

IMPACT OF FINANCIAL AND CAPITAL MARKET REFORMS ON CORPORATE FINANCE IN INDIA

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India's financial and capital market reforms since the early 1990s have had a positive impact on both the banking sector and capital markets. Nevertheless, the capital markets remain shallow, particularly when it comes to differentiating high-quality firms from low-quality ones (and thus lowering capital costs for the former compared with the latter). While some high-quality firms (e.g., large firms) have substituted bond finance for bank loans, this has not occurred to any significant degree for many other types of firms (e.g., old, export-oriented and commercial paper-issuing ones). This reflects the fact that most bonds are privately placed, exempting issuers from the stringent accounting and disclosure requirements necessary for public issues. As a result, banks remain major financiers for both high- and low-quality firms. The paper argues that India should build an infrastructure that will foster sound capital markets and strengthen banks' incentives for better risk management.

Most small- and medium-sized enterprises (SMEs) in Asian developing countries have access to fairly limited internal sources of finance (i.e., retained earnings) for investment because of their relatively low profitability. Yet, the demand for credit in an expanding economy is high. For example, retained earnings as a share of total finance needed for investment account for about 10 per cent each in Indonesia and the Republic of Korea, 13 per cent in Malaysia, and 20 per cent in Thailand. In these countries, firms depend mainly on bank loans for finance. By contrast, in developed countries, such as Germany, Japan and the United States, retained earnings are a major source of finance, accounting for more than 70 per cent of total finance. Based on the concepts of information asymmetry and agency problems, the "pecking

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order” theory indicates that firms’ financing patterns begin with retained earnings, followed by riskless debt, and then new equity (Myers, 1977; Myers and Majluf, 1984). In addition, it has been increasingly recognized in recent years that the liability mix, particularly among external sources of finance, depends crucially on (a) the extent of information asymmetry (e.g., risk preference) and agency problems (e.g., commitment to repayment or performing well) between ultimate creditors (or investors) and ultimate borrowers (or issuers); (b) availability of growth opportunities; and (c) the state of the (informational, legal, and judicial) infrastructure suitable for external financing (Shleifer and Vishny, 1987; Yoshitomi and Shirai, 2001).

The extent of information asymmetry and agency problems is likely to be reflected in the characteristics of the firms. For example, corporate bond finance can be cheaper than bank loans for reputable, profitable or large-sized firms (Diamond, 1991). This is because established firms of high reputation and with good credit records accumulated through previous financial relationships with banks, so-called “high-quality” firms, are not viewed as excessive risk takers and are regarded as being committed to repayment. From the bondholders’ viewpoint, their information asymmetry and agency problems are small. Thus, bondholders charge them lower interest rates, which take account of risk-free interest rates, systemic or market-wide risks, firm specific risks (i.e., credit, default, and liquidity risks), and the premium for information asymmetry and agency problems. Similarly, such firms are able to issue equity at high prices owing to their reputation for good and transparent management and the large expected corporate earnings (hence, capital gains). This makes it cheaper for them to raise funds from the equity market compared with bank loans. Moreover, information technology (IT) firms are able to issue equity at low cost because of greater growth opportunities than other firms, even though they find it difficult to obtain bank loans and bond finance owing to a lack of tangible assets. The fact that shareholders can potentially claim unlimited upside returns from equity, whereas downside risks are limited to the value of the initial investment by virtue of limited liability, explains why an equity market can flourish in developing countries. This is so even when the existing infrastructure does not support the development of a corporate bond market, for which the upside return is limited by the contractual interest rate (Herring and Chatusripitak, 2000).

The amount of financial and capital market infrastructure building needed also affects the liability mix. Capital (equity and bond) markets require timely, precise, and standardized information about issuers to the public. Standardized information, which explicitly embodies information in terms of coupon rates, risk premiums, length of maturity, ratings and financial statements, can be produced by imposing proper disclosure, accounting, and auditing requirements, with the assistance of investment banks and information-generating agencies. Moreover, the enforcement of these requirements and the protection of investors’ rights are a prerequisite for improving

public confidence in investing securities. Thus, the more sophisticated the infrastructure, the easier it is for capital markets to distinguish high-quality firms from low-quality ones. On the other hand, relatively low-quality firms, typically new, unprofitable SMEs, find it expensive to issue securities and, thus, raise funds from banks, which have skills and expertise to lower the cost of financing. Although information on low-quality firms is highly idiosyncratic and non-transferable to the public, banks are able to extend loans to them. This is because banks are able to reduce the costs of collecting and processing information about borrowers and monitoring (hereafter called “relationship lending”) by carrying out repeated transactions, offering settlement and checking accounts, and exploiting economies of scale (Diamond, 1991; Chemmanur and Fulghieri 1994).

In other words, well-developed capital markets enable high-quality firms to increasingly finance themselves from securities (bond and equity) rather than bank loans. In response, banks have to provide more loans to relatively low-quality firms and, thus, conduct relationship lending in order to maintain profitability. Therefore, the characteristics of firms determine corporate financing patterns and, hence, the extent of information asymmetry and agency problems. In other words, one can assess the state of financial and capital market development of a country by examining whether corporate financial patterns vary between firms of different quality.

India was chosen as a case study, for this paper. The public sector dominates India’s banking sector, which coexists with the relatively large equity market established with the introduction of the Bombay Stock Exchange in 1875. In 1991, India launched comprehensive banking sector reforms in an effort to enhance its efficiency and commercial orientation. These were followed in 1992 with capital market reforms to improve pricing and disclosure systems and tighten listing requirements. The important question is whether banks have continued to engage in relationship lending and whether these reforms have contributed to a differentiation between high- and low-quality firms, giving the former relatively better access to the capital markets. This paper examines the behaviour of the banking sector and whether securities are substituting for bank loans for high-quality firms compared with low-quality ones. Although this paper focuses on India, the same framework for assessing the state of financial and capital market development can be equally applied to other developing countries. The paper is divided into four sections. Based on the 5,000 firm-level database for 1990-2001, section I conducts a regression analysis to test whether banks’ lending behaviour varies depending on firms’ characteristics, reflecting information asymmetry and agency problems. Section II examines whether there has been a move from bank loans to bond finance on the one hand, and from bank loans to equity finance on the other, among high-quality firms compared with low-quality ones. The same analysis

is performed for term-loan financial institutions. Section III contains concluding remarks.¹

