Financial Stress in Indian Corporates*

Jugnu Ansari, Khushboo Khandelwal, and Nagpurnanand Prabhala

This version: April 2016

Abstract

We characterize the changes in credit quality of a large sample of listed Indian corporates. Multiple indicators suggest that credit quality declines sharply between 2010 and 2015, creating a thick tail of vulnerable corporate debt. The stress likely reflects a sharp contraction in aggregate corporate growth coupled with modest drops in profitability and imbalanced financing patterns with overreliance on debt. Default risk models suggest that state-owned banks bear the brunt of corporate stress. Reviving corporates is likely to depend on future growth as well as the ability to restructure or reallocate assets in place. Remedies for banks pose more difficult choices.

* Jugnu Ansari is at CAFRAL and Reserve Bank of India, Khushboo Khandelwal is at CAFRAL, and N. Prabhala is at CAFRAL and University of Maryland, College Park. This article is based solely on publicly available data. The views are personal and not those of CAFRAL or the Reserve Bank of India. Please address comments to admincafral@rbi.org.in. We acknowledge the invaluable research assistance of Devika Shivadekar, and Nishant Vats. We are very grateful to Jin Duan, Meena Hemchandra, Prachi Mishra, S. K. Panigrahi, Sun Wei, for their time, feedback and many helpful conversations. We thank Mahesh Vyas and CMIE staff for answering many queries about the CMIE Prowess data. We retain responsibility for any errors.

1. Introduction

Many analysts raise concerns about the credit risk of corporate India. These studies include Lindner and Jung (2014), studies by rating agencies such as Moody's and India Ratings. Using a proprietary DRSK model, Bloomberg India reports that the default risk of Indian corporates is higher than that of Asian, European, and U.S. firms.[1] India's central bank, the Reserve Bank of India echoes these concerns. For instance, see RBI's June 2015 Financial Stability Report based on internal data and in the popular press.[2]

Our study is motivated by the above observations. We study indicators of financial risk for a panel of all listed Indian corporates with audited financial data and focus on the time period after the 2008 global financial crisis. While aggregate leverage is stable, the stability masks a compositional shift towards more risky debt. One indicator of this shift is a diminished capacity to service debt. Related is the emergence of a thick left tail of corporate debt, or the portion of corporate debt that is vulnerable to default. Much of the stress is due to large credits. Market models of credit risk indicate similar signals of stress but more importantly, suggest an asymmetric pass-through to banks in which state-owned banks are left more vulnerable to corporate stress.

The data indicate that stress is likely due to an abrupt slowdown in corporate growth since 2011, compounded by pressures on profitability and imbalanced financing patterns with reliance on debt. Restoring corporate health seems predicated on a revival of the growth cycle, improved productivity of assets in place that include nearly 900 stalled projects, and more balanced financing patterns. Remedies for banks appear to be more difficult. In the short-term, state-owned banks must deal with *current* non-performing assets (NPAs), specifically resolving them with legal, internal, and recovery infrastructure not designed for this level of stress and that are not readily altered in the short term. The longer-

---

[1] See "*Credit Risk for Indian Corporates*" (Bloomberg, September 30, 2014), *"Banking System Outlook: India"* (Moody's, October 29, 2014) or "*Deleveraging Top 500 Indian Corporate Borrowers*" (India Ratings, December 3, 2014), Credit Suisse's "*House of Debt*" (October 2015).

[2] See *"An over-leveraged sector*," Live Mint, March 30, 2015 although these concerns have been raised earlier too. For instance, see "*Top Indian companies burdened with debt*" (Forbes, August 19, 2013).

term issue is controlling *future* NPAs. This likely requires reconsidering a careful rethink of the ownership, governance, and the footprint of the state-owned banks. In the interim, the umbrella of state ownership and the state's assurances of bail-in capital has provided a cushion for banks to function with relatively modest capital injections.

The article is organized as follows. Section 2 discusses the data. Section 3 discusses leverage and related data on the interest coverage ratio. For completeness, we also briefly touch upon the mix of debt seen in Indian corporates. Section 4 examines vulnerable corporate debt. Section 5 discusses the pass-through of corporate stress to banks. Section 6 characterizes the aggregate corporate growth, profitability, and financing patterns. Section 7 concludes. Section 8 offers policy implications.

We preface the analysis with a remark. Our focus is descriptive and on issues of policy interest du jour using a large, public dataset. We do not conduct structural or causal inquiries or test specific theories but use academic work of that vein to inform what we do.[3]

2. Data

Our data are from the December 2015 vintage of the CMIE Prowess database. The "all companies" dataset in CMIE has 37,628 unique firms over the time period from 2001 to 2015. An identity dataset maintained by CMIE contains 23 identifiers for firms covered by Prowess. We use the Prowess "company code" to identify unique entities. Appendix A describes the key variables used in the study and the Prowess sources used to construct them.

2.1. Sample Construction

We download standalone annual financial statements from CMIE Prowess. The vast majority of Indian corporates have fiscal year end *t* in March. Our notation is that all fiscal year *t* variables are as of March 31 of calendar year

[3] See Roberts and Whited (2012) or Whited (2014) on methodological issues and Li, Whited and Wu (2014) or Giroud, Mueller, Stomper, and Westerkamp (2011) for empirical evidence. For economic effects of leverage, see, e.g, Hart and Moore (1995), or Myers (1977) or standard corporate finance textbooks such as Berk and DeMarzo (2015).

t. If the year end is in a month other than March, we assign all firms with year-end before September 30 in calendar year *t* to fiscal year *t* and firms with all other year-ends to year *t+1*. This procedure results in an initial sample of 34,979 firms with financials from fiscal 2001 (ending March 31, 2001) to fiscal 2015 (ending March 31, 2015). This dataset is an unbalanced panel of 251,326 observations, each of which is a unique firm-year.

We drop 694 observations in which the fiscal year spans less than 3 months and 627 observations that cover fiscal 2000 as our focus is on the 2001-2015 time period. We identify 245 duplicate firm-fiscal years. We drop 124 cases in which they are preceded by prior observations for the same fiscal year that cover at least 12 months. Of the remaining 121 firm-years, we keep the observations that cover a greater number of months within the same fiscal year. The resulting sample comprises 249,760 firm-years for 34,881 unique firms. This sample includes 4,918 firm years, or about 2% of the sample, in which the fiscal year spans less than 12 months. We retain these because exclusions based on number of months in a financial year may introduce biases.

