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Financial Development and Growth in India: A Growing Tiger in a Cage?

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Asia and Pacific Department

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Abstract

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This paper examines the efficiency of the different segments of India's financial system using firm-level data on corporate financing patterns. Firms are increasingly relying on external funds to finance their investment in most recent years. Empirical analyses indicate that (1) the financial system in India is not channeling funds into industries with higher external finance dependence; (2) the debt financing system does not allocate funds according to firms' external finance dependence, while equity financing system does; and (3) firms in an industry that are more dependent on external finance grow more slowly.

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I. INTRODUCTION

Establishing a clear-cut foundation for promoting certain financial sector development policies aiming at better financial stability and higher economic growth is not an easy task. On the one hand, a growing number of empirical papers find evidence that finance matters for growth. As overviewed by Levine (2004), King and Levine (1993), Levine and Zervos (1998), and Levine, et al (2000) provided pioneering works using macro-level data, and Rajan and Zingales (1998) have established microeconomic level evidence.² In addition, a series of financial crises in the 1990s³ drew attention to the need for maintaining financial stability in order to achieve economic stability. These analyses provide a backbone for numerous policy recommendations to general financial systems in general. However, the foundation for promoting a particular set of policies to develop certain segments of the financial system is often vague. For instance, in India—one of the fastest growing economies in the world—the need for developing the embryonic corporate bond market is repeatedly emphasized (IMF (2008) and World Bank (2006)); yet building a strong case for it other than citing its small size and anecdotal evidences³ is difficult. While a large number of academic papers discuss the structure of financial systems and growth and stability,⁴ there seems to be a lack of a straightforward answer to the question of why India needs a corporate bond market, especially when there is well-developed equity market.

This paper attempts to establish a clearer link among uneven development of the different segments of a financial system, corporate financing patterns, and firm growth, using firm-level data in India. The corporate sector and its investment in India have been playing a key role driving the recent rise in India's economic growth (Figure 1). The rapid pace of India's corporate sector expansion will in turn continue to require very large amounts of funds. Furthermore, India's financial system is known for its rather skewed development, equipped with world-class equity markets but much less developed debt financing opportunities (Table). Firms are also rapidly increasing foreign financing as well (Figure 2). Analyzing sources of corporate funds will shed light on this uneven development of the India's financial system and the need and directions for further upgrading. If firms are increasingly using external funds (funds from outside of the firm)⁵ rather than internal funds (funds generated by

² However, skepticism exists. Most famously, Lucas (1988) discussed that finance simply follows growth, not vice versa.

³ In World Bank (2006), authors emphasized the experiences during the Asian crisis where mal-functioning of the bank-based system caused the boom-bust cycle in the economy, and discussed the need for developing a more market-based system.

⁴ Levine (2004) provides a comprehensive survey of the finance and growth literature, including discussions on financial structure and growth. Demirgüç-Kunt and Levine (2001) survey empirical evidence on financial structure and growth, and Allen and Gale (2000) go through theoretical perspectives in depth.

⁵ Throughout this paper, the term “external finance” is used to indicate sources of funds outside of a firm, including both domestic and foreign finance. The term “foreign” is used to indicate funds from overseas.

the firm's own operations), access to an efficient domestic financial system, or access to foreign financing, will become ever more important to sustain high levels of investment. In addition, if a well-developed equity market is not enough to compensate for the lack of equivalently well-developed debt financing opportunities in providing external finance and enhancing firm growth, there will be a stronger case for promoting the need to develop debt financing opportunities.

Comparative Size of Capital Markets (2006)												
(In billions of U.S. dollars and percent of GDP)												
	Stock Market Capitalization		Debt Securities						Bank Assets ¹	Bonds, Equities, and Bank Assets ²		
			Public		Private		Total					
Australia	929	123.1	107	14.1	751	99.5	858	113.6	1,381	182.9	3,167	419.6
Canada	1,472	116.0	702	55.3	633	49.9	1,336	105.3	2,033	160.2	4,841	381.4
Japan	4,865	111.4	6,751	154.6	1,969	45.1	8,719	199.6	6,617	151.5	20,201	462.5
New Zealand	42	40.2	22	21.0	5	5.1	27	26.1	154	149.3	223	215.6
United States	17,436	131.6	6,234	47.1	20,502	154.8	26,736	201.9	10,285	77.7	54,457	411.2
China	1,144	43.5	791	30.1	422	16.0	1,213	46.1	4,126	156.9	6,483	246.5
Hong Kong, PRC	1,715	<i>n.a.</i>	20	<i>n.a.</i>	95	<i>n.a.</i>	115	<i>n.a.</i>	847	<i>n.a.</i>	2,678	<i>n.a.</i>
India	816	92.1	305	34.4	41	4.6	346	39.0	757	85.4	1,919	216.4
Indonesia	137	37.7	85	23.4	20	5.6	106	29.0	149	41.0	392	107.7
Korea	815	91.8	468	52.6	643	72.4	1,111	125.1	1,058	119.1	2,984	336.0
Malaysia	235	155.8	63	41.7	116	76.6	179	118.3	297	196.7	711	470.8
Philippines	68	58.1	65	56.0	12	9.9	77	65.9	68	58.5	213	182.5
Singapore	364	275.3	56	42.6	68	51.4	124	94.0	337	254.7	825	624.0
Taiwan, POC	650	182.6	104	29.3	119	33.4	223	62.8	729	204.9	1,602	450.3
Thailand	138	66.8	76	36.8	46	22.3	122	59.1	228	110.8	488	236.6
Chile	169	116.1	18	12.6	32	21.8	50	34.4	112	76.9	330	227.4
Mexico	369	43.9	213	25.4	189	22.4	402	47.8	239	28.4	1,010	120.2
Peru	48	51.4	12	13.1	5	5.9	18	19.0	26	27.9	92	98.4
Russia	1,030	105.2	63	6.4	61	6.3	124	12.7	348	35.5	1,502	153.4

Sources: World Federation of Exchanges, Bank for International Settlements, Bankscope, Bloomberg LP.

1/ Commercial bank assets, end-2006.

2/ Sum of the stock market capitalization, debt securities, and bank assets.

In the following sections, this paper examines three specific questions: (1) are Indian firms increasingly relying on external funds? (2) are there signs of financing constraints/frictions in some segments of the financial system? and (3) does higher external finance dependence imply weaker firm growth? These questions are addressed by examining summary statistics for corporate financing patterns, and by estimating standard models from the corporate finance literature explaining capital structure and firm growth together with the external finance dependence measure introduced by Rajan and Zingales (1998). Lastly, this paper attempts to provide clear reasons for the need for further development in debt-financing mechanisms in India, based on the answers to these questions as well as implications from related literature.

Major findings are as follows. First, firms seem to use more external finance lately, marking a change in cyclical trends, as investment started to pick up. Second, there are signs of inefficiency in India's financial systems, particularly in the debt financing mechanisms. In the equity market, firms in an industry with higher external finance dependence are indeed utilizing external financing more than other firms. However, debt financing patterns do not

correspond to external finance dependence; direct evidence that Indian banks and its corporate bond market are not efficient in allocating resources. Third, consistent with the financing patterns and existing studies on finance and growth, firms in an industry with higher external finance dependence, on average, grow more slowly than others.

In addition to highlighting specific efficiency issues in Indian financial systems, this paper contributes to the finance-growth literature by looking at the implicit assumptions not directly analyzed in the existing research. For instance, Rajan and Zingales (1998) analyzed the direct statistical relationship between industry growth and the financial development of a country weighted by external finance dependence of the industry, assuming that financial underdevelopment would influence firms' funding patterns, and hence growth. The firm-level data in this paper allow one to test this assumption directly and strengthen the discussion connecting finance and firm growth.

The rest of the paper is organized around the three questions raised earlier. Before concluding, a final section discusses the policy implication of this paper's results on financial sector development in India, especially for the corporate bond market.

II. ARE INDIAN FIRMS INCREASINGLY RELYING ON EXTERNAL FUNDS?

The patterns of corporate finance have changed dramatically since the end of the 1990's. This paper uses the Prowess database from the Centre for Monitoring the Indian Economy (CMIE), a Mumbai-based economic think-tank, which includes detailed financial statement data for about 9,000 companies out of the approximately 10,000 listed companies in India.⁶ The data include from 3,300 to over 6,000 companies for fiscal years 1993/94 to 2005/06 after omitting errors and incomplete observations (Table 1). The majority of firms are over 10 years old (some are over 100 years old). By sector, manufacturing firms are the majority, and financial and chemical sectors are the two largest sub-sectors. The sample mostly represents domestic private sector companies (either independent or in a business group), although it also includes foreign and government owned companies, which are much larger on average than private sector companies by sales.

- The share of external funds in total funds gradually declined through 2003/04 (Table 2, left panel).⁷ In particular, there were large-scale repayments

⁶ The firms covered in the database account for 75 percent of corporate taxes and over 95 percent of excise duty collected by the Government of India. The database covers a much larger number of companies than the about 500 Indian firms included in the Corporate Vulnerability Utility (CVU) developed by the IMF, based on Worldscope and DataStream. In addition, Prowess has more detailed data fields, such as foreign borrowing, than CVU. Prowess is frequently used in existing studies on India's financial system, including Topalova (2004), Love and Martinez Peria (2005), Allen, et al (2006), and Allen, et al (2007).

⁷ External funds are defined as long-term domestic and foreign debt, equity, and trade credit, while total funds are defined as external funds plus retained earnings and depreciation.

of debt since 2000/01, both domestic and external. These repayments reduced the median share of “core” external funds—defined as formal/active sources of funds including long-term debt and equity, and excluding passive/informal sources of funds such as trade credit—in total funds sharply from 26 percent of total funds in 2000/01 percent to 9 percent in 2002/03 and 2003/04⁸ (Table 2, right panel). This de-leveraging reduced the debt-to-asset ratio, while more or less maintaining the equity-to-asset ratio (Table 3).

- However, the use of external funds seems to be picking up in the latest couple of years. The share of “core” external funds has come back up to about 16 percent in 2005/06 (Table 2, right panel). The use of foreign borrowing has increased and become more wide-spread across sectors (Table 4, left panel).

A combination of factors could have influenced these patterns:

- *The domestic economic cycle.* Corporate investment declined by about 5 percent of GDP from the mid-1990’s peak through 2001/02, in response to the unwinding of investments made during the early 1990’s boom. The recent pickup in the use of external funds coincides with the pickup in investment that started in 2002/03. Indeed, the growth of corporate investment is much faster than the growth of internal funds, and the share of external funds relative to capital expenditure has increased sharply for non-financial firms (Table 4, right panel).
- *Corporate tax rate.* The corporate tax rate has been reduced from 60–75 percent in the early 1990’s to 45 percent in 2005/06 (including surcharges).⁹ This could have contributed to the gradual decline in leverage as it reduced the tax benefits of debt.
- *Global influences.* Other economies in the world have shown similar corporate finance patterns (whether this reflects the transmission of global factors or coincidence is admittedly unclear). Major emerging markets turned into net capital exporters since 2000, as they de-leveraged after the 1990’s crises (IMF, 2004). The corporate sectors in G-7 countries turned into net savers starting around the turn of the century. IMF (2006a) discusses possible explanations for the G-7 experiences, including deleveraging of high debt accumulated during the 1990’s; high corporate profits owing to low interest rates and a generalized reduction in corporate tax rates; ongoing technological change that altered the relative price of capital; increased

⁸ As pointed out in Allen, et al (2006), Indian firms hold significantly large amounts of trade credit on their books, indicating a major role as a source of informal external funds.