I. ASSESSING THE CHANGES IN CREDITORS' LENDING BEHAVIOUR

The comprehensive banking sector reforms launched in 1991 by the Government of India included interest rate decontrols, cuts in reserve and liquidity requirements, an overhaul of priority sector lending, deregulation of entry barriers, strengthening of prudential regulations, and capitalization and partial privatization of public sector banks (Shirai, 2002). These reforms have helped to improve the performance of existing banks, as exemplified by the increase in returns on assets between 1993 and 2000 (from -0.5 per cent to 0.7 per cent for public sector banks and from -0.2 per cent to 0.9 per cent for private sector banks). This shows that banks have become more sensitive to various risks and returns in the face of intensified competition and tighter prudential regulations and supervision. In this environment, the important issues relate to whether banks have increasingly engaged in relationship lending, a question closely linked with the lending patterns of low-quality firms.

Basic model for banks and estimation results

Before India launched its reforms, heavy intervention left banks with few incentives to conduct relationship lending or turn in a high performance. As a result, banks provided loans both to high- and low-quality firms indiscriminately. Supporting this view, a study by Cobham and Subramaniam (1995) found no difference in the financing patterns between large and small firms based on data of 1,500 Indian firms for 1981-1990. Bank loans and internal sources were the two most important sources of finance for both kinds of firms. Since the early 1990s, however, banking sector and capital market reforms should have affected firms' corporate financing patterns, as the reforms have tackled issues relating to disclosure and availability of information. To assess whether such has been the case, this paper investigates whether banks have allocated credit disproportionately to low-quality firms compared with high-quality ones, which should be an inevitability when high-quality firms seek increasing recourse to the capital markets. Few studies have pursued this line of research, apart from Sarkar and Sarkar (2000). They analysed the age effect of firms and found that young firms were more deeply affected by the reforms than old ones and that the impact was more pronounced in earlier periods than later. They did this by looking at trend patterns of the proportion of funds mobilized from external sources since the

¹ One shortcoming of this paper is that the analysis does not cover the pre-reform period due to lack of consistent data. Thus, the paper focuses on (a) whether corporate financial patterns are consistent with those predicted by existing theories and (b) whether corporate financial patterns have seen significant changes before and after the 1996 tightening of reforms.

reforms began. This paper builds on their analysis by focusing on various characteristics of firms, based on the concepts of information asymmetry and agency problems and examining the substitution relationship among various external financial sources.

This paper chooses, as a dependent variable, each firm's borrowings from banks as a percentage of total liabilities (including share capital and reserves). Assuming that the degrees of information asymmetry and agency problems are reflected in the size of firms, years of incorporation, profitability and variance in profitability (as proxy to a measure of credit risk), these variables are adopted as explanatory variables. Low-quality firms refer to those that are relatively small, new, unprofitable and high-risk, while high-quality firms are defined as being large, old, profitable and low-risk. A natural logarithm of the asset size is used as a proxy for the size of the firm, ASSET. With respect to years of incorporation, this paper uses a dummy variable NEW, which is equal to 1 if a firm was incorporated from 1991 onward and 0 otherwise. As for profitability, after-tax return on assets, ROA is used. For variance of ROA, RISK is estimated based on the three-year period (the year under examination and the two preceding years) for each year.

Other explanatory variables include two dummy variables (commercial paper issuance and public listing at stock exchanges) and a variable for export-orientation. A commercial paper (CP) dummy variable CPD is equal to 1 if a firm issues CP and 0 otherwise. A listing dummy variable LISTED is equal to 1 if a firm is publicly listed in one of the 23 Indian stock exchanges or 0 otherwise. As for export orientation, the ratio of exports to sales EXPORT is used. Since exporting firms have access to export and import credit facilities and various tax benefits, they are likely to achieve higher performance and hence gain better financing deals (Kakani et al., 2001). Following Sarkar and Sarkar (2000) and Kakani et al. (2001), moreover, two indicators are used as proxy for the size of intangible assets: depreciation expenditure as a percentage of sales, DEPSALE, and the sum of marketing and advertising expenditures as a percentage of sales, ADVSALE. Firms with lower depreciation ratios are regarded as those with a larger amount of intangible assets and, thus, more growth options in their investment opportunities. Firms with high ratios of marketing and advertising expenditure to sales may be good at establishing entry barriers against competition by building up their brand image and increasing intangible assets. These two expenditures are important in industries with mature production technology (Aaker, 1984). In addition, industry dummies are adopted. CAT1 indicates firms belonging to the food, beverages, and live animals sector; CAT3 minerals and energy; CAT4 fats and oils; CAT5 chemicals and related products; CAT6 leather, textiles, rubber, plastic, paper, non-metallic minerals, and metals; CAT7 machinery, transport equipment and electronics; CAT8 miscellaneous manufactured goods; and CAT9 firms with diverse products. Since there are no firms in CAT2, this dummy variable is omitted. CAT9 is excluded for intercept.

Regression analysis is performed using the above variables and time dummies TIME, based on panel data for 1990-2001 using the ordinary least squares (OLS) method. Since RISK uses data of the previous two years in addition to the year under investigation (for example, RISK of the year 1992 uses data of 1990-1992), the observation period for the empirical analysis ranges from 1992 to 2001. The model omits the 1992 time dummy variable and, thus, coefficients of other time dummy variables account for time-specific factors in relation to 1992. Taking into account the predictions derived from existing theories, the signs of ASSET, ROA, CPD, LISTED, and EXPORT are expected to be negative. The coefficients of NEW and RISK are expected to be positive. The coefficient of ADVSALE (and DEPSALE) is expected to be negative (and positive) if a larger amount of tangible assets increases banks' incentives to extend more credit. Firm data are obtained from the Prowess database covering domestic manufacturing private firms, compiled by the Centre for Monitoring the Indian Economy.