We identify 1,533 cases for which total assets is missing and eliminate them. We exclude financial companies. The vast majority of such firms are either non-banking finance companies (NBFCs) or banks that have Prowess "industry type" codes of 2 or 3, respectively. Non-banking finance companies account for about most of these while the 96 to 143 banks in each year account for about 1% of our sample. Eliminating these still leaves us with residual firms that are potentially of a financial nature. We examine names of firms to exclude a further 1,752 firm-years that pertain to financials, resulting in a final sample of 184,815 firm years.[4]

We identify state owned enterprises through the field "entity group code" in Prowess. 6,386 firm-years (772 firms) have codes that include "State" or "Central," indicating ownership by state governments or the central government. Of these, 5,572 firm-year (649 firms) are commercial or private enterprises

[4] We exclude firms with "finance" or "investment" or "bank" in their names. It is not possible to estimate the fraction of business revenues from finance and non-finance activities for such firms. We exclude them as they have little empirical significance in terms of number or size but the heterogeneity relative to other included firms can generate outliers and distort regressions.

rather than departmental undertakings. Because state owned firms raise different issues, have their own financing patterns, and have incomplete data towards the end of the sample period, we exclude them from analysis.

Finally, we also eliminate 9,636 firm-year observations with micro firms having total assets less than ₹ 1 million. These firms are appropriately analyzed with a larger pool of similar small private firms.[5] These steps leave us with a sample of 168,793 firm-year observations.

2.2. Dropping Unlisted Firms

Table 1 gives the breakup of the initial sample by year. Two key features emerge from Table 1, viz., the variation in the number of observations and the large number of unlisted firms in the sample. On the first point, the number of observations increases from 6,727 firms in fiscal 2001 to 16,429 firms in 2010 and thereafter drops each year to reach a sample of 5,461 firms in 2015. Most of the drop is in the number of unlisted firms. This leads to our second point, the large number of unlisted firms.

Columns 2 and 3 of Table 1 break the sample into unlisted and listed firms. We find that the listed firm panel is roughly constant and more balanced across the sample period. The sample includes between 2,988 and 3,490 firms per year. In untabulated results, we find that virtually all listed firms trade on the BSE while roughly 1,300 firms are traded on the NSE in 2015. The number of unlisted firms shows more variation especially in the most recent years when it drops from 12,983 in fiscal 2010 to about 20% of this number, or 2,473 firms in fiscal 2015. There is simply too much fluctuation in the number of unlisted firms covered by CMIE, making the unlisted sample not comparable across years. We drop unlisted firms. The final sample includes 49,897 firm-years between 2001 and 2015.[6]

2.3. Measuring Leverage

[5] Conversations with CMIE staff reveal that the inclusion of such firms is subject to requests from commercial end-users so their number and the length of the tracked histories varies from year to year. In our judgment, the ad-hoc nature of this sample renders the current version of the CMIE database unsuitable for small-firm financing research.

[6] In unreported work, we analyze industry data. Briefly, we find that the most indebted firms in the left tail belong to sectors with high growth. Both the firms and the sectors they belong to decline in the current 2011-2015 corporate stress cycle.

Frank and Goyal (2010) and Welch (2011) discusses leverage measurement. We study two balance sheet measures of leverage, viz., debt and total liability ratios. The first is debt to debt plus tangible equity, and is a measure of long-term leverage due to debt. The second is the ratio of the total outside liabilities to tangible assets, which encompasses a larger suite of liabilities that includes, for instance, trade credit. Leverage can be defined using book or market values. We consider book values in our initial analysis and reserve market values in the later sections that analyze default probabilities. The more useful metric, as will be clear shortly, is interest coverage, the ratio of EBIT to interest expense.

The field "debt" in Prowess includes both debt and preference share capital. In keeping with convention in the finance literature, we exclude preference shares from debt. The debt field is sometimes null in the Prowess dataset. Internal discussions with CMIE staff suggest that in these cases, debt is usually not material. We thus treat null values of debt as being equal to zero.

In assessing interest coverage, an accounting issue is the treatment of capitalized interest expense. In our sample, about 6.6% of firm-years involve some capitalization of interest. About 10% of firms report capitalized interest in recent years and some significant amounts, as the 75th and 90th percentiles indicate. A conservative route would be to add back to interest expense any interest accrued and capitalized (without adjusting the corresponding depreciation). The other route would involve taking the reported numbers as is. Our inferences are largely insensitive to these choices.

2.4. Reported Aggregates

We report two aggregate statistics for our sample. We use two measures. One aggregates numerators and denominators separately.

$$L_t = \frac{\sum_{i=1}^{n_t} D_{it}}{\sum_{i=1}^{n_t} D_{it} + \sum_{i=1}^{n_t} TNW_{it}} \qquad (1)$$

where D is debt and TNW tangible net worth, or tangible shareholders equity, Both measures are for firm i in year t where years are fiscal year-ends. A second measure is the median debt to debt plus equity of each sample.

$$L_t = \text{median}\ \frac{D_{it}}{D_{it} + TNW_{it}} \qquad (2)$$

The first is a measure of leverage of the entire corporate sector, weights larger firms more, and sidesteps outliers. The second measure in equation (2), indicates the leverage of the median firm in the dataset. Likewise aggregate interest coverage ratio is either the sum of numerator to sum of denominator or is reported for the median firm.

2.5. Descriptive Statistics

Table 2 gives statistics for the final sample of listed firms used in our analysis. The distribution of firm size is skewed. The median (mean) total assets of listed firms increases from ₹ 291 million (₹ 1,888 million) in 2001 and ₹ 1,280 million (₹ 15,643 million) in 2015. Table 2 also displays the assets of the top 100 and top 500 firms by total assets. We find high and increasing concentration. The top 100 firms, or about 3% of the number of firms, account for 53% of assets in 2001 and 65% in 2015. The top 500 firms, or about 15% of the number, account for about 81% of assets in 2001 and 90% of assets in 2015.

Table 3 reports data on concentration in indebtedness. Credit in Indian corporates is concentrated, increasingly so. The top 100 indebted firms owe about 53% of all debt in 2001 and 68% in 2015. The top 500 indebted firms account for 82% of debt in 2001, which increases to 93% in 2015. In unreported results, we examine assets of the top *indebted* firms. These firms account for between 45% and 56% of assets, while the top 500 firms by debt account for 72% to 78% of assets. The quality of credit in India depends on the health of these top borrowers.