⁹ Mohan (2007).

demand for purchasing overseas companies by corporations; and increased demand for cash owing to heightened uncertainty in the business environment.

In addition, there are some notable cross-section patterns:

- *Age*: Younger firms rely more on external finance, as shown in a high share of external funds in total funds (Table 1) and the large share of external funds relative to investment (Table 4). This might be because they need to invest in capacity and it may take several years before they become profitable.
- *Size*: Smaller firms have limited access to formal sources of external finance compared to larger firms, and rely relatively heavily on trade credit (as shown in a high share of overall external funds but a low share of core external funds; see Table 2). They also tend to rely on equity, most likely from owner-founders, rather than debt (Table 3). Despite limited access to core external finance, smaller firms rely on overall external funds to finance their investment more than larger firms (Table 4, right panel), indicating their extensive use of trade credits. However, larger firms are more likely to borrow from abroad than smaller firms (Table 4, left panel).

Overall, the Indian corporate sector's use of external funds is rapidly increasing (although the share of external funds in total funds is still below the 1990's peak). Sources of internal funds—corporate profit growth and gains in corporate saving—are strong, but not as strong as corporate investment. Thus, maintaining and improving access to external funds would be key to sustain healthy financing for strong corporate investment going forward.

III. ARE THERE SIGNS OF FINANCING CONSTRAINTS?

Economy-wide measures indicate rapid financial development in India in recent years. Between 2003/04 and 2006/07, the annual growth rate of bank credit to the corporate sector averaged 30 percent y/y, and its share in GDP increased by 5 percentage points to over 16 percent of GDP. Between 2002/03 and mid-2007, the market capitalization of the Bombay Stock Exchange in percent of GDP more than tripled to over 100 percent. Furthermore, capital inflows accelerated sharply from 2 percent of GDP in 2002/03 to 5 percent of GDP in 2006/07, with FDI inflows into Indian companies increasing by 1 percentage point of GDP and external commercial borrowing disbursements to corporations rising by 2.5 percentage points of GDP.

However, some segments of India's financial system are less developed. Despite strong growth in recent years, the corporate debt (sum of bank credit to the corporate sector and corporate bonds) to GDP ratio remained below 20 percent in 2006/07, much lower than the average of 60 percent in emerging markets (near 80 percent in emerging Asia, 30 percent in emerging Latin America, and over 20 percent in emerging Europe (IMF, 2005)). Limited reliance on banks to fund corporate investment may reflect regulatory constraints, most notably the Statutory Liquidity Requirement that requires banks to invest a minimum of

25 percent of their deposits in government securities, and a priority sector lending requirement that mandates domestic banks to lend a minimum of 40 percent of their net credit to the priority sector.¹⁰ The corporate bond market is underdeveloped, amounting to less than 5 percent of GDP, compared with over 20 percent of GDP in Thailand, Chile, and Mexico, and 50–100 percent of GDP in more advanced economies. Impediments include fragmented tax structure, low transparency, restrictive issuance rules, lack of repo markets, and quantitative limits on the investor base (IMF, 2008).

Empirical Strategy

The empirical analyses in this paper indicate that corporate financing patterns reflect the uneven and still underdeveloped state of India's financial systems. The financing patterns and capital structure of Indian firms have several notable features: (1) overall, there is a limited relationship between external finance dependence and actual use of such funds;¹¹ (2) this is particularly true of debt financing, including foreign debt; and (3) equity markets, on the other hand, seem to be tapped by firms in more finance-intensive industries.

This paper employs an empirical strategy that properly instruments for external finance demand factors, and hence, can investigate the relationship between demand factors and financing patterns:¹²

$$x_i = \alpha + \beta RZ_us + \gamma y_i + \varepsilon_i \quad (1)$$

The dependent variable x_i is the period average of capital structure measures, including the share of external funds in total funds for firm i , and the share of debt, foreign debt, and equity over total assets. The independent variable y_i is a standard set of firm characteristics known to have explanatory power for capital structure in the corporate finance literature. RZ_us is an instrument for inherent external finance demand introduced by Rajan and Zingales (1998) as an external finance dependence measure (henceforth, the RZ measure), and is calculated as the share of capital expenditure financed by external funds¹³ using U.S. data. The analysis

¹⁰ The priority sector includes agriculture, small business, small scale industries, retail trade, education, small housing, and consumption loans among other items.

¹¹ Classification of external finance dependence is based on Rajan and Zingales (1998).

¹² The empirical literature on capital structure often uses firm-level data and regresses capital structure measures on individual firm characteristics. In the finance-growth literature, such as Rajan and Zingales (1998) and de Serres, et al (2006), industry level cross country data are used, and industry growth in a country is regressed on an interaction term between RZ_us (RZ measure based on U.S. data) and a country specific financial development or financial regulation measure. Since our data are firm-level data for India only, the interaction term is reduced to the RZ_us variable.

¹³ Defined as (capital expenditure – (cash flow + decrease in inventory + decrease in receivables + increase in payables))/capital expenditure. Cash flow is adjusted for changes in inventory, receivables and payables

(continued...)

uses the calculation of de Serres, et al (2006) for ISIC 2-digit level industries, which includes a part of the services sector (but excludes the financial sector).

The RZ measure is widely used as an instrument for external funds demand, in spite of three strong assumptions. First, some industries are likely to have larger needs for external funds. For instance, the labor-intensive textile industry may not need much external finance compared with capital-intensive heavy industries such as chemicals and petroleum. Second, the cross-industry variation of the demand for external finance is likely to follow the same ordering across countries, implying that if in the United States, the petroleum sector needs more external finance than the textile sector, the same is true in India. Third, and most controversial, the U.S. financial system is assumed to have only limited frictions in supplying finance; therefore, the observed ordering of the RZ measure with the U.S. data¹⁴ should reflect demand factors applicable in other countries. While this last assumption is arguably strong, the measure produces consistently reasonable results in the growth-finance literature (including Rajan and Zingales (1998) and de Serres (2006) for instance).

Accepting these assumptions, if a financial system has minimal supply side constraints, it should provide more funds to sectors that inherently are more dependent on external funds (higher RZ measure). In the model (1), an efficient financial system should be represented by a positive, significant coefficient for the RZ_us. On the other hand, if a financial system is distorted, the industries with large external finance dependence may not necessarily receive larger external resources, resulting in an insignificant or even a negative coefficient for the RZ_us measure.¹⁵

The model includes a standard set of firm characteristics that are often used in empirical models to explain capital structure by controlling for other relevant factors.¹⁶ Debt

represents internal funds; therefore, the numerator represents external funds that fill the gap between financing needs for investment and internally generated resources.

¹⁴ After smoothing short-term cyclical fluctuations; indeed, Rajan and Zingales (1998) used the decade average data to calculate the RZ measure.

¹⁵ A negative correlation between demand intensity for credit and actual amount borrowed indicates a “backward bending” supply curve, which could exist if higher interest rates attract less creditworthy borrowers and lenders cannot observe the creditworthiness of a borrower.

¹⁶ Two relatively recent studies covering non-U.S. firms, Rajan and Zingales (1995, covering G7 countries) and Booth, et al. (2001, covering developing countries) find that despite substantial institutional differences across countries, firm debt ratios in developed and developing countries seem to be influenced by some similar factors. More generally, in a widely cited review of the theoretical literature, Harris and Raviv (1991) conclude that debt use is positively related to fixed assets, non-debt tax shields, investment levels, and firm size, and is negatively related to cash-flow volatility, growth opportunities, advertising expenditure, the probability of bankruptcy, profitability, and the uniqueness of product. Theoretical models are based on agency costs (costs due to conflicts of interest between shareholders and managers or between shareholders and debt holders), asymmetric information (insiders and managers tend to have private information and may undertake inefficient

(continued...)

ratios tend to be lower for firms that are more profitable (hence, cash rich) and have higher market-to-book ratios (the latter is usually considered as a proxy for growth opportunities or Tobin's Q). On the other hand, debt ratios tend to be higher for firms that are larger and those that have more tangible assets that they can pledge as collateral. Therefore, the model includes firm size (using log of sales), profitability (return on asset (ROA)), asset tangibility (ratio of tangible assets to total assets), firm age (using log of years since incorporation at the beginning of the sample period), and dummy variables for ownership. Following Love and Peria (2005), the square of firm age is also included.¹⁷ Models are estimated with and without the market-to-book ratio, since only a limited number of firms have this data. For models explaining foreign borrowing, a dummy variable to distinguish exporters is added.

Models are estimated for three sets of cross section data: 1993/94–2005/06 (whole sample), 1993/94–1998/99 (first half), and 1999/00–2005/06 (second half). All the ratios were calculated by first summing the denominator and numerator across time with an aim to smooth annual volatility (similarly to Rajan and Zingales (1998)).

Tables 5–8 summarize the estimates. The two sub-samples include different numbers of observations, reflecting entry and exit of firms. Similar results are obtained even when focusing on a subset of companies that have data for the whole period.

Results: Share of core external funds (Table 5)

- The coefficient on the RZ_us measure is negative and significant for the whole sample and the sub-sample in the 1990's, implying that India's financial system is not allocating resources to firms that are the most finance-intensive, other things being equal.
- Coefficients for firm characteristics are generally as expected, although the different results for equity and debt have implications that are not clear cut. Larger firms seem to have better access to external funds, and more profitable firms with rich cash positions tend to rely less on external funds, as expected. The negative sign on age and asset tangibility seems to be picking up its impact on equity finance (younger firms receive equity finance from founding promoters) as shown in the regressions for equity-to-assets (Table 8). Foreign and government-owned firms use less external finance overall, especially debt (Table 6), but they use more equity (Table 8) than

investments), product/input market interaction (among competing producers, and/or between producers and consumers/suppliers), and corporate control considerations (related to takeover activities).

¹⁷ In their study, this variable often has negative and significant coefficients. One possible explanation is that some firms are extremely old (over 100 years in 1994), often in textile and food industries (tea), and they could survive owing to nonmarket factors. Another possibility is that many age and firm growth related dynamics could take place in a short horizon and then taper off. The squared term could capture these nonlinear effects.

private Indian firms. This apparently indicates a stronger preference for equity finance in foreign and government-owned firms, consistent with the findings by Love and Peria (2005). However, it should be noted that these firms, especially government-owned ones, are much larger than Indian independent companies on average, which explains the larger median use of external funds for these firms (Table 2).