The regression estimation is conducted for two separate periods (1992-1996 and 1997-2001). This is in order to assess whether banks changed their lending behaviour after the tightening of initial public offering (IPO) requirements in 1996, which enabled the capital market to differentiate firms by quality, so that relatively high-quality firms increased their access to the capital market compared with low-quality firms. The estimation results as reported in table 1 can be summarized as follows.

First, the coefficients of ROA were statistically significant and negative for both periods, suggesting that bank loans to unprofitable firms were greater than to profitable firms for the two periods and supporting the view that banks undertook relationship lending in the reform period. Second, the coefficients of EXPORT, LISTED, and CPD have shifted from being statistically significant and positive for 1992-1996 to being statistically insignificant in 1997-2001. This suggests that during 1992-1996 bank credits to relatively high-quality firms, i.e., ones that were export-oriented, publicly listed, and CP-issuing, were larger than those to less export-oriented, unlisted firms and those not issuing CP. However, such differences have become insignificant during 1997-2001, implying that low-quality firms have gained access to bank loans as much as high-quality firms – weak evidence of relationship lending. Third, bank credits to old firms, on the other hand, remain larger than those to new firms, as evidenced by the statistically significant and negative coefficient of NEW for both periods – contrary to the prediction. Fourth, the coefficient of RISK moreover turned out to be statistically significant for the two periods (albeit small scale), but shifted from positive during 1992-1996 to negative in 1997-2001. Thus, while bank credits to high-risk firms were larger than to low-risk ones during 1992-1996, those to low-risk firms relative to high-risk ones became greater during 1997-2001, contrary to the prediction. Further, the coefficient of ASSET shifted from being statistically significant and negative in 1992-1996 to being statistically

insignificant in 1997-2001. This indicates that smaller firms borrowed more heavily from banks compared with larger firms in 1992-1996, but such differences had disappeared in 1997-2001. Fifth, the coefficient of DEPSALE turned out to be statistically insignificant. On the other hand, the coefficient of ADVSALE shifted from negative in 1992-1996 to positive in 1997-2001, reflecting that bank loans to firms with growth opportunities have been greater in recent years. Sixth, compared with earlier periods, banks extended more credit to firms belonging to the food, fats and leather sectors as compared with firms with diverse products.

The above results suggest that banks have been providing more loans to unprofitable firms relative to profitable ones, while extending credit somewhat indiscriminately to less export-oriented, unlisted, and non-CP-issuing ones on the one hand, and to export-oriented, publicly listed, and CP-issuing ones on the other. In other words, banks have been expanding their customer base to a wider range of firms by increasingly engaging in relationship lending to low-quality firms in addition to high-quality ones. Nevertheless, some types of low-quality firms, such as those that are new and high-risk, have not obtained as much credit as old and low-risk ones, suggesting that banks' relationship lending has not developed to its full potential.

Application of the model to financial institutions

In India, term loan financial institutions are generally referred to as development banks established to promote industrial and agricultural development. Compared with ordinary banks, financial institutions have the following unique features: they (a) subscribe to rights issues and underwrite public issues, (b) provide long-term loans, (c) convert debt to equity when firms become financially distressed and (d) raise long-term financing from bonds. Until 1991, these institutions provided long-term loans at interest rates lower than those applicable to working capital or other short-term loans provided mainly by banks. To meet this objective, their bonds were issued with a guarantee and, thus, at low cost. Moreover, their funds were often granted through the budget and a large portion of the central bank's long-term credit was allocated to some of these institutions. Also, these institutions used to be protected from competition with banks, as regulations prevented banks from extending large term loans to industrial units and allowed them to provide term loans only to small-scale industrial units on a priority basis. Consequently, they were generally insufficiently oriented toward the task of monitoring managers and thus were unlikely to exercise effective governance over the firms (Khanna and Palepu, 1999).

However, since the 1991 reforms, financial institutions have increased exposure to market forces. This is because the Government has eliminated guarantees on bond issues and ceased the provision of cheap funds from the budget, which made it costly for these institutions to issue long-term bonds and forced them to increasingly issue shorter-term ones. Financial institutions face greater financing constraints than banks,

Table 1. Estimation results for firm's choices over loans, 1992-2001

Variable	Bank loans				Loans from financial institutions			
	Period: 1992-1996		Period: 1997-2001		Period: 1992-1996		Period: 1997-2001	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
C	29.82***	14.73	16.55***	7.86	6.78***	4.82	-5.69***	-4.56
TIME93	-0.43	-0.45	-	-	-0.58	-0.88	-	-
TIME94	-1.56*	-1.70	-	-	-0.92	-1.45	-	-
TIME95	-1.10	-1.24	-	-	-1.80***	-2.93	-	-
TIME96	-1.87**	-2.17	-	-	-3.63***	-6.06	-	-
TIME97	-	-	-	-	-	-	-	-
TIME98	-	-	0.23	0.34	-	-	-0.29	-0.72
TIME99	-	-	-0.24	-0.36	-	-	-0.68*	-1.68
TIME00	-	-	1.13*	1.66	-	-	-1.05***	-2.60
TIME01	-	-	-0.09	-0.12	-	-	-2.05***	-4.60
ASSET	-5.89***	-11.76	-0.40	-1.00	2.68***	7.72	6.78***	28.81
EXPORT	0.08***	6.22	0.00	0.99	0.00	0.22	-0.00	-0.97
ROA	-0.64***	-39.21	-0.65***	-44.40	-0.24***	-21.30	-0.40***	-45.99
RISK	0.00**	2.08	-0.00***	-3.40	-0.00	-1.25	-0.00***	-7.02
LISTED	1.34**	2.03	-0.70	-1.29	1.05**	2.28	1.14***	3.55
NEW	-4.32***	-3.63	-1.81***	-3.20	2.70***	3.27	3.04***	9.08
CPD	1.85***	2.51	0.69	0.88	-2.30***	-4.48	-5.43***	-11.77
DEPSALE	-0.00	-1.20	-0.00	-1.17	0.01***	5.55	0.00***	4.17
ADVSALE	-0.26***	-3.76	0.05***	2.91	-0.15***	-3.19	-0.05***	-4.76
CAT1	-0.07	-0.04	4.81**	2.39	-0.13	-0.10	4.86***	4.08
CAT3	-1.98	-0.85	-3.40	-1.48	4.27***	2.66	6.77***	4.99
CAT4	0.32	0.15	5.76***	2.51	2.16	1.41	7.65***	5.62
CAT5	-1.94	-1.09	0.35	0.18	4.76***	3.85	6.38***	5.48
CAT6	-0.56	-0.33	3.38*	1.77	7.45***	6.33	8.34***	7.38
CAT7	-2.22	-1.28	1.12	0.58	2.23*	1.85	4.09***	3.56
CAT8	2.60	0.73	-1.12	-0.37	5.51**	2.23	5.16***	2.89
R-squared	0.19		0.14		0.09		0.19	
F-statistics	101.38		117.31		45.92		169.12	
n	8 812		14 644		8 812		14 644	