3. Leverage

3.1. Stable Leverage, Declining Credit Quality

Table 4 reports the aggregate and median book leverage ratios for our sample. Over the sample period, the first measure of leverage, the debt ratio, declines between 2001 and 2015 from 0.56 to 0.44. The second measure of leverage, the total liabilities ratio, displays a similar decline from 0.67 to 0.61. Much of the decline is before 2008, after which leverage stabilizes. The stable

aggregate leverage may be comforting but it shrouds declines in credit quality and the related compositional shifts, as we discuss next.

Signs of credit quality declines can be seen in interest coverage ratios. Over the sample time period, the aggregate interest coverage ratio for the whole corporate sector changes from 1.90 in 2001 to a peak of 6.92 in 2007 before halving to 3.38 between fiscal 2008 and fiscal 2015. We see a similar decline in median interest coverage ratio, which drops to 2.14 in 2015. The main point made by the data is that the coverage ratio declines even when leverage is stable. The debt capacity of Indian corporates declines measurably over the sample period.

3.2. Declining Credit Quality of the Most Indebted Firms

As indicated by descriptive statistics in Tables 2 and 3, concentration is a dominant feature of India's corporate sector. We examine the credit quality of a rotating panel of the top 100 or 500 debtors each year. We obtain similar when we use as base a constant fraction of the population.[7]

Table 5 reports the debt ratio, total liabilities ratio, and interest coverage for the most indebted firms classified by the amount of indebtedness. Perhaps unsurprisingly, the overall levels of leverage of the top borrowers, are higher than the population aggregates.[8] The broad patterns in debt and coverage ratios of the most indebted firms are similar to those in the aggregate sample. Debt and outside liability ratios decrease from 0.61 and 0.70 in 2001 to 0.52 and 0.66 in 2015. The decline is pronounced in the time periods until fiscal 2011, after which leverage changes by economically insignificant amounts.

Once again, a different picture emerges from interest coverage ratios. For instance, between 2011 and 2015, the debt ratio of the top 100 indebted firms moves from 0.49 to 0.52, about a 5% (0.03/0.52) change. However, in the same period, the interest coverage ratio drops by 40% from the 3.70 to 2.15. The sharp decline in interest rate coverage in the face of relatively minor movements in leverage indicates the diminished debt capacity of corporates. The most indebted

[7] Formal tools for understanding concentration are power laws (Gabaix, 2009). We eschew the use of these tools in favor of the more familiar practice of looking at ratios for a fixed number of firms.

[8] Note, however, that the top indebted firms are formed by the *levels* of debt not debt ratios.

firms, which account for over 90% of debt owed by the listed firms, are less able to service debt in 2015 than before.

The results also reveal that the smaller firms have lower debt capacities. To wit, in Table 6, the median leverage of all listed firms is lower than the mean. Curiously, the median interest coverage is also *lower*. The lower coverage with lower leverage indicates that small firms have less capacity to service debt.

3.3. Composition of Debt

We investigate the sources of debt in Indian corporates. In early work, Berglof and van Thadden (1994) argue that a capital structure with multiple investors with short and long-term debt may be optimal as it gives greater incentives to renegotiate debt ex-post. Rauh and Sufi (2010) demonstrate that U.S. firms, especially firms with lower tier ratings, have multi-tiered debt structures.

In the Indian market, variation in debt type is shaped by institutional issues. Debt through bonds is relatively rare and restricted to companies of high quality. Moreover, many bond issuers are banks and non-banking financial companies. According to our internal data, only 19% of aggregate bonds outstanding are issued by corporates. Debt types relevant to India are foreign-currency (FX) versus rupee denominated debt,[9] secured versus unsecured debt, usually discussed in work on creditor rights (Lilienfield-Toal, Mookherjee, and Visaria, 2012; Vig, 2013), and short versus long-term debt given the wide prevalence of on-demand lines of credit that are routinely renewed.[10]

Tables 7 to 11 describe the different types of debt in corporate balance sheet structures. Table 7 breaks out debt by whether it is short-term or long-term. About 70% of debt in Indian corporates is long-term, which is defined as maturity of 1 year or more. This feature is interesting because in India, long-term debt typically does *not* come from the bond market. Banks are the main providers of long-term credit to Indian corporates.

[9]See https://www.rbi.org.in/scripts/BS_ViewMasCirculardetails.aspx?id=8101 for guidelines on external commercial borrowings and https://rbi.org.in/Scripts/ECBView.aspx for data.
[10] Other forms of debt include a commercial paper market, which has relatively limited literature and different sources of data. We defer analysis of this form of debt to future work.

Table 8 shows that secured debt comprises about 70% of total debt for all firms. It is slightly lower at 63% for the top 100 most indebted firms. In the early time periods of our sample, secured debt ratios are close to 80% for the full samples and the sub-samples of indebted firms. They drop through the mid-2000s, perhaps as a response to the 2002 SARFAESI act (Bhue, Prabhala, Tantri, 2016).

Table 9 shows that banks finance close to 56% of total debt of corporate firms in 2015 against 32% in 2001. The low figure in 2001 seems curious given that India is a bank-dominated economy. The discrepancy is resolved by examining debt from other financial institutions, which is about 22% of total debt in 2001. The sum of financial institution and bank debt remains close to 60% of aggregate debt in the recent decade. Table 10 reports data on the maturity of bank debt. We find that increasing proportions of bank debt are long-term, especially for the most indebted firms. CMIE data providers caution us against analyzing time variations in this estimate as varying reporting standards and quality may make comparability difficult.

Table 11 reports data on FX debt. Column 2 reports data on the number of firms with positive FX debt. The number of firms reporting FX debt varies from 163 to 579 firms in a year. Columns 3-5 report foreign currency debt as a fraction of total debt for all firms, issuers or otherwise. FX debt amounts to 13% of total debt in 2015 compared to 6% in 2001. We also consider FX borrowings as a fraction of the total for only firms with *positive* FX debt. For these firms, FX debt is roughly 22% of total debt outstanding in 2015 versus 21% in 2001 and a peak of 33% in 2007-2009. This proportion is roughly equal in both the full sample and the samples of the most indebted firms. This is because the firms who access FX debt are disproportionately concentrated among the top indebted firms.[11]

3.4. Trade Credit

We examine the role played by trade credit. As Petersen and Rajan (1997) remark, trade credit is a significant portion of aggregate credit but has relatively

[11] State-owned firms, who are also significant FX debt issuers, are excluded from our analysis. We are exploring the nature of FX debt issuers in separate work.

less developed literature relative to work on corporate leverage. In their work, accounts payable are 4% to 11% of sales while accounts receivable are 7.3% and 18.5% for small and large firms, respectively. Receivables extended by firms exceed their payables.[12] This is not surprising, given that large firms are less constrained (Kaplan and Zingales, 1997; Whited and Wu, 2006; Hadlock, Fee, and Pierce, 2010). Thus, large firms should draw formal credit and extend trade credit to firms that they are better informed about.[13] However, this pattern is reversed in India, where large indebted firms have lower receivables than payables.