Results: Debt to assets (Table 6)

- The coefficient on the RZ_us measure is not significantly different from zero for any of the three samples. All the coefficients for firm characteristics are consistent with the existing literature on leverage (debt-to-equity or debt-to-assets).

Results: Foreign debt to assets (Table 7)

- The coefficient on the RZ_us measure is either not significantly different from zero or is significantly negative for all the cases. This implies that, so far, evidence is lacking that firms that need more external finance are going abroad in order to avoid constraints in the domestic markets. This could reflect the fact that smaller firms are more likely than large ones to face difficulties borrowing domestically, while bigger firms have greater access to foreign borrowing.
- Foreign debt is mostly accessed by large firms. For each cross-section sample, a model is estimated with all firms and another that includes only the firms with access to foreign borrowing (firms with foreign debt stocks greater than zero). The size impact becomes significant only when estimation is limited to a subset of firms with access to foreign debt. Asset tangibility seems to be associated with increased foreign borrowing. Rather surprisingly, foreign-owned firms are not more likely to access foreign borrowing, but this could reflect a preference for equity finance.

Results: Equity to assets (Table 8)

- The coefficient on the RZ_us measure is generally positive and significant. In particular, the equity market seems to provide an important source of finance for young and small firms with high growth opportunities in recent years. The estimation also confirms the preference for equity finance by foreign and government owned firms.

IV. DOES HIGHER EXTERNAL FINANCE DEPENDENCE IMPLY WEAKER FIRM GROWTH?

Given the evidence above that Indian firms with higher external finance dependence do not tend to borrow as much as less-dependent firms, one would expect to see a negative relation between external finance dependence and firm growth. To the extent finance matters for

growth, such financing constraints are likely to reduce firm growth compared to its potential. Indeed, the studies by Rajan and Zingales (1998, which includes India in their cross-country sample) and de Serres, et al (2006, which covers European countries) find that financial underdevelopment reduces the growth rate of an industry that is more dependent on external finance.

Similar empirical models are employed to those for capital structure (equation (1)). The dependent variable x_i is the annual average growth rate for firm gross value added.¹⁸ Once again, the RZ_us measure functions as an instrument for inherent demand for external funds.

A slightly different set of firm characteristic variables is used, reflecting the literature on firm growth, and include the initial share of a firm's gross value added in percent of total gross value added for all the firms in the sample, age, a dummy variables for exporters, access to foreign finance, and ownership, and some financial ratios, including ROA, leverage, and market-to-book ratios. Empirical studies by Evans (1987) and Hall (1987) using U.S. data, find that the growth rate of manufacturing firms is negatively associated with firm size and age. ROA and market to book ratio are expected to be positively correlated with firm growth, as ROA could proxy for a firm's efficiency as well as availability of internal funds, and the market-to-book ratio could proxy for growth opportunities.

Similar to the estimations for capital structure, three sets of cross section data are used, covering 1993/94–2005/06, 1993/94–1998/99, and 1999/00–2005/06. Table 9 summarizes the results.

- The coefficient for RZ_us is negative and significant, indicating that firms in an industry that tend to rely more on external funds are growing more slowly than others. That means that the observed efficiency in the equity market is not enough to compensate for the lack of efficient debt financing opportunities, indicating the need to upgrade this part of the financial system in India (this point is explored further in the next section). In addition, this growth-hampering effect seems to be stronger in more recent years. It is possible that the cyclical upturn of investment and increased need for external finance could have tightened the existing constraints in the financial system.
- Firm specific control variables generally have coefficients with expected signs. Age is mostly negatively related to firm growth, and high profitability is positively correlated with growth. Access to foreign finance seems to contribute positively to growth.

¹⁸ Estimation using other measures such as growth rate of sales, total assets, or gross fixed assets yielded results that were broadly similar to the results from the model with gross value added.

V. POLICY IMPLICATION: WHY DOES INDIA NEED A CORPORATE BOND MARKET?

Why would India need further development in bank credit and the corporate bond market? Wouldn't a well-developed equity market compensate for the weak financing opportunities using other mechanisms? In an attempt to answer these questions, this section draws on implications from existing literature as well as the results in this paper.

The empirical evidence in this paper seems to indicate that having efficient equity markets is not enough to compensate for the lack of well-functioning debt financing opportunities. In India, the use of debt instruments among corporations is not in line with the external finance dependence of their industries. In addition, there are statistically significant negative relationships between firm growth and industries' external finance dependence, despite the observed efficiency and activity levels in the equity market.

There are some theoretical analyses that emphasize the importance of debt instruments. For instance, Townsend (1979), Diamond (1984), and Gale and Hellwig (1985) show that an optimal contract when it is costly to prevent borrowers from retaining profits without compensating investors—namely, when output is costly to verify—is a simple debt contract that specifies fixed payment and forces borrowers to go into bankruptcy, which destroys the value of the borrower's profit, if borrowers fail to repay the contracted amount.¹⁹ Furthermore, in the practice of financial engineering, debt instruments and their market help develop other types of derivatives, since their cash flows are relatively predictable and tractable to be structured. Developing debt instrument will help develop transactions of other types of financial claims.²⁰

As for the relative benefit of bank/intermediary-based systems versus market-based systems, research indicates that one system does not necessarily dominate the other; rather they could serve different functions and range of clients. As extensively reviewed in Allen and Gale (2000) and Levine (2004), an intermediary-based system could be better at (1) providing a simple set of services at a low cost (such as simple debt and deposit contracts) for smaller investors and firms; (2) economizing information acquisition costs; and (3) monitoring and eliciting corporate governance, often based on (long-term) relationship with clients. However, a bank-based system could entail risks of bankruptcies and bank runs and rent-

¹⁹ However, these models predict that firms will be 100 percent debt financed, because equity claims, which promise payments based on firm performance, would require excessive verification cost. Boyd and Smith (1996) extend these costly state verification models to find a nontrivial capital structure (discussed later).

²⁰ However, adding new instruments does not guarantee improved welfare. Incomplete market theory says that the welfare implication of adding new financial instruments to an incomplete market economy is notoriously ambiguous (Allen and Gale, 2000).

seeking by intermediaries.²¹ On the other hand, a market-based system can be better at (1) processing and aggregating information and diverse opinions effectively; (2) providing greater flexibility to tailor products; and (3) providing competition and limit rent-seeking that could arise in relationship-based arrangements.²² However, a market-based system will be too expensive for smaller and less-sophisticated investors and firms, and the markets may not provide adequate monitoring of individual investment. In particular, Boyd and Smith (1996) and Allen and Gale (1999, 2000) provide cases where banks and markets could co-evolve.²³ Diamond (1991) also developed a model where bank loans and corporate bond market serve borrowers with different credit histories, and hence complement each other.²⁴

There is some empirical evidence emphasizing complementarities of intermediaries and markets as well. Using firm-level data, Demirguc-Kunt and Maksimovic (1996) show that increases in stock market development tend to increase the use of bank finance in developing countries. Tadesse (2002) argues that a market-based system is suited for financially-developed economies, while a bank-based system can be more growth-enhancing in economies with a less developed financial sector. However, generally, financial structure per se does not explain cross-country and/or industry growth differentials (Beck and Levine (2002) and Demirguc-Kunt and Maksimovic (2002)). Separately, Davis (2001) pointed out flows from securities market could have supplemented flows from banks and helped smooth out total financing flows during past distress time in major developed economies.

²¹ Tight regulations on banks' activities could limit the risk of instability in a bank-based system. However, an optimal bank-based financial systems design could allow a financial crisis as a tail event (Allen and Gale, 1998).

²² However, competition may not always improve efficiency, as explored in Allen and Gale (1997). Easy availability of market trading opportunities could undermine risk-sharing contracts between individuals and intermediaries by undermining individuals' incentive to bear lower consumption when their personal (pre-insurance payments) income is high, which is necessary to support the risk-sharing contracts.

²³ Boyd and Smith (1996) extend the costly state verification models developed by Townsend (1979), Diamond (1984) and Gale and Hellwig (1985) to show nontrivial optimal debt-equity ratio. Entrepreneurs can combine nonverifiable but higher productivity technology, which has to be financed by debt and hence involves costly bankruptcy on occasions, and verifiable but lower productivity technology, which can be financed by equities. Allen and Gale (1999) contrast markets (either debt or equity) with better information aggregation capacity and intermediaries, which can better economize on information acquisition costs. They show that markets are more efficient in incorporating diverse opinion and financing productive project when uncertainty is large, such as in new technology-based industry, while intermediaries do better with financing more traditional lines of projects by reducing average information acquisition costs.

²⁴ The paper takes costly verification setup similar to Diamond (1984) where a debt contract becomes optimal. Bank loans could offer monitoring to limit borrower's moral hazard problem with costs, while corporate bond market does not offer monitoring. Borrowers want to borrow repeatedly to invest in new projects, and their repayment record is public information, resulting in a menu of different contracts contingent on their credit rating. The model produces a 'life cycle' effect, namely, new borrowers borrow from banks initially but may later issue debt directly as loss of reputation—getting a bad credit history—and resulting increased cost of future borrowing substitute monitoring in providing borrowers incentives to repay.

Altogether, the literature and the results in this paper seem to indicate additional growth and financial efficiency benefits from upgrading debt financing opportunities. Growing internal resources and good financing opportunities from the equity market could continue to underpin Indian firms' expansion in the future. However, debt market and the banking sector do have complementary roles that serve different lines of clients and provide alternative forms of incentive provision and monitoring mechanisms, which could improve efficiency in allocation of capital, and hence spur growth further.

VI. CONCLUSION

This paper tries to shed a clearer light on the link among uneven development of the different segments of a financial system, corporate financing patterns, and firm growth, using firm-level data in India, and provide some direction for further upgrading of India's financial system. Specifically, this paper examines whether Indian firms are increasingly relying on external funds and facing financing constraints/frictions in some segments of the financial system, with an influence on firm growth. Standard models explaining capital structure and firm growth are estimated together with the external finance-dependence measure introduced by Rajan and Zingales (1998) in order to see whether there are significant cross-industry differences associated with external finance dependence.

This paper contributes to the finance (and financial structure) and growth literature by looking at the corporate financing patterns and their relationship with external finance dependence, which is usually presumed in empirical tests relating external finance dependence and growth. There are signs of inefficiency in India's financial systems, particularly in the debt financing mechanisms. Furthermore, having an efficient equity market does not seem to compensate for the lack of efficient debt financing opportunities (including banks and bond markets) in enhancing firm growth. These findings also suggest that future financial sector development policy in India should involve developing debt financing facilities.