Note: ***, **, * indicate significance at 1%, 5% and 10% respectively; n refers to the number of observations.

because they are unable to raise funds through cheaper deposits owing to the limited number of branches and the central bank's limit on their access to deposits (because they are exempted from reserve and liquidity requirements). The demarcation between banks' and financial institutions' lending business has also been gradually disappearing, as banks have increasingly engaged in large-scale project finance and have become direct competitors. Further, interest rate liberalization has contributed to raising the financing cost for financial institutions.

Reflecting these changes, financial institutions would have had a greater incentive than banks to perform better and thus monitor their borrowers and/or issuers by taking advantage of dual holdings of term loans and equity. Since banks and financial institutions differ in their financing sources, the mechanisms to mitigate information asymmetry and agency problems are likely to be different. Banks are able to minimize information asymmetry and agency problems through repeating short-term financing transactions (refinancing), which give banks unlimited power. By contrast, financial institutions offering long-term loans may attempt to minimize such problems by conducting more extensive due diligence to evaluate projects, pricing the risk more carefully with considerable monitoring and covenants, and investing in borrowers' equity.

To test this hypothesis, the regression model adopted for banks is used, except that the dependent variable is firms' borrowings from financial institutions as a share of total liabilities. The results reported in table 1 can be interpreted as follows: first, the coefficients of ROA and CPD and NEW turned out to be statistically significant and negative and positive for both periods. This means that loans from financial institutions to unprofitable, non-CP-issuing, and new firms were greater than those to profitable, CP-issuing, and old firms, suggesting that more credit is allocated to relatively low-quality firms, in line with predictions. Second, the coefficients of EXPORT were moreover statistically insignificant for both periods, indicating no differences between export-oriented and less export-oriented firms in terms of access to loans from financial institutions. Third, further, the coefficients of DEPSALE (and ADVSALE) were statistically significant and positive (negative), as predicted. This suggests that loans from financial institutions to firms with a large amount of tangible assets were greater than those to firms with few tangible assets. Fourth, loans from financial institutions to large and publicly listed firms, however, remained larger than those to small and unlisted firms for the two periods, as evidenced by the statistically significant and positive coefficients of ASSET and LISTED. Fifth, in addition, financial institutions seem to have extended credit to high-risk and low-risk firms indiscriminately during 1992-1996, as indicated by the statistically insignificant level of the coefficient of RISK. However, credits extended to low-risk firms became greater than to high-risk firms in 1997-2001, contrary to the prediction. Sixth, compared with earlier periods, financial institutions allocated more credit to firms belonging to sectors from CAT1 to CAT8 compared firms with diverse products.

These results indicate that financial institutions, like banks, extended more credit to unprofitable firms compared with profitable firms. In addition, they also extended loans more intensively to new and non-CP-issuing firms compared with old and CP-issuing firms' behaviour not present in the case of banks. This suggests that financial institutions engage in a greater degree of relationship lending than banks. These results are consistent with the view that financial institutions, as long-term financiers, face more severe information asymmetry and agency problems and, thus, their incentive to perform relationship lending is greater than for banks.

II. TESTING THE RELATIONSHIP BETWEEN LOANS AND SECURITIES FINANCE

Prior to the 1992 market reforms, the pricing and volume of corporate securities were controlled by the Government; IPO requirements were loose in the absence of adequate accounting, disclosure and listing requirements; and all securities were treated at par regardless of firm size, liquidity, floating stock, trading volume, performance, etc. In order to improve the infrastructure needed to develop a sound capital market, the Government empowered the Securities and Exchange Board of India (SEBI) as a regulatory body in 1992. In the same year, SEBI published guidelines on equity issues that enabled issuers to price their primary issues freely, generating the first stock market boom in 1993-1995. Moreover, the National Stock Exchange (NSE), the first nationwide screen-based stock exchange, was established in 1994, intensifying competition among the existing 22 stock exchanges. In 1995, NSE formed the National Securities Clearing Corporation Ltd. to eliminate counterparty and payment risks. The National Securities Depository Ltd., set up in 1996, dispensed with the need for physical share certificates by setting up a system of computer records of ownership of securities. SEBI allowed the entry of foreign institutional investors to the capital market in 1992 and introduced the Takeover Code in 1994 as well as further deregulation subsequently. Stricter entry and disclosure norms were introduced in 1996. Compared with the equity market, whose market capitalization accounts for more than 50 per cent of GDP, the corporate bond market remains small, with the share of outstanding corporate bonds issued standing only at about 3 per cent even today. Further, private placements account for 90 per cent of public debt issues.

Relationship between bank loans and bond finance

The existing literature on finance suggests that compared with bank loans, bond finance is less effective at minimizing agency problems and improving corporate control. This is because even if bond covenants are inefficient (for example, allowing unprofitable projects to continue or profitable projects to be terminated), corporate bondholders, unlike banks, lack the ability to respond flexibly to ensure better resource allocation (Berlin and Loeys, 1988). The bond market disciplines issuers mainly

through bond covenants, which are written in terms of readily observable indicators of the firm's ability to repay. Further, renegotiation of corporate bond agreements is difficult and costly compared with bank loan agreements, since a change in covenants must be approved by bondholders through collective representation clauses (for example, in the United States, changes are permitted to covenants if two thirds of bondholders agree). The wider the bond ownership, the more difficult renegotiation becomes.