Tables 12 and 13 report trade credit data for India. Receivables to sales ratios are relatively stable at between 14% and 16% of sales, which are comparable to the large firm data in Petersen and Rajan (1997) for the U.S. and Rajan and Zingales (1995) for the evidence in France. In Table 13, we find that the median receivables to payables ratio for all firms is 1.0 or lower, especially for the highly indebted firms. Equivalently, receivables and payables are 35% and 34% of debt for the full sample, but 21% and 26% for the top 100 indebted firms and 26% and 28% for top 500 indebted firms.

The most indebted firms appear to squeeze their suppliers and impose the externality of their low credit quality on the trade credit system. An interesting question is whether facilitating greater flow of credit to small enterprises effectively subsidizes larger enterprises that have some power over their smaller suppliers.

4. Vulnerable Corporate Debt

In this section, we focus on the left tail of corporate debt vulnerable to default. To understand tail behavior, we focus on percentiles of the distributions of economic quantities of interest. We first examine distributions based on accounting data. We then use market models of credit risk to understand how vulnerability is seen in equity prices.

---

[12] Rajan and Zingales (1995) display statistics for G-7 countries. Payables range from 11.5% of sales in Germany to 17% in France, while receivables are 13% in Canada to 29% in France.

[13] Other work on trade credit includes its relation to legal systems (Demirguc-Kunt and Maksimovic, 2001), monetary policy (Nilsen, 2002) and growth (Fisman and Love, 2003).

Briefly, for corporates, multiple measures suggest that a left tail is at or worse than levels prevalent after the 2008 financial crisis. In the banking sector, there is an interesting asymmetry in which a large gap opens up between private and state-owned banks. State-owned banks have greater vulnerability to corporate stress than the private sector banks.

4.1. Tails in Leverage Ratios

Table 14 provides the distribution of debt ratios. In the aggregate sample, the trends and levels of leverage are at the most mildly disturbing. The trends are, however, more worrisome for the most indebted firms. For this sample, the left tail thickens. For instance, the 75th percentile of leverage is 0.72 in 2010, one year after the financial crisis. The 75th percentile leverage increases to 0.85, or a debt to equity ratio of 5.67 in 2015. In unreported work, we see similar patterns for the total liability ratio. This pattern in tails is our main point. The firms that account for 90% of the total corporate debt are measurably riskier in 2015 than before.

4.2. Tails of Interest Coverage Ratios

Table 15 reports the distribution of interest coverage ratios. Unlike in Table 14, we now see a distinct left tail even in the full sample. For instance, the median coverage drops from 3.12 to 2.14 over the sample period. The 25th percentile, representing one-quarter of the population, has coverage of 0.86 in 2015. The deterioration in coverage is stark for the top 100 and 500 borrowers, where the median coverage drops to 1.10 and 1.41, respectively and the 25th percentile to 0.12 and 0.27, respectively. In 2015, many top borrowers cannot even cover *half* their interest expense.

4.3. Quantifying the Tail of Vulnerable Debt

Tables 16 and 17 quantify vulnerable corporate debt. We use two proxies for vulnerability. One is the interest coverage ratio. Low interest coverage signals more vulnerability. The second is whether enterprises make net profits. In both cases, we compute the amount of debt in the tails of the vulnerability measure and track how it evolves over time.

Panel A of Table 16 gives an estimate of the total vulnerable debt when vulnerability is measured using coverage ratio. Panel B reports a similar metric, vulnerable bank debt. 59% of bank debt is by firms with coverage ratio less than 1.5X and 66% of debt is by coverage ratio of less than 2X, which would ordinarily be considered below-investment grade debt.[14]

Table 17 gives debt classified by the profitability of the firm that owes the debt. We classify firms by whether they are loss making or not. We find that loss-making firms have increasing fractions of debt, assets and capital expenditure in recent years. For instance, the percentage of debt issued by loss making firms increases from 14% in 2010 to 37% in 2015. Given that loss-making firms increase debt and incur a large portion of the capital expenditure after 2008, the nature and productivity of the spend is a good question.

Table 18 shows *where* the left tail develops. We find that large firms are responsible for currently distressed firms. Panel A shows, for firms with coverage ratio less than 1.0, the number of firms and the distribution of the debt amounts. Panel A comprises the most stressed firms with coverage less than 1.0. Here, the number of companies in the left tail increase modestly from 483 in 2008 to 623 in 2015, a 3.7% per year growth. However, the median amount owed grows by over 23% per year from ₹ 241 million to ₹ 799 million. In other words, the median stressed firm owes far more debt in 2015 than before. Large credit accounts seem primarily responsible for the left tail.[15]

4.4. Evidence from Distance to Default

DTD, or distance to default, is a market-based measure of default vulnerability. Higher values of DTD signal strength, as they indicate that firms are further from default boundaries. Lower values of DTD signal weakness as firms are close to default boundaries. We analyze DTD of corporates to assess corporate vulnerability. DTD are from Risk Management Institute (RMI), NUS Singapore, which explains the technical issues in a relatively accessible manner

[14] http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm

[15] 113 of the 623 firms are common. The extensive margin drives stress but there is a residual chronic component of long-term stressed firms.

(Duan and Wang, 2012). Appendix B provides a brief synopsis.[16] We map the RMI data to the CMIE Prowess data by matching company names and ISINs.

Table 19 reports DTD estimates. We focus on the estimates after fiscal 2008 when DTD samples are more homogeneous. We find that the median DTD decreases sharply in fiscal 2009 reflecting the global financial crisis. Median corporate DTDs change modestly after 2009 but an interesting asymmetry appears between the left and right tails. While good firms show declines in DTDs, the left tail percentiles remain at about 2009 DTD levels through 2014.