Lastly, provided that the inefficiency in Indian financial system does hamper the growth of finance-intensive firms, could this imply that India's roaring macroeconomic growth will be caged tight in the future? The results in this paper do not seem to go that far. This paper has provided some evidences for the *existence* of inefficiency in Indian financial sector, which negatively affects growth differentials of finance-intensive industries from other industries, but does not *quantify* the inefficiency's impact on macroeconomic growth. Indeed, India's GDP growth has been one of the fastest in the world despite of the existing inefficiency in the financial sector.²⁵ This observation shares some similarity to the fact that India's visible infrastructure gap does not seem to be ruining macroeconomic growth (yet). The observation

²⁵ Although India could have achieved higher growth without burdens on the financial sector in the form of high cash reserve ratio and statutory liquidity requirement (Aziz (2008)).

indicates that there are other factors influencing the surge of recent macroeconomic growth in India. Indeed, studies on India's source of growth indicate that productivity growth has been the major source for the recent pickup in its GDP growth.²⁶ This could imply that the direct negative impact from the underdeveloped financial system to growth via firm financing and capital accumulation did not jeopardize growth, as strong productivity growth might have covered up any potential impact from financing side.

However, high historical productivity growth per se does not guarantee sustained growth in the future, and upgrading the financial system could prevent a potential slowdown or help nurture additional sources of productivity growth going forward, in addition to facilitating capital accumulation. As pointed out in Oura (2007), productivity growth could be highly cyclical, as it has been in many other successful Asian economies. If the major source of India's recent productivity gains reflect long-run effects of reforms that intensified after the crisis in the early 1990's, there may not be unlimited rooms for additional gains unless reform momentum were sustained. Financial sector reform could open up channels for additional efficiency gains, not just help facilitate capital accumulation by lowering financing costs. For instance, there could be large potential productivity gains from correcting misallocation of resources in India.²⁷ Upgrading the financial system would facilitate reallocating resources, and hence contribute to sustained productivity growth.

²⁶ For instance, Rodrik and Subramanian (2003), Bosworth and Collins (2006), and IMF (2006b), as overviewed by Oura (2007)).

²⁷ Hsieh and Klenow (2007) calculated that correcting misallocation of capital and labor in Indian manufacturing sector to a similar level observed in the U.S. could give 40-50 percent TFP gains in the sector.

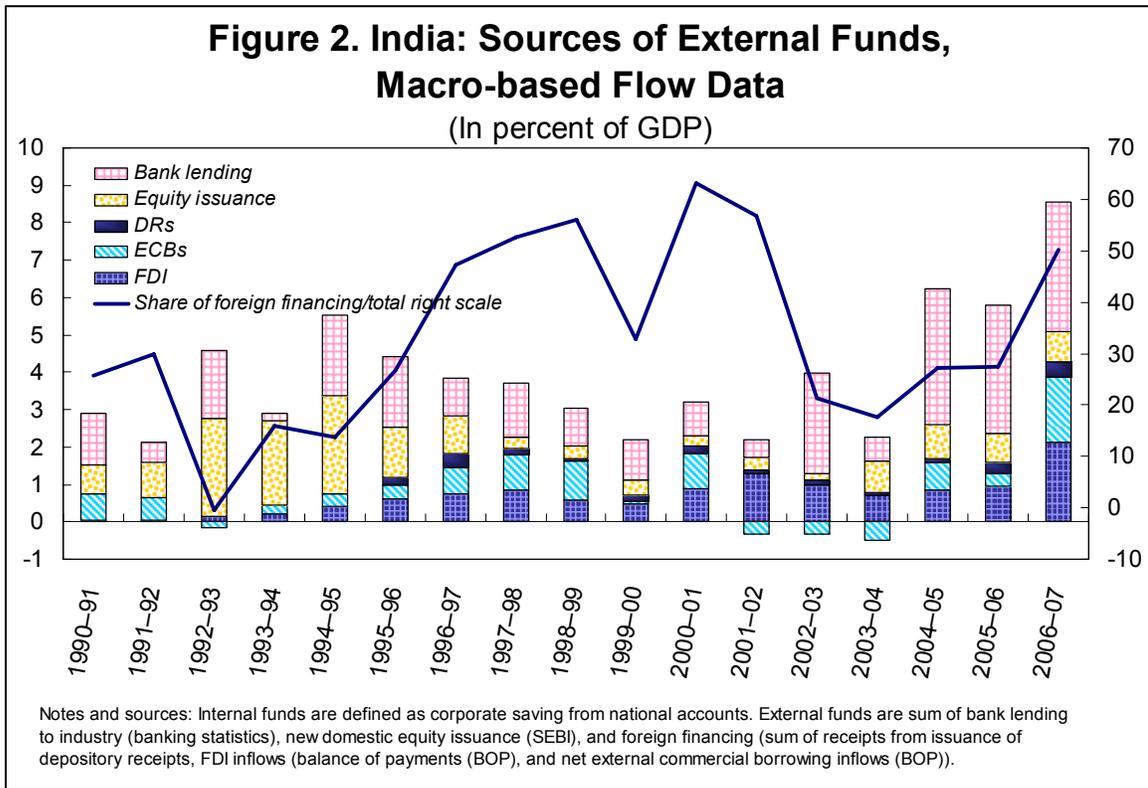
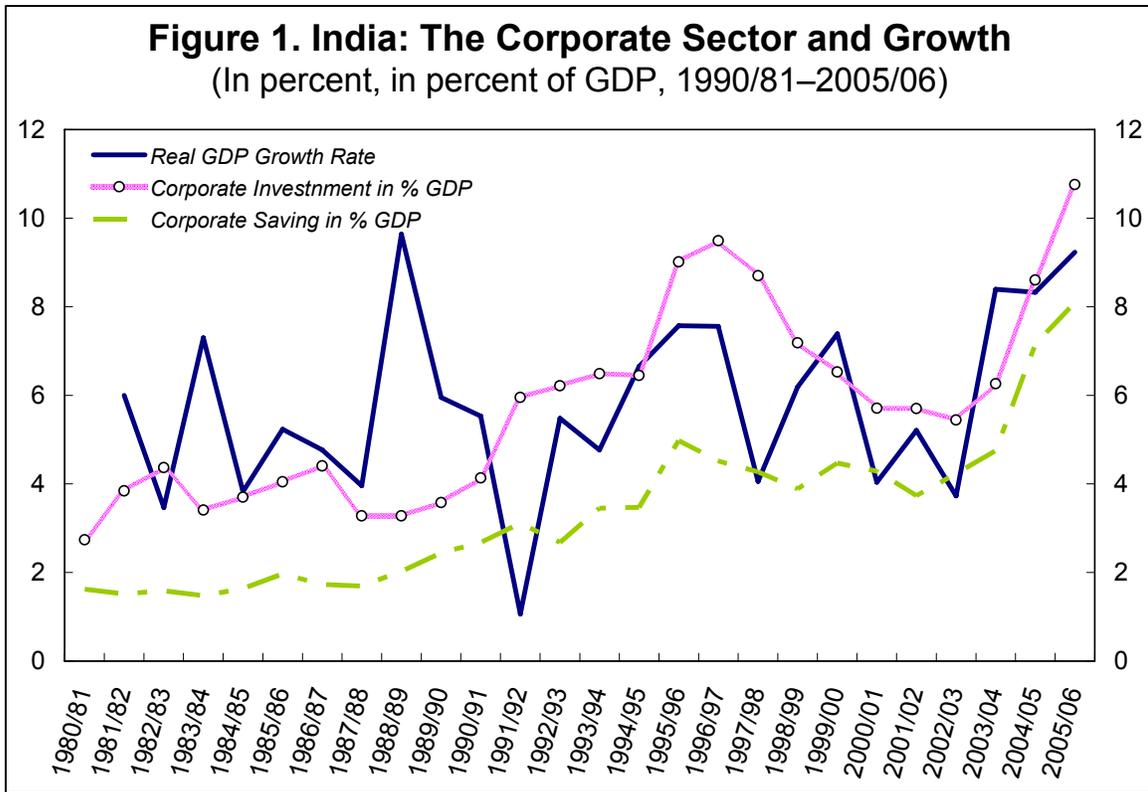


Table 1. Distributions of Firms in the Study: Number of Firms

	Number of Firms										Proportion of Firms (In percent of total)													
	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06
Total	3366	4285	4577	4545	4710	5241	5414	5693	6142	6453	5939	5202	100	100	100	100	100	100	100	100	100	100	100	100
Age																								
0-5	573	929	952	749	574	387	295	260	222	261	183	89	17	22	21	16	12	7	5	4	4	3	2	2
5-10	735	867	901	971	1046	1293	1311	1242	1137	1017	664	416	22	20	20	21	22	25	24	22	19	16	11	8
10+	2058	2489	2724	2825	3090	3561	3808	4191	4783	5175	5092	4697	61	58	60	62	66	68	70	74	78	80	86	90
Industry																								
Financial	370	655	788	821	809	863	881	1008	1340	1437	1350	1106	11	15	17	18	17	16	16	18	22	22	23	21
Nonfinancial	2996	3630	3789	3724	3901	4378	4533	4685	4802	5016	4589	4096	89	85	83	82	83	84	84	82	78	78	77	79
Mining	89	121	138	138	136	145	154	161	167	174	164	150	3	3	3	3	3	3	3	3	3	3	3	3
Manufacturing	2427	2853	2916	2833	2916	3208	3262	3286	3311	3402	3123	2835	72	67	64	62	62	61	60	58	54	53	53	54
Food	293	335	355	337	360	408	411	424	423	428	392	359	9	8	8	7	8	8	8	7	7	7	7	7
Textiles	303	382	393	406	407	426	434	437	441	457	415	397	9	9	9	9	9	8	8	8	7	7	8	8
Wood	10	12	13	14	15	16	15	15	16	17	15	15	0	0	0	0	0	0	0	0	0	0	0	0
Paper	78	100	113	109	110	127	143	142	139	151	132	110	2	2	2	2	2	2	3	2	2	2	2	2
Petroleum	28	37	36	36	34	38	42	39	40	44	33	32	1	1	1	1	1	1	1	1	1	1	1	1
Chemical	553	656	647	640	650	709	706	704	702	738	664	593	16	15	14	14	14	14	14	13	12	11	11	11
Rubber	150	191	204	197	200	224	220	215	227	217	209	191	4	4	4	4	4	4	4	4	4	4	4	4
Mineral	132	136	136	129	129	139	140	150	139	143	141	132	4	3	3	3	3	3	3	3	2	2	2	2
Basic metal	232	264	259	238	257	293	298	297	313	309	292	268	7	6	6	5	5	6	6	5	5	5	5	5
Fabricated metal	61	73	74	72	79	92	91	92	88	92	84	76	2	2	2	2	2	2	2	2	1	1	1	1
Machinery	178	206	207	196	195	214	205	214	219	217	210	194	5	5	5	4	4	4	4	4	4	4	4	4
Electronics	224	252	267	255	255	277	282	290	292	300	266	247	7	6	6	6	5	5	5	5	5	5	4	5
Motor vehicle	128	136	136	137	141	151	178	172	177	185	178	149	4	3	3	3	3	3	3	3	3	3	3	3
Transport equipment	28	28	32	26	31	36	34	32	31	33	32	25	1	1	1	1	1	1	1	1	1	1	1	0
Furniture	29	45	44	41	53	58	63	63	64	71	60	47	1	1	1	1	1	1	1	1	1	1	1	1
Service	850	1311	1523	1574	1658	1888	1998	2246	2664	2876	2652	2217	25	31	33	35	35	36	37	39	43	45	45	43
Electricity gas water	27	31	36	36	40	45	46	56	65	70	69	60	1	1	1	1	1	1	1	1	1	1	1	1
Construction	77	102	110	112	126	144	154	173	182	187	163	126	2	2	2	2	2	3	3	3	3	3	3	2
Trade	203	286	325	321	345	400	411	463	501	539	469	379	6	7	7	7	7	8	8	8	8	8	8	7
Hotel restaurant	50	62	61	64	68	73	75	78	80	87	78	81	1	1	1	1	1	1	1	1	1	1	1	2
Transport service	41	49	55	51	65	83	85	95	108	125	104	91	1	1	1	1	1	1	2	2	2	2	2	2
Telecom	9	12	14	20	22	35	37	39	46	50	43	41	0	0	0	0	0	0	0	1	1	1	1	1
Financial	370	655	788	821	809	863	881	1008	1340	1437	1350	1106	11	15	17	18	17	16	16	18	22	22	23	21
Business service	73	114	134	149	183	245	309	334	342	381	376	333	2	3	3	3	4	5	6	6	6	6	6	6
Ownership																								
Private independent	1546	2262	2420	2404	2438	2809	2944	3173	3579	3710	3352	2913	46	53	53	53	52	54	54	56	58	57	56	56
Private group	1383	1523	1609	1617	1713	1810	1838	1867	1899	2006	1924	1725	41	36	35	36	36	35	34	33	31	31	32	33
Foreign	257	293	300	314	336	357	363	364	360	381	347	307	8	7	7	7	7	7	7	6	6	6	6	6
Government	180	207	248	210	223	265	269	289	304	356	316	257	5	5	5	5	5	5	5	5	5	5	5	5

