rent seeking activities without compromising on its ability to control and monitor firm performance.

We further analyze that firm performance is a crucial factor affecting bank financing and the number banking relationships a firm maintains. While banking relationships are positively impacted by firm performance, results suggest nonlinearity between bank financing and firm performance. We conjecture a possibility of existence of a variant of a potential debt overhang concern. In other words, firms with low growth opportunities tend to borrow more from the banks due to lack of other opportunities to finance their investments. In the later part of the period, given the emergence of profitable investment

opportunities, these firms employed lesser debt to finance their investments in order to prevent the wealth transfer from shareholders to creditors.

Table 3 OLS and 3SLS estimates of the relation between firm performance and bank financing.

	OLS Model	3 SLS Model	
Performance Equation	Column 1	Column 2	Column 3
Bank Debt/Total Assets	-1.412762*** (0.192989)	-17.03271*** (2.196952)	-94.29669*** (22.85788)
Sales Growth	0.2994706*** (0.0695734)	0.3612214*** (0.0875383)	-0.0111642 (0.2309999)
Size	0.0452398** (0.0233258)	0.1055521 (0.1146822)	-1.293618*** (0.3579521)
Age	0.2689023*** (0.0473495)	4.604339*** (0.6333766)	4.63528*** (1.225039)
Capital Expenditure	0.2594905* (0.1443474)	1.370791*** (0.2488856)	3.88165*** (1.013707)
Natural Logarithm of Number of Banks	0.3020241*** (0.0430213)	1.002949*** (0.1158068)	
LN Number of Bankers*TBD/TA			46.68251*** (11.28621)
Constant	-0.0379928 (0.1580159)	0.0000000272 (0.0245781)	3.94E-08 (0.0596996)
<b>Bank Financing Equation</b>			
Tobin's Q	-0.0001572 (0.0028596)	0.1424609*** (0.020325)	1.179697*** (0.2776433)
Tobin's Q Square	-0.0000297 (0.0001878)	-0.0086776*** (0.0010709)	-0.0610182*** (0.0146034)
Sales Growth	0.0212346*** (0.0055922)	0.0103544** (0.0052832)	-0.0916537** (0.0411726)
Tangible Assets	0.1655926*** (0.0098453)	0.1323952*** (0.0177867)	0.4587847*** (0.1423865)
Size	0.0175655*** (0.0015074)	0.0422537*** (0.0054045)	0.0506454 (0.0352952)
Age	-0.0019139 (0.0039607)	0.0638522* (0.0349416)	-1.236896*** (0.3749722)
Cash Flow	-0.1621334*** (0.0167725)	-0.3898127 *** (0.0432611)	-2.42107*** (0.5499876)
Constant	-0.0438957*** (0.0140425)	7.34E-10 (0.0014114)	-4.00E-09 (0.0091694)

AGE is the natural log of the number of years since the firm was founded. SIZE is the natural log of the firm's total assets. Capital expenditure defined as Change in NET Fixed Assets scaled by Total Assets. Significance at 10%.



\*\* Idem, 5%.  
 \*\*\* Idem, 1%.

Table 4:  
 This table shows OLS and 3SLS estimates of the relation between firm performance and the choice of single-or multiple-bank financing.

Performance Equation	OLS	3 SLS
Natural Logarithm of Number of Banks	0.2566604*** (0.0428676)	6.576357*** (2.405595)
Age	0.2853642*** (0.0476236)	-7.092488** (3.416861)
Size	0.0400904 * (0.0234767)	-2.173298*** (0.7476469)
Capital Expenditure	0.0344821 (0.1420138)	0.0724726 (0.0731628)
Sales Growth	0.3215934*** (0.0699891)	0.1023078 (0.1286019)
Constant	-0.145762 (0.1584184)	-2.89E-08 (0.0266092)
Bank Relationship Equation		
Tobin's Q	0.0511386 *** (0.0062167)	0.1070257*** (0.0317374)
Age	0.0414053** (0.0178289)	1.165912*** (0.0882482)
Size	0.3367897*** (0.0067803)	0.3269374*** (0.0142726)
Leverage	0.3807173*** (0.0410497)	-0.0484751 (0.0517958 )
Coverage	-0.0000318 (0.0000571)	2.12E-06 (0.0000232)
Constant	-0.9783556 *** (0.0601691)	4.86E-09 (0.0037257)

AGE is the natural log of the number of years since the firm was founded. SIZE is the natural log of the firm's total assets. LEVERAGE is the debt-to-total-assets ratio. Capital expenditure defined as Change in NET Fixed Assets scaled by Total Assets. Significance at 10%.  
 \*\* Idem, 5%.  
 \*\*\* Idem, 1%.

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