5. Bank Vulnerability to Corporate Stress

Because close to two-thirds of the Indian corporate debt is bank debt, an interesting question is how corporate stress manifests itself in *bank* distance to default. We compare the current stress, which is induced by corporate credit issues, with the stress levels seen just after 2008, which represent an easily interpretable benchmark for high stress given the global financial crisis. Our sample comprises 42 banks with traded prices for whom we can estimate distance to default.

Table 20 presents data on one-year ahead DTD for all banks. We find that bank DTDs decreases sharply in fiscal 2009, the first year after the global financial crisis and then reverses course in 2010. For instance, the median DTD for all banks in 2009 is 0.44. The median distance to default in 2015 is 0.14, which is below the levels reached just after the crisis. In other words, the market imputes default probabilities for banks at the levels of the 2008 financial crisis. In fact, the left tail comprising DTDs of stressed banks, e.g., the 25th percentile of the DTDs, is markedly worse than after 2008.

Panels A through C of Table 21 present DTD data for state-owned, old private banks, and new private banks, respectively. The data show a sharp gap in DTD between state-owned banks and new private sector banks. While the private banks increase DTD, state-owned banks show lower DTD. Thus, the brunt of the corporate credit crisis appears to be borne by state-owned banks.

[16] See Duan and Wang, 2012, *Global Credit Review* 2, 95-108.

We briefly comment on interpreting the DTD estimates. One, the reported DTDs reflect market assessments of the quality of the banks' portfolios. They do not indicate imminent default to depositors or bond holders given the implicit promise of state support. Rather, the DTD quantifies the demands placed by state-owned banks on the government. We also remark that one can shrug aside equity market indicators on grounds that equity markets are a side show. However, low market capitalization can also have real effects. For instance, it may raise costs of raising external equity from investors.

6. Causes of Corporate Stress

6.1. Aggregate Shock

We characterize the aggregate shock that likely underlies current corporate stress in India. The shock is reflected in operating metrics including firm growth, profitability, and investment patterns for all listed firms. We report the data with a predictive structure so indebtedness of year *t* predicts performance levels in fiscal *t+1*.

Tables 22-24 characterize the sales, profits, and investments in the sample of listed firms that we study and the corresponding statistics for the most indebted firms. The concentration of sales and profits are below those for debt. For instance, in Tables 22 and 23, we see that cohorts of the 100 most indebted firms account for 45% of sales and 65% of earnings before interest and depreciation, respectively. These statistics remain relatively stable and are below the debt concentrations reported in Table 3. We find similar patterns for the 500 most indebted firms.

Interestingly, however, the capital expenditure patterns in Table 24 show greater concentration levels than sales or profits for the most indebted firms. That is, indebted firms account for disproportionately large portions of investments in the corporate sector. The data also characterize the nature of the investment cycle currently under way. Corporate investments show a discontinuous jump, doubling in 2009 just after the global financial crisis. Aggregate investment shows more limited fluctuations thereafter and remains at roughly the same nominal level in 2015 as in 2009.

Tables 25-27 characterize the growth, profitability, and investments for our sample. From Table 25, we see that aggregate sales growth drops very sharply from 20% in fiscal 2011 to 2% in fiscal 2015. Similar declines are seen for the top 100 and top 500 most indebted firms. Table 26 shows that there is a downward trend in profit margins, which reach historic lows in 2015. Table 27 reports data on the capital formation rate, the capital expenditure in fiscal year *t+1* divided by fiscal year *t* capital stock. Capital formation rates are well below their peaks of the 28-38% in 2009-2010.

The bottom line is that there is clear evidence of a severe shock to the aggregate growth trajectory of India's corporate sector since 2011. The boom in sales growth after the 2008 global financial crisis has essentially stalled in 2015 with an accompanying slow down in profitability and capital formation. [17] As discussed in Section 5, the brunt of this stress is borne by state-owned banks.

6.2. Imbalances in Financing Patterns

We next study the financing patterns of Indian corporates. We draw on the empirical analyses of the Myers (1977) pecking order theory along the lines of Myers and Shyam Sunder (1999) or Frank and Goyal (2003, 2005). Cash flow deficits *FD* equal the change in assets of firms minus change in retained earnings. We examine the fraction of *FD* financed by equity issuance ΔE, which is change in total shareholders equity minus changes in retained earnings, the portion financed by debt issuance ΔD, and by internal cash flows *CF*. The estimates are predictive. Thus, indebtedness in year *t* classifies firms and predicts financing patterns for year *t+1*.

Table 28 reports the results for all firms. The results start in fiscal 2002 rather than 2001 because of our one-year ahead predictive set up and the fact that financing deficits are first differences so we lose year 1 of our sample. Table 28 shows that listed firms have considerable and increasing financing deficits, which is probably not surprising for a growing economy. Annual financing deficits for our sample increase by about 15% per year on average from ₹ 0.5

[17] In unreported work, we conduct an attribution analysis of the growth slowdown to firms and the sectors they belong to. We find that the indebted firms belong to growing and profitable sectors, and that these sectors experience a sharp slowdown. Sectoral rather than firm-specific effects dominate.

trillion in 2002 to about ₹ 3 trillion in 2014 but drop in 2015 to ₹ 1.7 trillion, partially due to asset growth slowdown and due to changes in population in 2015. The cumulative (undiscounted) deficits in our sample period exceed ₹ 24 trillion. The top 100 [500] indebted firms account for 61% [87%] of the deficit, similar to the concentration numbers for debt in Table 3.

Table 29 reports how the deficits have been financed. The data give a macro picture of the compositional imbalances in how firms have been financed. Debt is more important in the recent years than in the early part of the sample period. For instance, debt issuances finance at least 52% of deficits between 2012 and 2015, versus 21%-37% between 2002 and 2005. The shift towards debt is more prominent for the most indebted firms. For instance, between 2012 and 2015, debt accounts for 66-75% of financing deficits for the top 100 indebted firms. Here, the increasing role of debt is odd given that the cohort already comprises the *most* indebted firms. The final three columns in Table 29 report similar patterns in medians. [18]

The bottom line is that in aggregate, financing deficits are large and the corporate sector as a whole tilts towards debt to finance these deficits.