Sources: Prowess database from CMIE; and authors' calculation.

Table 2. Distributions of Firms in the Study: External Funds in Percent of Total Funds
(Ratio of flow variables)

	93/94 94/95 95/96 96/97 97/98 98/99 99/00 00/01 01/02 02/03 03/04 04/05 05/06										93/94 94/95 95/96 96/97 97/98 98/99 99/00 00/01 01/02 02/03 03/04 04/05 05/06										Time Series Average								
	Median, External Funds Including Long-term Debt, Equity, and Trade Credits										Median, Core External Funds Including Only Long-term Debt and Equity																		
Total	73	80	80	80	75	71	69	69	69	67	66	62	64	64	70	46	55	52	41	35	25	26	26	15	9	9	12	16	28
Age	91	90	93	89	86	88	88	85	88	88	80	72	80	82	86	72	71	76	59	41	41	48	52	37	22	25	30	59	49
5-10	79	83	83	77	73	67	74	73	72	69	68	71	73	74	74	52	63	60	46	38	26	31	29	15	9	10	16	26	32
10+	68	75	73	70	67	66	66	65	64	64	60	63	63	66	66	38	47	41	34	32	23	24	14	8	9	12	14	25	25
Size 1/	85	89	94	91	86	79	79	78	78	69	70	63	58	58	77	53	64	71	41	19	8	12	7	0	0	0	0	0	21
Medium	71	78	76	72	71	69	72	70	70	70	64	66	64	70	70	45	54	48	40	32	30	31	30	26	16	17	16	20	31
Large	68	76	73	68	65	64	63	64	60	59	65	65	66	66	66	41	50	44	41	44	34	31	35	26	20	20	31	33	35
Industry																													
Financial	84	86	88	83	84	82	83	81	80	83	75	72	65	81	68	69	67	48	32	36	32	18	13	0	0	0	0	0	30
Nonfinancial	72	79	78	73	69	66	67	67	64	62	59	63	64	68	44	53	48	40	35	24	25	27	15	11	12	17	20	20	22
Mining	68	85	71	63	62	50	47	47	53	39	51	54	45	57	40	61	45	32	36	19	16	3	6	3	0	13	10	29	22
Manufacturing	71	78	77	71	67	62	63	63	60	59	56	63	63	66	46	53	51	41	37	25	25	27	18	14	13	22	24	31	31
Food	73	80	81	74	64	61	69	72	71	72	73	70	65	71	54	58	53	35	22	27	39	32	32	30	35	28	28	36	36
Textiles	71	81	79	71	67	61	45	57	55	60	56	70	67	65	65	64	66	65	50	45	28	19	27	26	18	29	43	47	40
Wood	57	76	74	70	67	84	67	84	74	82	66	85	84	75	63	63	59	36	51	53	18	46	29	38	9	53	1	39	1
Paper	59	73	73	82	66	73	65	51	35	50	51	61	53	61	28	45	53	55	52	39	39	19	22	10	15	20	33	33	33
Petroleum	71	81	73	77	45	60	79	72	68	74	77	63	75	70	70	25	57	43	22	6	21	23	2	4	9	22	17	16	21
Chemical	72	79	77	71	67	60	59	61	48	52	46	55	58	62	46	53	50	43	41	21	23	29	14	13	9	16	24	29	29
Rubber	74	79	81	72	67	64	54	45	47	48	48	44	61	60	48	59	64	46	39	34	30	25	17	11	10	0	24	31	31
Mineral	60	66	67	66	60	61	73	64	55	50	46	55	51	60	28	41	46	44	32	30	34	27	15	10	0	6	28	26	26
Basic metal	80	81	75	72	76	68	68	68	74	61	64	73	75	72	59	53	47	37	40	35	29	29	34	14	19	40	35	36	36
Fabricated metal	67	78	73	64	71	82	65	50	76	61	63	75	71	69	57	48	47	51	45	21	23	21	28	8	5	30	28	32	32
Machinery	68	76	73	63	69	52	55	64	59	50	53	61	58	62	28	35	34	35	25	12	19	15	3	5	1	8	7	17	17
Electronics	76	78	77	78	74	66	71	67	67	71	57	64	56	69	40	46	46	34	36	24	35	27	19	19	12	10	6	27	27
Motor vehicle	62	69	67	55	56	62	51	56	35	39	43	49	53	54	36	37	41	37	42	31	20	37	14	6	4	24	20	27	27
Transport equipment	55	57	78	76	58	61	82	91	79	50	52	82	74	69	21	17	23	31	46	18	11	18	9	9	2	13	13	18	18
Furniture	72	75	81	79	62	71	67	71	63	76	73	83	86	74	15	62	46	23	24	14	14	14	14	25	6	8	21	27	23
Service	82	85	86	84	83	82	82	83	79	78	72	69	68	79	49	61	55	40	26	25	28	26	10	2	5	1	3	25	25
Electricity gas water	73	80	75	83	70	70	77	69	87	86	68	66	71	75	61	66	34	45	61	28	17	17	49	43	37	41	43	42	42
Construction	83	87	87	91	86	89	83	90	88	84	82	82	87	86	37	40	35	23	24	12	16	23	5	13	17	14	25	22	22
Trade	82	86	90	91	88	91	87	90	87	84	83	77	77	86	27	44	39	33	22	19	16	19	9	2	10	7	2	19	19
Hotel restaurant	45	78	75	70	81	65	71	64	91	40	45	56	36	63	29	56	45	40	45	37	38	39	45	0	9	7	0	30	30
Transport service	81	69	60	55	50	71	82	57	59	60	51	49	65	62	45	18	10	16	17	8	30	31	22	17	14	8	32	21	21
Telecom	77	80	88	89	101	120	95	98	87	76	41	46	55	81	53	66	65	41	39	73	78	70	30	43	1	3	8	44	44
Financial	84	86	88	83	84	82	83	81	80	83	75	72	65	81	68	69	67	48	32	36	32	18	13	0	0	0	0	30	30
Business service	78	86	74	78	59	54	74	76	44	43	46	45	57	63	34	54	43	28	14	11	38	41	0	1	4	1	7	21	21
Ownership																													
Private independent	78	82	84	79	72	68	69	68	64	66	62	64	66	71	51	60	61	43	30	21	23	25	12	6	10	12	18	29	29
Private group	71	78	75	72	72	72	69	69	68	66	61	65	62	69	46	53	46	42	41	34	32	29	22	13	11	17	17	31	31
Foreign	69	74	71	63	68	63	63	64	66	60	53	54	45	62	31	33	29	26	28	24	16	23	8	6	3	1	0	18	18
Government	79	85	83	70	70	80	77	80	79	73	72	76	71	76	36	53	41	25	33	18	35	18	20	22	9	18	26	27	27

Sources: Prowess database from CMIE; and authors' calculation.

1/ Each category has one-third of the total observation

Table 3. Distributions of Firms in the Study: Equity-to-Asset and Debt-to-Asset Ratios
(Ratios of stock variables)