Generally, calls for renegotiation are considered to be less likely for high-quality firms than low-quality ones because the former are perceived to have better performance and management. Also, greater access to the bond market is assured by a high reputation as a diligent payer of debt services based on previous bank-borrower relationships and the readiness to standardize information. To test whether high-quality firms, compared with low-quality ones, have easier recourse to bond issuance and have shifted away from bank loans, the model uses each firm's borrowings from banks as a percentage of total liabilities as a dependent variable. As explanatory variables, the interaction-variables are used between outstanding bonds issued by firms as a percentage of total liabilities BOND and dummy variables derived from the firms' characteristics. Dummy variables are related to the following high-quality firms: large HASSET, profitable HROA, low-risk LRISK, older OLD, CP-issued CPD, publicly listed LISTED, and export-oriented HEXPORT. HASSET is equal to 1 if a firm has above-average assets and 0 otherwise; HROA is equal to 1 if a firm has above-average profitability and 0 otherwise; LRISK is equal to 1 if a firm has below-average variance of ROA and 0 otherwise; OLD is equal to 1 if a firm was incorporated before 1991 and 0 otherwise; and HEXPORT is equal to 1 if a firm has above-average exports as a percentage of sales and 0 otherwise. As high-quality firms are expected to be more active in substituting bond finance for bank loans than low-quality ones, the signs of these interaction variables are expected to be negative, given that declining interest rates make it attractive for firms to issue bonds.

In addition, two proxies for firms with large intangible assets are introduced. HDEPSALE is equal to 1 if a firm has above-average depreciation expenditure as a share of sales (thus, above-average tangible assets) and 0 otherwise. LADVSALE is equal to 1 if a firm has a below-average sum of marketing and advertising expenditures as a share of sales (thus above-average tangible assets) and 0 otherwise. As for the signs of the coefficients of BOND X HDEPSALE and BOND X LADVSALE, existing theories do not say much about the relationship between bank loans and bond finance. Banks may require fixed assets as collateral on firms, while bond investors may pay higher prices for issuers with sufficient collateral. In such a case, the coefficients of BOND X HDEPSALE and BOND X LADVSALE are positive since firms with a large amount of tangible assets may have access to both bank loans and bond finance, compared with those that have a small amount of tangible assets.

The regression estimation is performed using the OLS method based on the same database for the two periods. The estimation results as reported in the left two columns of table 2 indicate the following: first, the coefficient of BOND X HASSET turned from being statistically insignificant in 1992-1996 to being statistically significant and negative for 1997-2001. This suggests that bank loans and bond finance have become substitutes for each other for large firms compared with small firms in recent years – evidence of differentiation of firms by quality. Second, the coefficients of BOND X HROA turned out, however, to be statistically significant but positive for both periods. This suggests that bank loans and bond finance are complementary for profitable firms relative to unprofitable ones. Moreover, the coefficient of BOND X HEXPORT was statistically insignificant in 1992-1996, but became statistically significant and positive in 1997-2001. This indicates that complementarity has been strengthened recently for export-oriented firms relative to less export-oriented firms. The complementary relationships for profitable and, recently, for export-oriented firms occur, because banks tend to provide shorter-term working capital, which is not a direct substitute for relatively longer-term bond finance (of between five and seven years). Third, the coefficients of BOND X HDEPSALE and BOND X LADVSALE were statistically significant and negative in 1992-1996, but turned out to be statistically insignificant in 1997-2001. Thus, bank loans and bond finance were substitutes for each other at an earlier stage for firms with greater tangible assets, but no difference was observed between firms with different levels of tangible assets in later periods.

With respect to firms' borrowings from financial institutions, the main results reported in table 2 are as follows: first, the coefficients of BOND X HASSET and BOND X HROA turned from being statistically insignificant for 1992-1996 to being statistically significant and negative for 1997-2001. This suggests that loans from financial institutions and bond finance have become substitutes for each other for large and profitable firms in recent years – evidence that SEBI's efforts to improve the market infrastructures have had a positive impact. Second, in addition, the coefficients of BOND X LRISK and BOND X LISTED were statistically significant and negative for both periods. These results suggest that borrowings from financial institutions and bond finance have functioned as substitutes for each other for low-risk firms and publicly listed firms for both periods – evidence of quality differentiation. The fact that financial institutions provide longer-term loans relative to banks may explain why loans from these institutions and bond finance tend to be more interchangeable for large, profitable, low-risk and listed firms. Third, the coefficient of BOND X OLD was statistically insignificant in 1992-1996 but became significant and positive in 1997-2001, suggesting that loans from financial institutions and bond finance have been complementary for old firms relative to new firms in recent years. Moreover, the coefficient of BOND X HEXPORT turned from being statistically significant and negative for 1992-1996 to being statistically significant

and positive for 1997-2001. Last, the coefficient of BOND X LADVSALE turned out to be statistically significant and positive in 1997-2001, while that of BOND X HDEPSALE was statistically significant and positive in 1992-1996. Thus, the results for firms with large tangible assets have been mixed.

While some evidence of quality differentiation has been observed in the reform period, the overall weak relationship between loans from both banks and financial institutions and bond finance may indicate that the latter has not yet succeeded in distinguishing high-quality firms from low-quality ones to a substantial degree. This may be closely associated with the fact that most bonds are issued in the private placement market, to which even low-quality firms have access. According to the existing literature, private placement bond finance lies between bank loans and publicly issued bond finance, since private market borrowers tend to be less transparent with respect to their information (Carey et al., 1993). Therefore, the differences between loans and bond finance are subtle. This also suggests that there has been insufficient infrastructure building needed for a sound bond market, so few high-quality firms have qualified to act as public issuers.

Relationship between loans and equity finance

When a solid infrastructure allows outside shareholders to distinguish high-quality firms from low-quality ones, the former are likely to increase equity over debt. There are several reasons for this. First, high-quality firms do not need to increase debt in order to signal their truly favourable (e.g., profitable) position to outside shareholders. If the equity market is unable to differentiate between high-quality and low-quality firms because of inadequate disclosure systems, the former have an incentive to increase debt over equity. This is because they know that low-quality firms would not follow them given that the higher marginal expected bankruptcy costs for any debt level would prevent the latter from increasing debt (Harris and Raviv, 1991).