6.3. Regression Evidence

We characterize individual firm financing behavior in a regression setting. We estimate the pecking order regressions of Myers and Shyam Sunder (1999) or Frank and Goyal (2003).

$$\frac{\Delta D_{it}}{A_{i,t-1}} = a + b\frac{FD_{it}}{A_{i,t-1}} \qquad (3)$$

In equation (3), ΔD_{it}, debt issuance, is scaled by beginning of period assets $A_{i,t-1}$, and FD_{it} denotes the financing deficit. The U.S. results are widely debated. Myers and Shyam Sunder (1999) report estimates of β close to 0.75 while Frank and Goyal (2003) report that β =0.28. Chirinko and Singha (2000) argue that

[18] In unreported work, we study the financing deficits met through external equity issuance. We find that equity raising accounts for about 21% of the financing deficit for all years but one, 2010. External equity altogether vanishes in fiscal 2012 and 2013, when debt picks up the slack.

empirical estimates of coefficients attain a maximum of 0.75. A vast literature seeks to explain deviations from the coefficient of 0.75.[19]

Table 30 reports the evidence for Indian corporates. We estimate regressions cross-sectionally each year, or the Fama-Macbeth regressions. The average coefficient for debt across all years is 0.47. The cross-sectional R^2 each year is economically significant and ranges from 36% to 70%.[20] In each case, the point estimate of about 0.45 comfortably exceeds the Frank-Goyal estimate of 0.28 for large U.S. corporates. Firms in India seem more averse to issuing equity than their U.S. counterparts.

Table 30 also reports regressions for subsamples of the 100 most indebted firms. Here, the average debt coefficient is much higher for all years and is often close to the bound of 0.75 suggested by Chirinko and Singha (2000) and much greater than the Frank and Goyal estimate for the U.S. Debt appears to be the main channel by which firms, especially the highly indebted ones, meet financing deficits. We leave further investigations of the imbalanced financing patterns, e.g., the cross-sectional variation, for future research.

7. Conclusions: The Facts

We study the leverage and historical financing patterns of a comprehensive set of listed Indian corporates. In fiscal 2015, these firms have book value of assets, tangible equity, and debt of ₹ 45 trillion, ₹ 18 trillion, and ₹ 14 trillion, respectively.

Over the last decade, the leverage of listed corporates declines. Declining leverage, however, masks more worrisome compositional effects. An increasing number of corporations are unable to generate income to service modest or declining debt ratios. Debt owed by listed firms with interest coverage less than 2.0 has expanded from ₹ 1.56 trillion to ₹ 8.5 trillion between 2008 and 2015, a 27% per year clip. Relatively safe debt is perhaps 30-40% of total debt.

The data also suggest that state-owned banks bear the burdens of stressed corporate debt. Merton-style distance to default (DTD) metrics decline for state

[19] See, e.g., Fama and French (2002, 2005), Leary and Roberts (2011), Gomes and Phillips (2012).
[20] Panel regressions with fixed effects yield similar results with a coefficient of 0.45 with R^2 of 50%.

owned banks. DTDs for state-owned banks are near or below the bottoms after the 2008 financial crisis.

The likely causes of stress are a sharp slowdown in corporate growth. A modest decline in aggregate corporate margins compounds the stalled growth effect and seems troublesome given favorable external conditions faced by India since 2010. Imbalanced financing patterns with continued reliance on debt and little external equity completes the troika, and results in the lack of a cushion for a soft landing.

8. Policy Implications

We consider the policy implications suggested by the evidence. While many growth forecasts for India are optimistic and articulate structural reforms to aid growth, they are less specific about current problems and escape trajectories from them.[21] The data suggest that revival strategies must likely focus on both corporates and banks.

On the corporate side, the current issue is dealing with the overhang is from the assets created by the previous investment cycle. There is a jump in aggregate corporate investments in 2009 and maintenance of nominal investments at about the 2009 level since then. The productivity of these assets is an issue. One indicator is the 893 stalled projects in 2016.[22] It seems necessary to take rather micro measures that likely vary from project to project including identifying viable assets, addressing impediments that stall them, and restructuring or reallocating others, potentially to new owners.

A second measure on the corporate side concerns correcting financing imbalances. External equity has been remarkably conspicuous by its absence in the recent cycle. However, equity is traditionally the source of growth capital so some revival in equity raising seems necessary to spur growth. Unfortunately, we have little solid evidence on the precise barriers to equity raising. Conjectures include overcoming a reluctance of promoters to dilute control, perhaps by

[21] See, e.g., https://www.imf.org/external/pubs/ft/survey/so/2016/car030216a.htm

[22] http://economictimes.indiatimes.com/news/politics-and-nation/projects-worth-rs-11-36-trillion-stalled-under-bjp-government/articleshow/51691554.cms

encouraging non-promoter backed private equity, or addressing policy uncertainties that inhibit foreign capital.

On the banking side, our data suggest that the key issues are for state owned banks. The issues divide into the short term and the longer term. One short-term issue is stability of the institutions to let them work through the current stress. The imprimatur of state ownership and repeated firm assurances of state support seem to have satisfied both depositors and investors and let banks function without large short-term capital infusions.

A second short-term issue for state-owned banks is handling the current non-performing assets (NPAs). With a clogged judicial system, a patchwork recovery legal infrastructure, and internal systems that are not designed to deal with large NPAs, it has been hard to resolve distress quickly or efficiently.[23] One solution is a proposed change to the bankruptcy code.[24] History indicates that this type of reform could be slow, ironically due to the slow court processes that required the legal changes in the first place. For instance, debt recovery tribunals were written into low, but legal challenges to these entities took more than a decade to resolve. Capacity constraints at courts or resolving ambiguities in drafting could result in further delays. An interesting development is the interest of the Indian Supreme Court in NPAs.[25] While it is not clear what will emerge from the Court's interest, one possibility is that it triggers an inward look into speeding up the judicial system.

The longer-term issue is how to mitigate *future* NPAs. We offer some conjectures on this issue. India's state-owned banks are the consequence of the nationalization of formerly private banks and their growth paths a product of government mandates, regulations, and politics (Cole, 2009). More clear articulation on the optimal number, nature, and footprint of state-owned banks has perhaps become necessary. Other changes are in the governance of state owned banks. On external governance, the current model has the state as a dominant shareholder with atomistic other shareholders. Perhaps blocks of active external shareholders could engage the state in governance of banks and

[23] See, e.g., Ghosh (2016) or Phadnis and Prabhala (2016)
[24] http://finmin.nic.in/reports/Interim_Report_BLRC.pdf
[25] See, e.g., http://www.livemint.com/Industry/MChpJbCK84ipuKG8uT3KSP/Supreme-Court-asks-RBI-to-furnish-details-of-bad-loans.html

perhaps allow banks to operate more independently.[26] Internal governance changes would focus on appointing, incentivizing, and empowering top management and boards. The formation of the Bank Boards Bureau is a step in this direction.[27] Whether these changes are effective and what channels they operate through are interesting research questions.