	93/94 94/95 95/96 96/97 97/98 98/99 99/00 00/01 01/02 02/03 03/04 04/05 05/06										93/94 94/95 95/96 96/97 97/98 98/99 99/00 00/01 01/02 02/03 03/04 04/05 05/06										Time Series Average							
	Median, Equity-to-Asset					Median, Debt-to-Asset					Time Series Average																	
Total	15	20	26	27	26	24	24	24	24	24	24	24	23	24	36	32	31	30	32	32	31	30	29	25	24	23	23	29
Age	36	39	50	53	53	45	35	32	26	29	27	29	18	36	34	28	23	21	20	22	26	23	26	24	26	20	27	25
5-10	23	29	34	37	39	40	44	45	48	46	36	29	28	37	39	33	33	34	35	32	30	25	23	17	19	21	20	28
10+	10	14	17	17	17	18	18	19	20	23	21	22	23	18	35	33	32	31	33	32	32	32	30	27	25	23	23	30
Size 1/ Small	26	35	52	58	59	57	56	57	60	65	62	63	65	55	33	25	18	14	13	16	16	13	10	4	3	2	4	13
Medium	13	21	26	27	27	25	25	25	26	28	25	25	25	24	37	34	33	34	35	35	34	34	32	30	28	27	26	32
Large	9	13	14	14	14	13	13	13	12	12	11	11	11	12	36	35	35	36	38	37	36	36	35	33	32	31	31	35
Industry																												
Financial	11	17	34	38	43	42	37	35	39	49	42	41	39	36	37	29	17	11	10	12	8	8	4	2	2	1	1	11
Nonfinancial	15	21	25	26	25	23	23	23	23	23	21	21	21	22	36	32	32	32	34	34	33	33	32	30	29	28	28	32
Mining	20	29	35	36	35	27	27	26	28	28	29	28	27	25	32	31	26	31	34	33	32	31	30	29	24	23	26	29
Manufacturing	15	21	24	25	24	22	22	22	21	21	19	18	19	21	37	34	34	35	37	38	37	38	37	35	34	33	32	35
Food	10	17	21	20	19	18	17	16	14	15	13	14	14	16	33	33	35	36	34	33	35	36	37	37	39	37	34	35
Textiles	15	22	26	28	26	25	25	22	22	22	21	21	20	23	41	41	42	44	46	48	47	47	46	43	45	45	44	45
Wood	7	13	18	24	24	21	19	19	21	15	17	28	19	19	52	50	44	48	39	34	38	44	44	39	33	29	34	40
Paper	13	18	24	30	28	26	25	24	24	22	22	19	22	23	36	32	34	32	38	42	41	38	39	38	40	38	37	37
Petroleum	5	17	24	22	23	21	19	18	21	19	18	21	20	20	27	25	33	29	31	25	27	30	32	26	23	17	24	27
Chemical	18	23	28	28	26	24	23	24	24	24	21	20	21	23	37	34	34	34	37	38	37	37	35	33	30	30	31	34
Rubber	16	21	31	30	30	29	28	28	28	29	27	27	27	27	39	36	36	36	38	39	39	38	38	37	36	35	35	37
Mineral	14	20	21	23	21	21	25	23	23	23	21	20	21	21	45	40	39	41	45	47	46	46	45	42	40	38	42	40
Basic metal	18	21	24	24	23	22	21	21	21	22	19	17	18	21	40	37	38	38	40	41	42	44	42	40	41	40	37	40
Fabricated metal	13	21	25	24	24	22	20	16	16	16	17	15	18	19	31	25	30	35	36	39	37	38	39	36	33	32	34	34
Machinery	11	13	16	16	17	15	17	18	18	19	17	15	15	16	24	26	26	26	29	27	27	25	23	22	20	20	18	24
Electronics	15	20	25	25	24	23	24	26	25	25	24	22	23	23	36	31	31	32	33	34	33	33	31	29	27	25	24	31
Motor vehicle	14	17	16	16	16	16	17	17	17	15	15	12	13	16	39	35	35	36	37	37	35	37	33	30	28	29	27	34
Transport equipment	18	22	20	17	16	17	12	18	19	21	12	17	10	17	33	25	27	29	31	34	28	28	33	28	22	22	20	28
Furniture	25	35	40	36	31	27	18	17	17	17	13	14	17	24	20	23	11	12	15	20	21	23	22	23	23	26	22	20
Service	12	19	30	33	35	31	31	33	33	38	33	34	34	30	26	23	18	16	15	15	14	11	10	6	7	5	6	13
Electricity gas water	16	20	26	27	25	22	22	22	22	23	25	25	25	23	42	42	34	29	36	37	35	30	44	46	44	43	36	38
Construction	8	8	14	18	15	13	13	13	14	13	11	11	17	13	20	23	19	18	19	19	18	21	22	21	20	18	19	20
Trade	10	19	30	32	30	24	23	24	25	26	22	24	25	24	21	16	16	16	18	15	16	17	17	12	11	8	11	15
Hotel restaurant	25	22	34	34	34	31	30	31	33	28	26	23	26	29	37	29	24	22	21	24	26	27	30	32	34	31	31	28
Transport service	12	20	20	20	20	21	21	22	23	25	22	25	20	21	37	32	27	21	30	32	26	29	24	30	33	29	33	29
Telecom	6	31	31	29	36	38	39	43	34	47	56	58	51	38	44	13	32	38	39	48	39	30	42	33	29	31	9	33
Financial	11	17	34	38	43	42	37	35	39	49	42	41	39	36	37	29	17	11	10	12	8	8	4	2	2	1	1	11
Business service	24	36	42	49	43	43	43	51	56	56	55	51	48	46	17	18	13	10	10	9	5	3	3	3	4	3	6	8
Ownership																												
Private independent	18	26	36	39	38	34	32	32	32	34	30	30	30	32	35	30	27	26	27	28	29	27	25	21	21	20	22	26
Private group	13	18	18	18	18	18	18	19	19	19	17	17	17	18	38	35	36	36	38	38	37	37	37	33	32	30	29	35
Foreign	12	13	15	15	15	14	15	17	18	17	19	20	18	17	27	25	25	23	22	21	20	19	16	14	11	8	6	18
Government	10	11	12	12	12	12	12	13	12	11	10	12	11	10	35	40	38	34	32	30	29	29	33	27	25	21	20	30

Sources: Prowess database from CMIE; and authors' calculation.
1/ Each category has one-third of the total observation

Table 4. Distributions of Firms in the Study: Foreign Borrowing to Asset Ratio and External Funds Relative to Capital Expenditure 1/

	Average Foreign Borrowing to Asset Ratio										Median External Funds Relative to Capital Expenditure 1/										Time Series Average							
	93/94	94/95	95/96	96/97	97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05	05/06	93/94	94/95	95/96	96/97	97/98	98/99	99/00		00/01	01/02	02/03	03/04	04/05	05/06	
Total	0.4	0.4	0.3	0.3	0.5	0.6	0.5	0.4	0.4	0.4	0.6	1.4	1.6	0.6	0.7	0.9	0.7	0.7	0.6	0.6	0.6	0.4	0.3	0.5	0.4	0.5	0.6	
Age																												
0-5	0.3	0.1	0.2	0.1	0.4	0.4	0.6	0.7	0.8	0.7	0.8	1.3	1.1	0.6	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.7	0.7	0.5	0.9	0.9	0.9	
5-10	0.4	0.3	0.2	0.3	0.4	0.4	0.4	0.2	0.4	0.3	0.5	1.4	1.8	0.5	0.7	1.0	1.0	0.8	0.8	0.8	0.8	0.6	0.6	0.5	0.3	0.7	0.7	
10+	0.5	0.4	0.4	0.4	0.6	0.6	0.5	0.4	0.4	0.4	0.5	1.4	1.6	0.6	0.5	0.7	0.6	0.5	0.4	0.4	0.5	0.4	0.2	0.4	0.4	0.4	0.5	
Size 2/																												
Small	0.2	0.1	0.0	0.1	0.1	0.1	0.3	0.3	0.2	0.2	0.2	0.6	0.6	0.2	0.9	1.0	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8	0.7	0.8	0.9	
Medium	0.1	0.1	0.2	0.1	0.3	0.4	0.3	0.3	0.4	0.3	0.6	1.2	1.2	0.4	0.7	0.9	0.8	0.7	0.7	0.7	0.6	0.5	0.4	0.5	0.6	0.5	0.6	
Large	1.0	0.9	0.7	0.8	1.1	1.1	0.8	0.6	0.6	0.6	0.9	2.4	3.1	1.1	0.4	0.7	0.7	0.4	0.5	0.2	0.3	0.1	0.1	0.2	0.3	0.4	0.4	
Industry																												
Financial	1.0	0.7	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.4	0.6	0.7	0.8	0.6	0.5	0.3	0.6	0.5	0.8	0.7	0.4	0.1	0.0	0.5
Nonfinancial	0.4	0.3	0.3	0.4	0.5	0.6	0.5	0.4	0.4	0.4	0.6	1.7	2.0	0.7	0.7	0.9	0.9	0.7	0.6	0.6	0.6	0.4	0.3	0.5	0.5	0.5	0.6	
Mining	0.8	0.4	0.4	0.2	0.6	0.6	0.7	0.7	0.5	0.4	0.5	1.7	1.6	0.7	0.3	0.9	1.0	0.8	1.0	0.7	0.4	-0.1	0.6	0.4	0.4	0.5	0.5	0.6
Manufacturing	0.3	0.2	0.2	0.3	0.5	0.6	0.4	0.3	0.4	0.4	0.6	2.0	2.2	0.7	0.7	1.0	0.9	0.7	0.7	0.6	0.5	0.6	0.3	0.2	0.4	0.5	0.5	0.6
Food	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.5	1.4	1.3	0.3	0.7	1.0	0.9	0.7	0.6	0.2	1.0	0.9	0.7	0.8	0.9	0.7	0.5	0.7
Textiles	0.0	0.0	0.1	0.3	0.6	0.7	0.4	0.4	0.6	0.5	0.6	3.3	3.3	0.8	1.0	1.1	1.0	0.7	0.8	0.8	0.6	0.6	0.2	0.3	0.5	0.6	0.8	0.7
Wood	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.5	1.9	0.8	0.4	0.7	0.9	1.0	0.9	0.4	0.6	0.3	0.8	1.0	0.5	1.1	-0.2	0.9	0.7
Paper	0.3	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.4	2.6	3.7	0.8	0.7	0.8	0.8	0.8	0.8	1.0	0.5	0.2	0.4	0.6	0.5	0.4	0.6	0.6
Petroleum	0.4	0.3	0.3	0.3	1.4	1.6	1.6	0.5	0.6	0.4	0.1	2.8	3.9	1.1	0.2	0.3	1.0	0.5	0.6	0.6	0.9	0.5	0.5	0.4	-0.5	-0.2	0.8	0.4
Chemical	0.3	0.4	0.2	0.2	0.6	0.7	0.3	0.3	0.3	0.3	0.5	2.0	2.7	0.7	0.7	1.0	0.9	0.6	0.6	0.5	0.4	0.6	0.2	0.1	0.2	0.3	0.5	0.5
Rubber	0.2	0.2	0.3	0.3	0.4	0.6	0.4	0.5	0.8	0.8	2.1	1.7	0.7	0.5	0.9	1.1	0.8	0.6	0.7	0.6	0.5	0.0	-0.1	0.5	0.4	0.5	0.5	0.6
Mineral	0.4	0.5	0.6	0.6	0.4	0.3	0.4	0.3	0.5	0.5	0.7	1.1	0.5	0.5	0.6	0.5	0.5	0.8	0.9	0.7	0.7	0.4	0.1	0.0	0.1	0.3	0.5	0.6
Basic metal	0.6	0.6	0.7	0.6	0.8	0.9	1.0	0.6	0.3	0.4	0.6	2.1	2.1	0.9	0.9	1.0	0.9	0.6	1.0	0.8	0.6	0.7	0.7	0.5	0.7	0.9	0.8	0.8
Fabricated metal	0.0	0.2	0.1	0.1	0.4	0.6	1.2	0.3	0.2	0.1	0.2	2.4	2.7	0.7	0.7	0.8	1.0	0.9	0.4	0.7	1.2	0.6	-0.1	0.3	0.9	0.6	0.7	0.7
Machinery	0.2	0.2	0.1	0.6	0.5	0.2	0.4	0.2	0.5	0.4	1.2	1.3	1.4	0.6	0.0	0.5	0.9	0.6	0.2	0.2	0.0	0.3	0.3	-0.2	-0.2	0.4	0.1	0.2
Electronics	0.4	0.1	0.1	0.3	0.3	0.5	0.5	0.6	0.9	0.7	0.9	1.5	1.2	0.6	0.5	1.0	1.0	0.9	0.7	0.7	0.5	0.8	0.1	0.2	0.2	0.1	0.5	0.6
Motor vehicle	0.2	0.0	0.1	0.5	0.8	1.1	0.5	0.8	0.5	0.9	1.7	2.7	0.8	0.3	0.3	0.6	0.6	0.3	0.2	0.4	0.3	0.4	-0.6	-0.3	-0.2	0.3	0.3	0.2
Transport equipment	0.5	0.0	0.0	0.1	0.5	0.4	0.8	0.8	0.9	0.8	0.6	3.6	6.4	1.2	-0.6	0.6	0.5	0.7	0.6	0.1	-1.0	0.0	0.8	-0.4	-0.6	1.0	0.3	0.2
Furniture	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1.1	3.6	0.4	1.3	2.5	1.3	0.9	2.0	0.6	0.9	1.5	1.2	1.8	0.2	1.0	0.8	1.2
Service	1.0	0.8	0.5	0.4	0.5	0.5	0.5	0.4	0.4	0.3	0.5	0.7	0.8	0.6	0.6	0.8	0.8	0.6	0.6	0.5	0.6	0.6	0.7	0.6	0.6	0.3	0.4	0.6
Electricity gas water	10.9	7.2	5.8	4.3	7.0	7.3	4.1	2.5	1.8	2.3	2.6	2.8	3.1	4.7	0.6	0.7	0.8	0.8	0.6	0.7	0.4	0.7	0.5	0.9	0.5	0.3	0.7	0.7
Construction	0.0	0.0	0.0	0.0	0.1	0.2	0.8	0.7	0.3	0.3	0.3	0.5	0.6	0.3	0.7	1.2	0.8	0.8	0.5	0.9	0.8	0.7	0.6	1.0	1.1	0.5	0.9	0.8
Trade	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.5	0.4	0.2	0.9	0.9	0.9	0.8	1.0	0.7	0.9	0.9	1.0	0.4	0.8	0.7	0.7	0.8
Hotel restaurant	0.0	0.6	0.5	0.5	1.0	0.8	0.7	0.6	0.5	0.4	1.0	3.6	2.4	1.0	0.2	0.2	0.5	0.3	0.5	0.6	0.6	0.5	0.8	0.6	0.1	0.0	-0.1	0.4
Transport service	4.4	4.6	2.7	2.3	3.1	2.6	2.2	2.5	2.6	1.8	2.4	2.5	4.3	2.9	0.6	0.8	0.3	0.7	0.6	0.8	0.2	0.2	0.6	0.6	0.6	0.3	0.6	0.5
Telecom	0.1	0.0	0.0	0.0	0.3	0.7	1.7	1.5	1.1	0.9	0.9	1.4	1.2	0.8	1.7	0.9	1.0	0.5	1.0	2.0	0.7	0.9	0.6	0.8	0.6	-0.1	0.0	0.8
Financial	1.0	0.7	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.3	0.4	0.6	0.7	0.8	0.6	0.5	0.3	0.6	0.5	0.8	0.7	0.4	0.1	0.0	0.5
Business service	0.0	0.1	0.0	0.3	0.4	0.4	0.2	0.1	0.2	0.1	0.1	0.4	0.9	0.2	0.4	0.9	0.6	0.6	0.4	0.2	0.5	0.5	0.6	0.3	0.6	0.2	0.2	0.5
Ownership																												
Private independent	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	1.0	1.2	0.3	0.9	1.0	1.0	0.8	0.8	0.7	0.7	0.7	0.6	0.5	0.6	0.6	0.7	0.7
Private group	0.4	0.4	0.4	0.5	0.7	0.7	0.5	0.4	0.4	0.3	0.5	1.8	2.1	0.7	0.6	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.2	0.3	0.3	0.4	0.5
Foreign	0.5	0.7	0.7	0.9	1.2	1.1	1.1	1.0	1.5	1.7	2.6	2.8	3.2	1.5	0.0	0.3	0.6	0.2	0.0	0.3	0.2	0.3	-0.5	-0.9	0.0	0.2	-0.3	0.0
Government	2.2	2.0	1.7	1.3	1.7	1.9	1.8	1.2	1.1	1.3	1.0	1.5	1.6	1.6	-0.1	0.4	0.4	0.3	0.1	0.2	0.2	0.2	-0.1	-0.1	-0.7	-0.3	-1.7	-1.6