Second, outside shareholders would not heavily discount the prices of newly issued equity of high-quality firms if the quality is known to them. This avoids the situation where more than the net present value of the new project is accrued to outside shareholders so that inside shareholders anticipating a new loss are reluctant to accept the project (Myers and Majluf, 1984). If the quality is unknown, managers of the firms would increase debt to prevent the loss of inside shareholders so that the latter would not reject a new project – a device to mitigate the problems of underinvestment and sluggish firms' growth. Therefore, high-quality firms, if the quality is known to the public, do not need to worry about this discounting problem and, thus, issue more equity over debt. Third, managers of high-quality firms tend to operate firms in a proper manner and, thus, shareholders of such firms do not need to increase debt in order to reduce free cash available to managers that might be used for

Table 2. Estimation results for loans and bond finance relationship, 1992-2001

Variable	Bank loans				Loans from financial institutions			
	Period: 1992-1996		Period: 1997-2001		Period: 1992-1996		Period: 1997-2001	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
C	26.75***	9.93	15.40***	7.60	9.74***	5.33	-2.27*	-1.87
TIME93	-0.61	-0.62	–	–	-0.45	-0.68	–	–
TIME94	-2.16**	-2.20	–	–	-0.53	-0.79	–	–
TIME95	-1.70*	-1.78	–	–	-1.58***	-2.44	–	–
TIME96	-2.35**	-2.33	–	–	-3.70***	-5.41	–	–
TIME97	–	–	–	–	–	–	–	–
TIME98	–	–	0.00	0.01	–	–	-0.67*	-1.81
TIME99	–	–	-0.41	-0.67	–	–	-1.06***	-2.83
TIME00	–	–	0.95	1.52	–	–	-1.45***	-3.90
TIME01	–	–	-0.43	-0.60	–	–	-2.40***	-5.67
ASSET	-6.40***	-10.58	0.27	0.66	3.73***	9.10	7.35***	29.82
ROA	-0.68***	-37.83	-0.65***	-44.80	-0.24***	-20.01	-0.39***	-45.25
OLD	4.72***	3.12	1.70***	3.07	-3.18***	-3.09	-3.17***	-9.55
CPD	2.50***	2.68	0.96	1.12	-1.81***	-2.86	-4.79***	-9.33
LISTED	2.18***	2.83	-0.70	-1.32	1.36***	2.60	1.57***	4.92
EXPORT	0.08***	5.34	0.00	0.98	-0.00	-0.52	-0.00	-1.06
DEPSALE	-0.00	-0.97	-0.00	-1.15	0.01***	4.72	0.00***	4.57
ADVSALE	-0.28***	-3.39	0.05***	2.78	-0.15***	-2.76	-0.05***	-4.84
RISK	0.00***	2.98	-0.00***	-4.19	-0.00	-0.42	-0.00***	-7.82
CAT1	-0.69	-0.33	3.64*	1.91	-1.86	-1.33	4.10***	3.59
CAT3	-1.53	-0.60	-4.50**	-2.08	3.06*	1.75	5.92***	4.55
CAT4	-1.03	-0.42	4.72**	2.18	1.07	0.64	6.12***	4.72
CAT5	-2.59	-1.32	-0.67	-0.36	3.92***	2.94	5.63***	5.04
CAT6	-1.09	-0.59	2.30	1.28	6.75***	5.34	7.57***	6.98
CAT7	-3.11*	-1.62	-0.05	-0.02	1.03	0.79	3.25***	2.94
CAT8	2.39	0.61	-2.01	-0.70	4.93*	1.85	4.51***	2.63
BOND	0.03	0.10	-0.24	-1.29	0.21	1.00	0.18	1.59
BOND X HASSET	0.12	1.33	-0.36***	-3.99	0.02	0.37	-0.23***	-4.18
BOND X HROA	0.17**	2.12	0.20**	2.32	0.09	1.60	-0.12**	-2.30
BOND X LRISK	0.03	0.19	0.06	0.52	-0.23**	-2.37	-0.20***	-3.06
BOND X OLD	0.11	0.48	0.03	0.30	-0.09	-0.61	0.18***	2.77
BOND X CPD	-0.13	-1.30	-0.01	-0.10	-0.10	-1.41	0.04	0.50
BOND X LISTED	-0.24	-1.12	0.04	0.28	-0.35**	-2.43	-0.27***	-3.52
BOND X HEXPORT	0.04	0.43	0.18*	1.82	-0.12*	-1.78	0.13**	2.33
BOND X HDEPSALE	-0.19**	-2.32	0.17	1.84	0.19***	3.38	-0.02	-0.31
BOND X LADVSALE	-0.16*	-1.86	0.01	0.14	0.03	0.50	0.09**	1.72
R-squared	0.20		0.14		0.11		0.19	
F-statistic	65.01		83.43		31.36		121.33	
n	7 783		15 673		7 783		15 673	

Note: ***, **, * indicate significance at 1%, 5%, and 10%, respectively.

unproductive activities – mitigating conflicts of interest between shareholders and managers (Jensen, 1986).

At the same time, high-quality firms are able to mitigate various conflicts of interest between shareholders/managers and debt-holders, thereby being able to determine the optimal liability mix and achieve more efficient outcomes. For example, high-quality firms, because of adequate cash flows, are able to avoid a situation where shareholders/managers want to continue to operate firms, while debt-holders prefer liquidation (Harris and Raviv, 1990). Moreover, high-quality firms could minimize the two sources of “asset substitution effect” of debt. The first source refers to the situation in which the debt contract gives shareholders an incentive to invest sub-optimally – investing in risky projects – thus accruing large returns that are well above the face value of the debt to shareholders when a project turns out to be successful. Meanwhile, debt-holders bear the cost through lowered value of the debt or shoulder the failure of the project due to shareholders’ limited liability (Harris and Raviv, 1991). The second source occurs in cases of near bankruptcy, where shareholders may not increase holdings of equity even though the project is value-increasing (Myers, 1977). This is because shareholders have to bear the entire cost of the investment, while debt-holders may obtain returns. Thus, the more debt accumulates, the higher the probability of rejecting value-increasing projects.