References

Aggarwal, R., I. Erel, M. Ferreira, and P. Matos, 2011, "Does Governance Travel Around the World? Evidence from Institutional Investors," *Journal of Financial Economics* 100, 154-181.

Berglof and Von Thadden, 1994, "Short term versus long term interests: Capital structure with multiple investors," *Quarterly Journal of Economics* 109 (4), 1055-1084.

Bhue, G., N. Prabhala, and P. Tantri, 2016, "Creditor Rights and Relationship Banking: Evidence from a Policy Experiment," CAFRAL Working Paper.

Chirinko, R. and A. Singha, 2000, "Testing static tradeoff against pecking order models of capital structure: a critical comment.," *Journal of Financial Economics* 58 (3), 417-425.

Cole, Shawn, 2009, "Fixing Market Failures or Fixing Elections: Agricultural Credit in India," *American Economic Journal: Applied Economics* 1(1), 219-250.

DeAngelo and Roll, 2015, "How Stable Are Corporate Capital Structures?," *Journal of Finance* 70, Issue 1, pp. 373-418.

Demirguc-Kunt, A. and V. Maksimovic, 2001, "Firms as financial intermediaries – evidence from trade credit data," Policy Research Working Paper Series 2696, The World Bank.

Duan, J-C., and T. Wang, 2012, Measuring Distance to Default for Financial and Non-Financial Firms, *Global Credit Review* 2, 95-108.

[26] See, e.g., Aggarwal et al. (2011) or Edmans (2014).

[27] See, e.g., https://rbi.org.in/Scripts/PublicationReportDetails.aspx?ID=784, the P J Nayak committee report, for a discussion of these and other steps to improve bank governance.

Edmans, Alex, 2014, Blockholders and Corporate Governance, *Annual Review of Finance and Economics* 6, 23-50.

Fama E.F. and K. French, 2005, "Financing decisions: Who issues stock?", Journal of Financial Economics, Vol. 76, pp. 549-582.

Fama, E., and K. French, 2002, "Testing trade-off and pecking order predictions about dividends and debt," Review of Financial Studies15, 1-33.

Ferreira, M., and P. Matos, 2008, "The Colors of Institutions' Money: The Role of Institutional Investors Around the World," *Journal of Financial Economics* 88, 499-533.

Fisman, R. and I. Love, 2003, "Trade Credit, Financial Intermediary Development and Industry Growth," *Journal of Finance* 58 (1), 353-374.

Ghosh, S., 2016, Bailouts and Bankruptcies: Corporate Distress, Troubled Debt Restructurings and Equity Stripping, CAFRAL Working Paper.

Gomes, A. and G. Phillips, 2012, "Why do public firms issue private and public securities?," *Journal of Financial Intermediation* 21, 619-658.

Frank, M., and V. Goyal, 2003, "Testing the pecking order theory of capital structure," *Journal of Financial Economics* 67, 217-248.

Frank M., and V. Goyal, 2005, "Trade-Off and Pecking Theories of Debt," Chapter 7 in B. Espen Eckbo (editor), *Handbook of Corporate Finance: Empirical Corporate Finance,* North-Holland

Frank, M. and V. Goyal, 2010, "Capital structure decisions: Which factors are reliably important?" *Financial Management* 38, 1-37.

Gabaix, X., 2009, "Power Laws in Economics and Finance," *Annual Review of Finance and Economics* 1, 255-293.

Giroud, X., H. Mueller, A. Stomper, and L. Westerkamp, 2011, "Snow and Leverage," *Review of Financial Studies* 25 (3), 680-710.

Hadlock, C., T. Fee and J. Pierce, 2010, "New Evidence on Measuring Financial Constraints: Moving Beyond the KZ Index," *Review of Financial Studies* 23 (5) 5, 1909-1940.

Hart and Moore, 1995, "Debt and Seniority: An Analysis of the Role of Hard Claims in Constraining Management," *American Economic Review* 85 (3), 567-585.

Kaplan, S. and L. Zingales, 1997, "Do Investment Cash-Flow Sensitivities Provide Useful Measures of Financing Constraints?," *Quarterly Journal of Economics* 112, 169-215.

Leary, M. and M. Roberts, 2010, "The Pecking Order, Debt Capacity, and Information Asymmetry," *Journal of Financial Economics* 95, 332-355.

Li, Whited and Wu, 2014, "Collateral, Taxes and Leverage," Available at http://econ.as.nyu.edu/docs/IO/35695/1403w.pdf

Lilienfield-Toal, U., D. Mookherjee, and S. Visaria, 2012, "The Distributive Impact of Reforms in Credit Enforcement: Evidence from Indian Debt Recovery Tribunal," *Econometrica* 80 (2), 497-558.

Lindner P. and S. Jung, 2014, "Corporate Vulnerabilities in India and Banks' Loan Performance," IMF Working Paper (232).

Myers, 1977, "Determinants of Corporate Borrowing," *Journal of Financial Economics* 5, 147-175.

Myers, S. and L. Shyam Sunder, 1999, "Testing static tradeoff against pecking order models of capital structure," *Journal of Financial Economics* 51, 219-244.

Nilsen, 2002, "Trade Credit and the Bank Lending Channel," Study Center Gerzensee, Working Paper no. 99.04, Swiss National Bank.

Petersen, M., and R. Rajan, 1997, "Trade Credit: Theories and Evidence," *Review of Financial Studies*http://ideas.repec.org/a/oup/rfinst/v10y1997i3p661-91.html 10 (3), 661-691.

Phadnis, M. and N. Prabhala, 2016, "Debt Recovery Tribunals in India: A Short Note," CAFRAL Working Paper.

Rajan, R. and L. Zingales, 1995, "What Do We Know about Capital Structure? Some Evidence from Capital Structure," *Journal of Finance* 50 (5), 1421-1460.

Rajan, U., A. Seru, and V. Vig, 2015, "The failure of models that predict failure: distance, incentives, and defaults," *Journal of Financial Economics* 115 (2), 237-260.