Sources: Prowess database from CMIE; and authors' calculation.

1/ (capital expenditure - (internally generated cash))/capital expenditure. Internally generated cash includes cash flow from operation and change in inventories, receivables, and payables. Capital expenditure - internally generated cash amounts to the external funds needed to fill the gap between investment and internal saving.

2/ Each category has one-third of the total observation

Table 5. Determinants of External Funds Use in India

This table presents results from regressions using data excluding outliers (firms with external fund ratio falling in largest 5 percentile or lowest 5 percentile). All models are estimated using standard OLS. Heteroskedasticity consistent standard errors are reported in brackets. Dependent variable is percent share of external funds (flow) over total funds. External and total funds includes changes in short term current liabilities. RZ_us is taken from de Sorres et al (2006, shown in Appendix), as a result, the estimation excludes some sectors where RZ_us is not available, most notably, financial sector. Ownership dummy variables are set against private independent companies.

Independent Variables	Dependent Variable: Use of External Funds (Debt and equity flow in percent of total funds)					
	1993/94–05/06		1993/94–98/99		1999/00–05/06	
RZ_US	-0.651*	-0.751*	-0.670*	-0.986**	0.237	0.279
	[0.340]	[0.400]	[0.356]	[0.411]	[0.445]	[0.529]
Size (log, sales)	2.467***	2.277***	3.198***	4.661***	0.449	0.68
	[0.685]	[0.796]	[0.597]	[0.893]	[0.509]	[1.167]
Age (log)	-14.448**	-13.573	-16.002***	-10.481	-17.018*	-9.287
	[6.406]	[8.569]	[5.920]	[8.650]	[9.028]	[12.737]
Age (log, square)	1.132	1.12	1.012	0.4	1.96	0.156
	[1.091]	[1.412]	[0.995]	[1.433]	[1.521]	[2.079]
Profitability (ROA)	-1.601***	-2.098***	-1.483***	-2.401***	-0.05	-1.745***
	[0.340]	[0.323]	[0.210]	[0.234]	[0.053]	[0.291]
Asset tangibility	-63.826	108.054	-96.721	-83.925	-69.820**	-82.668*
	[57.276]	[83.328]	[75.611]	[103.088]	[27.168]	[42.630]
Market to book ratio		0.168		-1.112**		1.195***
		[0.661]		[0.487]		[0.355]
Private group (dummy)	-4.729**	-5.400**	-0.257	-2.84	-3.037	-10.050***
	[2.122]	[2.615]	[1.977]	[2.536]	[2.367]	[3.302]
Foreign (dummy)	-15.085***	-14.951***	-14.229***	-10.404***	-16.190***	-21.151***
	[2.869]	[3.477]	[2.877]	[3.382]	[3.955]	[4.699]
Government (dummy)	-26.063***	-26.117***	-28.747***	-27.579***	-19.972***	-27.840***
	[5.986]	[7.589]	[5.369]	[9.511]	[5.797]	[10.455]
Number of observations	934	425	1420	736	2127	824
R-square	0.20	0.30	0.18	0.29	0.03	0.12

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6. Determinants of Leverage in India, Debt-to-Assets Ratio

This table presents results from regressions using data excluding outliers (firms with dependent variable falling in largest 5 percentile or lowest 5 percentile). All models are estimated using standard OLS. Heteroskedasticity consistent standard errors are reported in brackets. Dependent variable is ratio of debt to total asset where debt only includes long-term borrowing (and does not include current liabilities). RZ_us is taken from de Sorres et al (2006, shown in Appendix), as a result, the estimation excludes some sectors where RZ_us is not available, most notably, financial sector. Ownership dummy variables are set against private independent companies.

Independent Variables	Dependent Variable: Leverage (Debt-to-asset ratio)					
	1993/94–05/06		1993/94–98/99		1999/00–05/06	
RZ_US	0	0.001	0	-0.001	-0.002	-0.001
	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]
Size (log, sales)	0.025***	0.024***	0.024***	0.023***	0.032***	0.039***
	[0.003]	[0.005]	[0.003]	[0.005]	[0.003]	[0.004]
Age (log)	0.029	0.085*	0.019	0.014	0.054	0.128**
	[0.032]	[0.049]	[0.024]	[0.036]	[0.036]	[0.051]
Age (log, square)	-0.012**	-0.020**	-0.010**	-0.009	-0.014**	-0.026***
	[0.005]	[0.008]	[0.004]	[0.006]	[0.006]	[0.008]
Profitability (ROA)	-0.014***	-0.016***	-0.010***	-0.012***	-0.014***	-0.012***
	[0.001]	[0.002]	[0.001]	[0.001]	[0.001]	[0.002]
Asset tangibility	0.559**	1.441***	0.516*	0.687*	0.405***	0.804***
	[0.280]	[0.499]	[0.307]	[0.402]	[0.124]	[0.169]
Market to book ratio		-0.004		-0.004*		-0.006*
		[0.005]		[0.002]		[0.004]
Private group (dummy)	-0.001	-0.039**	0.005	-0.003	-0.002	-0.026**
	[0.010]	[0.016]	[0.008]	[0.012]	[0.009]	[0.012]
Foreign (dummy)	-0.111***	-0.128***	-0.066***	-0.060***	-0.124***	-0.140***
	[0.014]	[0.019]	[0.013]	[0.016]	[0.013]	[0.014]
Government (dummy)	-0.098***	-0.135**	-0.080***	-0.052	-0.128***	-0.207***
	[0.027]	[0.052]	[0.025]	[0.049]	[0.023]	[0.034]
Number of observations	934	414	1423	735	2133	838
R-square	0.32	0.38	0.24	0.27	0.31	0.32

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 7. Determinants of Foreign Borrowing Use in India

Results under "All" column show estimates using data with all firms. Results under "Access" column show estimates using data of firms that have access to foreign borrowing. A firm is defined to have access to foreign borrowing if stock of foreign debt is positive in the sample. All models are estimated using standard OLS. Heteroskedasticity consistent standard errors are reported in brackets. Dependent variable is stock of foreign debt in percent of the stock of total external resources (including debt, current liabilities, and equity capital). RZ_us is taken from de Sorres et al (2006, shown in Appendix), as a result, the estimation excludes some sectors where RZ_us is not available, most notably, financial sector. Ownership dummy variables are set against private independent companies.