Based on these existing studies, this paper tests whether high-quality firms have substituted equity finance for bank loans compared with low-quality firms. Moreover, whether firms with a large amount of intangible assets are likely to issue more equity over bank loans is tested. This paper adopts the same regression model presented earlier, but uses the ratio of share capital to total liabilities *SHARE*, instead of *BOND*. It is expected that the signs of the coefficients of *SHARE X HASSET*, *SHARE X HROA*, *SHARE X LRISK*, *SHARE X OLD*, *SHARE X CPD*, *SHARE X LISTED*, and *SHARE X HEXPORT* would be negative. As for firms with a large amount of intangible assets, two dummy variables are used: *LDEPSALE* and *HADVSALE* (in contrast to *HDEPSALE* and *LADVSALE* in the case of bonds) being equal to 1 if firms have above-average intangible assets and 0 otherwise. The coefficients of *SHARE X LDEPSALE* and *SHARE X HADVSALE* would be expected to be negative. This is because banks are unlikely to extend credit to firms without sufficient collateral, while such firms may have access to the equity market due to growth opportunities.

The estimation results reported in table 3 for the case of firms’ borrowings from banks indicate the following: first, the coefficients of *SHARE X HASSET*, *SHARE X HROA*, *SHARE X LRISK*, and *SHARE X HEXPORT* were statistically significant and negative for both periods, in line with the prediction. These results indicate that bank loans and equity finance are substitutes for each other in the case of large, profitable, low-risk, and export-oriented firms, compared with small, unprofitable, high-risk, and less export-oriented ones. Although the results appear to

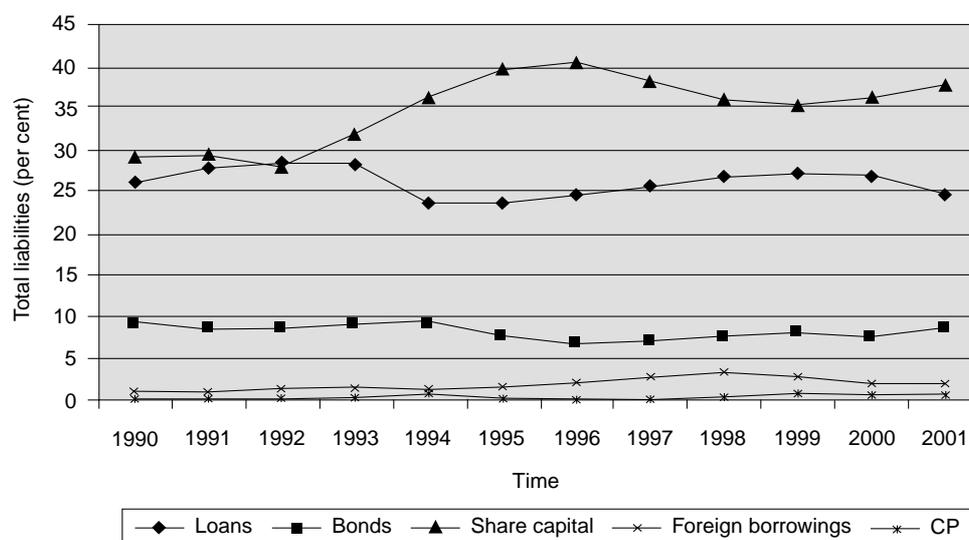
Table 3. Estimation results for loans and equity finance relationship, 1992-2001

Variable	Bank loans				Loans from financial institutions			
	Period: 1992-1996		Period: 1997-2001		Period: 1992-1996		Period: 1997-2001	
	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic	Coefficient	t-Statistic
C	36.13***	10.40	19.07***	8.95	12.68***	5.21	2.29*	1.77
TIME93	-0.59	-0.63	–	–	-0.71	-1.10	–	–
TIME94	-1.76*	-1.92	–	–	0.42	0.65	–	–
TIME95	-1.65*	-1.81	–	–	-0.36	-0.57	–	–
TIME96	-2.83***	-2.92	–	–	-2.36***	-3.47	–	–
TIME97	–	–	–	–	–	–	–	–
TIME98	–	–	0.16	0.26	–	–	-0.75**	-2.02
TIME99	–	–	-0.27	-0.44	–	–	-0.98***	-2.64
TIME00	–	–	0.79	1.28	–	–	-1.13***	-3.02
TIME01	–	–	0.82	1.17	–	–	-2.86***	-6.72
ASSET	-3.08***	-4.63	1.01**	2.09	4.03***	8.63	5.61***	19.10
ROA	-0.68***	-35.20	-0.58***	-37.12	-0.19***	-14.35	-0.38***	-40.51
OLD	-9.74***	-3.70	-2.78***	-3.49	-11.71***	-6.34	-6.07***	-12.56
CPD	1.70	1.58	0.89	1.04	-4.66***	-6.16	-5.07***	-9.75
LISTED	-3.28***	-3.58	-4.01***	-6.14	2.45***	3.81	2.69***	6.80
EXPORT	0.19***	10.94	0.00	1.08	-0.00	-0.19	-0.00	-1.00
DEPSALE	-0.01**	-2.03	-0.00	-1.37	0.01**	2.39	0.00***	3.62
ADVSALE	0.16*	1.81	0.07***	3.85	-0.12**	-2.03	-0.04***	-3.94
RISK	-0.00***	-7.21	-0.00***	-5.44	-0.00	-1.42	-0.00***	-7.83
CAT1	0.63	0.33	4.44**	2.39	-0.38	-0.28	4.51***	3.99
CAT3	-0.70	-0.29	-3.57*	-1.68	2.21	1.31	6.01***	4.66
CAT4	-1.09	-0.48	5.03**	2.37	2.90*	1.79	6.74***	5.24
CAT5	-1.69	-0.92	0.34	0.19	3.78***	2.95	5.83***	5.29
CAT6	-0.13	-0.08	3.38*	1.92	6.93***	5.69	7.86***	7.34
CAT7	-0.99	-0.55	1.07	0.60	1.35	1.08	3.68***	3.38
CAT8	4.81	1.30	-0.62	-0.22	3.63	1.40	4.81***	2.82
SHARE	0.07	0.88	0.01	0.82	0.26***	4.71	-0.01	-0.96
SHARE X HASSET	-0.12**	-2.04	-0.14***	-3.05	0.04	1.01	0.05	1.61
SHARE X HROA	-0.09***	-3.22	-0.04***	-2.88	-0.00	-0.14	-0.01*	-1.70
SHARE X LRISK	-0.61***	-22.99	-0.22***	-16.91	-0.03*	-1.62	0.00	0.48
SHARE X OLD	0.44***	7.08	0.10***	6.71	0.29***	6.74	0.07***	7.63
SHARE X CPD	0.00	0.03	-0.06	-1.03	0.24***	3.87	0.02	0.57
SHARE X LISTED	0.29***	6.26	0.15***	9.67	-0.25***	-7.74	-0.04***	-4.21
SHARE X HEXPORT	-0.38***	-10.14	-0.04***	-2.84	-0.03	-1.02	0.02***	2.77
SHARE X LDEPSALE	0.05*	1.91	0.05***	4.36	-0.27***	-15.69	-0.06***	-8.52
SHARE X HADVSALE	-0.25***	-8.14	-0.05***	-4.16	-0.03	-1.29	-0.03***	-4.60
R-squared	0.30		0.16		0.16		0.19	
F-statistic	110.23		100.19		50.73		124.25	
n	7 783		15 673		7 783		15 673	

Note: ***, **, * indicate significance at 1%, 5%, and 10%, respectively.

support the prediction, one needs to be cautious in interpreting them. The substitution relationship may simply reflect temporary stock market booms driven by the liberalization of stock prices in 1993-1995 (when many firms listed their shares at stock exchanges), and in the 1999-2000 IT boom (in order to take advantage of the temporary low cost of equity). There has been no steady shift from bank loans to equity finance, as shown in figure 1 for the average of all firms. The highly volatile pattern of equity finance also reflects a poor infrastructure. Therefore, the substitution relationship between bank loans and equity finance does not necessarily imply that the importance of bank loans has constantly declined over equity for high-quality firms during 1990-2001. Second, further, the coefficients of $\text{SHARE} \times \text{OLD}$ and $\text{SHARE} \times \text{LISTED}$ turned out to be statistically significant and positive for both periods, suggesting that bank loans and equity finance are complementary for old and publicly listed firms relative to new and unlisted firms. Third, the coefficients of $\text{SHARE} \times \text{LDEPSALE}$ and $\text{SHARE} \times \text{HADVSALE}$ turned out to be statistically significant, but the signs were opposite.

Figure 1. Total liabilities for all firms, 1990-2001



Source: Prowess database, Centre for Monitoring the Indian Economy.

The same model is applied to the case of borrowings from financial institutions. The sign of the relationship between loans from financial institutions and equity finance for high-quality firms is expected to be mixed. On the one hand, a negative relationship is expected to be more pronounced than the case of bank loans and equity finance, because long-term loans and equity finance are more likely to be substitutes for each other. On the other hand, a positive relationship can be expected since financial institutions often invest in shares of their borrowers. If the second effect exceeds the first, a positive relationship between loans and equity finance is to be expected.

With respect to firms' borrowings from financial institutions, the results reported in table 3 are summarized as follows: first, the coefficient of $\text{SHARE} \times \text{LISTED}$ was statistically significant and negative for the two periods. This suggests that loans from financial institutions and equity finance are substitutes for each other in the case of publicly listed firms relative to unlisted firms. Also, the coefficient of $\text{SHARE} \times \text{HROA}$ shifted from being statistically insignificant in 1992-1996 to being statistically significant and negative in 1997-2001. Thus, a substitution relationship is observable for profitable firms relative to unprofitable ones in recent years. Second, the coefficient of $\text{SHARE} \times \text{LRISK}$, which was statistically significant and negative for 1992-1996, turned out to be statistically insignificant and positive in 1997-2001. Third, the coefficient of $\text{SHARE} \times \text{OLD}$ was moreover statistically significant but positive for the two periods. Fourth, the coefficient of $\text{SHARE} \times \text{CPD}$ turned from being statistically significant and positive to being statistically insignificant, while the opposite is true for the case of $\text{SHARE} \times \text{HEXPORT}$. The overall greater complementarity between loans from financial institutions and equity finance (as compared with bank loans with equity finance) arises from the greater impact of dual holdings of debt and equity. Fifth, the coefficients of $\text{SHARE} \times \text{HDEPSALE}$ and $\text{SHARE} \times \text{LADVSALE}$ were statistically significant and negative, in line with the prediction.

III. CONCLUSIONS

This paper has found that financial and capital market reforms have had positive impacts on these markets in India. However, the financial and capital markets remain shallow for several reasons. First, firms characterized as being of high quality have increasingly substituted bond finance for bank loans, but this behaviour was more prevalent for the relationship from loans from financial institutions to bond finance. The weaker substitution relationship for bank loans reflects their short-term nature as a result of the intervention policies of previous governments. As the reforms make further progress, banks should be expected to lengthen the maturity of credit as they diversify. Thus, a greater substitution relationship is likely to emerge for high-quality firms than for low-quality ones.

Second, the overall weak substitution relationship between loans (both from banks and financial institutions) and bond finance for high-quality firms suggests the failure of the largely privately funded bond markets to differentiate firms by quality, because SEBI exempts public issues from stringent accounting and disclosure requirements. Indeed, tighter regulations in the public capital market have encouraged some firms to shift from the equity market to the private placement bond market. Such a regulatory arbitrage merits greater attention and a further improvement of the infrastructure.

Third, while equity finance has become one of the most important financing sources next to loans, the equity market has not proved a stable source during 1990-2001. Firms appear to have taken advantage of the two stock market booms in order to raise funds cheaply, but have shifted away from the market once the boom petered out. Therefore, there has been no steady shift among high-quality firms from loans from banks and financial institutions to equity. This reflects an inadequate infrastructure for a sound capital market despite SEBI's efforts to strengthen accounting, auditing and disclosure requirements, thereby failing to differentiate between firms of different quality and to enable high-quality firms to issue shares at higher prices than low-quality ones regardless of the boom-bust cycles of stock prices. The poor infrastructure is evidenced by the frequent cases of malpractice and price manipulation. The results of this study reinforce the need for further financial and capital market reforms with an emphasis on infrastructure building.

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