Independent Variables	Dependent Variable: Foreign Debt in Percent of Total Assets											
	1993/94–05/06				1993/94–98/99				1999/00–05/06			
	All		Access		All		Access		All		Access	
RZ_US	-0.071**	-0.012	-0.199**	-0.124	-0.055**	-0.029	-0.376*	-0.367	-0.007	0.035	-0.01	-0.023
	[0.033]	[0.056]	[0.080]	[0.109]	[0.028]	[0.046]	[0.209]	[0.250]	[0.037]	[0.053]	[0.110]	[0.109]
Size (log, sales)	0.406***	0.626***	0.257	0.341	0.410***	0.653***	-1.937	-6.473	0.255***	0.604***	-0.269	0.161
	[0.072]	[0.146]	[0.225]	[0.299]	[0.068]	[0.154]	[3.536]	[4.142]	[0.040]	[0.094]	[0.286]	[0.211]
Age (log)	-0.35	0.731	-1.358	-0.419	-0.619	-1.119	-3.167	-6.416	-0.991	-2.453	-9.415	-8.637**
	[0.684]	[1.260]	[1.984]	[2.852]	[0.571]	[1.154]	[3.793]	[5.862]	[1.507]	[2.470]	[6.198]	[3.747]
Age (log, square)	-0.006	-0.183	0.084	-0.025	0.078	0.16	0.326	0.903	0.074	0.274	1.226	1.094*
	[0.112]	[0.218]	[0.323]	[0.476]	[0.105]	[0.214]	[0.652]	[0.955]	[0.231]	[0.375]	[0.954]	[0.561]
Profitability (ROA)	-0.006	-0.011	-0.023	0.031	-0.016*	-0.027	-0.158	0.08	0	0.029	-0.055	0.168**
	[0.010]	[0.053]	[0.041]	[0.130]	[0.008]	[0.025]	[0.117]	[0.234]	[0.001]	[0.024]	[0.055]	[0.078]
Asset tangibility	3.316	15.137***	6.31	31.876***	7.327***	9.690**	109.750**	117.723***	0.718	3.88	2.16	5.497
	[4.458]	[5.245]	[7.565]	[12.047]	[2.505]	[4.332]	[29.642]	[37.173]	[1.814]	[3.323]	[11.686]	[10.939]
Market to book ratio		-0.063		0.084		-0.153**		-0.305		0.015		0.098
		[0.125]		[0.274]		[0.068]		[0.324]		[0.061]		[0.228]
Exporter (dummy)	0.123	0.361	0.244	0.474	0.026	-0.052	0.062	-1.902	-0.034	-0.01	-0.42	-0.337
	[0.235]	[0.335]	[0.676]	[0.671]	[0.201]	[0.268]	[1.763]	[1.439]	[0.161]	[0.241]	[0.605]	[0.570]
Private group (dummy)	-0.09	-0.19	-0.543	-0.408	0.006	-0.136	-0.857	-0.135	0.399**	0.177	0.666	0.276
	[0.201]	[0.438]	[0.670]	[0.910]	[0.137]	[0.283]	[2.057]	[2.850]	[0.189]	[0.346]	[0.818]	[0.762]
Foreign (dummy)	-0.018	-0.788*	0.287	-1.289	0.118	0.462	-1.937	-6.473	0.705	-1.147***	2.23	-1.952**
	[0.450]	[0.471]	[1.190]	[1.099]	[0.283]	[0.448]	[3.536]	[4.142]	[0.594]	[0.338]	[1.808]	[0.911]
Government (dummy)	0.906	-1.13	1.621	-1.515	1.214	-1.158	-1.937	-6.473	0.423	-0.287	2.048	-0.042
	[0.910]	[1.181]	[1.987]	[2.006]	[1.065]	[0.921]	[3.536]	[4.142]	[0.447]	[0.816]	[1.657]	[1.471]
Number of observations	1040	434	347	192	1578	765	177	123	2363	872	553	312
R-square	0.06	0.08	0.05	0.04	0.05	0.05	0.06	0.09	0.03	0.08	0.08	0.11

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 8. Determinants of External Funds Use in India

This table presents results from regressions using data excluding outliers (firms with dependent variable falling in largest 5 percentile or lowest 5 percentile). All models are estimated using standard OLS. Heteroskedasticity consistent standard errors are reported in brackets. Dependent variable is ratio of equity to total asset where equity is only includes long-term borrowing (and does not include current liabilities). RZ_us is taken from de Sorres et al (2006, shown in Appendix), as a result, the estimation excludes some sectors where RZ_us is not available, most notably, financial sector. Ownership dummy variables are set against private independent companies.

Independent Variables	Dependent Variable: Ratio of Equity to Total Assets					
	1993/94–05/06		1993/94–98/99		1999/00–05/06	
RZ_US	0.005***	-0.001	0.004***	0.001	0.006***	0.004**
	[0.002]	[0.002]	[0.001]	[0.002]	[0.002]	[0.002]
Size (log, sales)	-0.013***	-0.011**	-0.008***	-0.011***	-0.043***	-0.047***
	[0.003]	[0.005]	[0.002]	[0.004]	[0.003]	[0.004]
Age (log)	-0.053*	-0.140***	-0.070***	-0.108***	-0.140***	-0.261***
	[0.029]	[0.047]	[0.021]	[0.033]	[0.038]	[0.071]
Age (log, square)	0	0.018**	0.001	0.010*	0.007	0.032***
	[0.005]	[0.008]	[0.004]	[0.005]	[0.006]	[0.011]
Profitability (ROA)	-0.004***	-0.004***	-0.002***	-0.003***	-0.001	-0.007***
	[0.001]	[0.001]	[0.001]	[0.001]	[0.000]	[0.001]
Asset tangibility	0.044	-0.311	-0.177	-0.133	-0.342	-1.378***
	[0.297]	[0.372]	[0.275]	[0.243]	[0.254]	[0.240]
Market to book ratio		-0.002		-0.005*		0.007***
		[0.003]		[0.002]		[0.002]
Private group (dummy)	0.005	0.012	-0.012*	0	-0.007	0.008
	[0.009]	[0.012]	[0.007]	[0.010]	[0.009]	[0.011]
Foreign (dummy)	0.029**	0.045**	-0.004	0.019	0.048***	0.061***
	[0.013]	[0.018]	[0.011]	[0.015]	[0.016]	[0.019]
Government (dummy)	0.043**	0.017	0.008	-0.032	0.094***	0.134***
	[0.019]	[0.027]	[0.017]	[0.020]	[0.022]	[0.022]
Number of observations	934	407	1422	725	2130	820
R-square	0.26	0.17	0.25	0.23	0.35	0.44

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 9. Determinants of Firm Growth

This table presents results from regressions using data excluding outliers (firms with firm growth rate falling in largest 5 percentile or lowest 5 percentile). All models are estimated using standard OLS. Heteroskedasticity consistent standard errors are reported in brackets. Dependent variable is annual average growth rate of firm gross value added within each sample period. RZ_us is taken from de Sorres et al (2006, shown in Appendix), as a result, the estimation excludes some sectors where RZ_us is not available, most notably, financial sector. Initial share of a firm is calculated as a share of the firm's gross value added to the sum of gross value added across all firms as of the first year of the sample period. Ownership dummy variables are set against private independent companies.

Independent Variables	Dependent Variable: Annualized Average Growth of Gross Value Added					
	1993/94–05/06		1993/94–98/99		1999/00–05/06	
RZ_US	-0.417***	-0.632***	-0.027	-0.373*	-0.357***	-0.733***
	[0.113]	[0.146]	[0.162]	[0.195]	[0.138]	[0.166]
Initial share	0.609	0.062	1.19	-2.354	1.512	-4.920
	[1.096]	[1.536]	[1.942]	[1.833]	[2.224]	[3.475]
Age (log)	-2.216***	-2.262***	-3.200***	-3.631***	-2.493***	-1.471**
	[0.355]	[0.469]	[0.450]	[0.630]	[0.440]	[0.609]
Profitability (ROA)	0.700***	0.860***	0.572***	1.051***	0.070*	0.927***
	[0.070]	[0.104]	[0.147]	[0.116]	[0.039]	[0.099]
Leverage	0.056	0.159*	0.016	0.375***	0.075***	0.109
	[0.050]	[0.089]	[0.033]	[0.097]	[0.029]	[0.080]
Market to book ratio		0.261		0.371		0.688
		[0.206]		[0.307]		[0.422]
Access to foreign debt (dummy)	2.188***	1.817**	2.731**	3.294***	2.631***	1.174
	[0.533]	[0.705]	[1.081]	[1.194]	[0.712]	[0.885]
Exporter (dummy)	-0.802	-0.929	0.607	-0.246	-0.284	-1.065
	[0.515]	[0.665]	[0.718]	[0.882]	[0.632]	[0.803]
Private group (dummy)	-0.352	-0.813	2.138***	1.422	-0.931	-1.670*
	[0.603]	[0.874]	[0.819]	[1.156]	[0.686]	[0.947]
Foreign (dummy)	0.041	-1.806	2.240*	0.856	3.370***	-2.931**
	[0.816]	[1.161]	[1.282]	[1.662]	[1.144]	[1.429]
Government (dummy)	-1.334	-1.533	3.385	3.953	-1.105	-1.575
	[1.451]	[2.090]	[2.164]	[3.073]	[1.704]	[2.744]
Number of observations	867	394	1297	678	1919	801
R-square	0.32	0.32	0.15	0.24	0.05	0.19

***, **, and * denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Appendix Table. Industries' Dependence on External Finance (U.S.)

Industry	ISIC/NIC Code	Our Indicator	Dependence on External Finance
Wood and products of wood and cork	20	Wood	-0.45
Fabricated metal products except machinery and equipment	28	Fabricated metal	-0.25
Construction	45	Construction	-0.19
Other nonmetallic mineral products	26	Mineral	0.00
Pulp paper, paper products, printing and publishing	21-22	Paper	0.09
Electricity, gas, and water supply	40-41	Electricity, gas, water	0.12
Machinery and equipment n.e.c.	29	Machinery	0.19
Textiles, textile products, leather, and footwear.	17-19	Textile	0.19
Other transport equipment	35	Transport equipment	0.19
Motor vehicles, trailers and semi-trailers	34	Motor vehicle	0.20
Transport and storage	60-63	Transport service	0.43
Basic metals	27	Basic metal	0.44
Food products, beverages and tobacco	15-16	Food	0.53
Rubber and plastics products	25	Rubber	0.56
Hotels and restaurants	55	Hotel restaurant	0.64
Wholesale and retail trade, repairs	50-52	Trade	0.75
Coke refined petroleum products and nuclear fuel	23	Petroleum	0.78
Electrical and optical equipment	30-33	Electronics	1.62
Post and telecommunications	64	Telecom	1.67
Real estate renting and business activities including computer and R&D services	70-74	Business service	3.35
Chemicals and chemical products	24	Chemical	6.20

Source: de Serres, et al (2006)

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