Rauh, J. and A. Sufi, 2010, "Capital Structure and Debt Structure," *Review of Financial Studies* 23 (12), 4242-4280.

Roberts M., and T. Whited, 2012, "Endogeneity in Empirical Corporate Finance," in George Constantinides, Milton Harris, and Rene Stulz, eds. *Handbook of the Economics of Finance* Volume 2, Elsevier.

Vig, V., 2013, "Access to collateral and corporate debt structure: Evidence from a natural experiment," *Journal of Finance* 68 (3), 881-928.

Welch, Ivo, 2011, "Two Common Problems in Capital Structure Research: The Financial Debt-to-Assets Ratio and Issuing Activity versus Leverage Changes" *International Review of Finance* 11 (2), 1-17.

Whited, T., 2014, "Identification," Keynote speech at Annual Meeting of the Finance Cavalcade, http://toni.marginalq.com/Cavalcade2014Keynote.pdf

Whited, T. and W. Wu, 2006, "Financial Constraints Risk," *Review of Financial Studies* 19 (2), 531-559.

Appendix A

Major Prowess Data Filelds Used in the Study

Prowess variable name	*Description (monetary variables in INR million)*
co_code	Company code
company_name	Company name
mr_entity_type_name	Entity type : Public / Private
owner_code	Ownership group code
owner_gp_name	Owner group name
co_industry_type	Industry type
co_industry_name	Industry name
co_nic_code	NIC tree code
nic_prod_code	NIC code
nse_first_traded_date	NSE first traded date
nse_delist_date	NSE delisting date
bse_first_traded_date	BSE first traded date
bse_delist_date	BSE delisting date
sa_sales	Total sales
sa_interest_exp	Interest expenses
sa_int_capitalised	Interest expense capitalised
sa_int_trf_to_dre	Interest transferred to deferred revenue expenditures
sa_pbdita	Profit before depreciation, interest, tax & amortisation
sa_depreciation	Depreciation
sa_amortisation	Amortisation
sa_paidup_pref_cap	Paid-up preference capital
sa_long_term_borrowings	Long term borrowings excluding current portion
sa_short_term_borrowings	Short term borrowings
sa_tangible_net_worth	Tangible net worth
sa_debt	Debt + Preference share capital
sa_secured_borrowings	Secured borrowings
sa_bank_borrowings	Borrowing from banks
sa_fin_inst_borr	Borrowing from financial institutions
sa_frgn_crncy_borr	Foreign currency borrowings
sa_total_assets	Total assets
sa_gross_fixed_assets	Gross fixed assets
sa_net_fixed_assets	Net fixed assets
sa_sundry_creditors	Trade payables
sa_trade_receivables	Trade receivables
sa_retained_profits	Retention after paying common and preferred dividends

Appendix B

Computation of DTD

The starting point for DTD models is to recognize that in a levered firm, equity *S* is a call option on firm value *V* with strike equal to debt face value *F* and maturity *T-t* where *t* denotes the valuation date and T is debt maturity. If σ denotes *firm value* volatility and *r* the risk-free rate, then the Black-Scholes formula gives

$$S(V_t,\sigma) = V_t N(d_t) - e^{-r(T-t)} F N\left(d_t - \sigma\sqrt{T-t}\right)$$

$$d_t = \frac{\ln\left(\frac{V_t}{F}\right) + \left(r + \frac{\sigma^2}{2}\right)(T-t)}{\sigma\sqrt{T-t}}.$$

The distance to default DTD_t is a transformation of the above expression where the risk-free rate *r* is replaced by the actual expected return of the *firm* μ. This change is necessary to reflect the actual default probability rather than the risk-neutral probability that is relevant for pricing. Formally, if N(.) denotes the standard normal distribution, the probability of default is $N(-DTD_t)$, where

$$\mathrm{DTD}_t = \frac{\ln\left(\frac{V_t}{F}\right) + \left(\mu - \frac{\sigma^2}{2}\right)(T-t)}{\sigma\sqrt{T-t}}.$$

Given DTD, the Merton (1974) default probability implied by it is given by N(-DTDt) where N(.) denotes the cumulative of the standard normal distribution function. The computation of DTD is straightforward given the inputs into the formula. The necessary assumptions are about debt levels, maturity of debt, and volatility. On the first two, there are a set of standard and agreed upon transformations of observable data. On the third, volatility, mathematical restrictions tie the observable equity volatility σS to asset volatility σ required in the formula. One approach to its computation and consistency as well as estimation of μ are discussed quite thoroughly in Duan and Wang (2012).

Table 1

CMIE Prowess sample of non-financial corporates

Year	Unlisted	Listed	Total
2001	3,361	3,366	6,727
2002	3,861	3,490	7,351
2003	5,733	3,385	9,118
2004	6,893	3,267	10,160
2005	8,513	3,202	11,715
2006	9,434	3,262	12,696
2007	10,094	3,322	13,416
2008	11,309	3,386	14,695
2009	12,769	3,459	16,228
2010	12,983	3,446	16,429
2011	10,733	3,411	14,144
2012	8,482	3,348	11,830
2013	6,673	3,330	10,003
2014	5,585	3,235	8,820
2015	2,473	2,988	5,461
2001-2015	118,896	49,897	168,793

Table 1 reports the number of firms in each fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 2

Total Assets

	Overall			Top 100 by Assets		Top 500 by Assets	
Year	Total	Median	Mean	Total	% share	Total	%share
2001	6,355,400	291	1,888	3,355,005	53%	5,134,911	81%
2002	6,667,424	268	1,910	3,590,815	54%	5,429,094	81%
2003	6,800,800	274	2,009	3,673,942	54%	5,568,678	82%
2004	7,390,053	300	2,262	4,166,029	56%	6,161,657	83%
2005	8,718,756	332	2,723	5,040,121	58%	7,381,256	85%
2006	10,856,300	388	3,328	6,167,964	57%	9,189,131	85%
2007	14,759,075	464	4,443	8,556,918	58%	12,568,850	85%
2008	20,248,770	582	5,980	11,873,647	59%	17,361,160	86%
2009	24,976,834	617	7,221	15,162,990	61%	21,708,954	87%
2010	28,380,784	682	8,236	17,062,038	60%	24,672,514	87%
2011	34,138,624	900	10,008	20,374,496	60%	29,550,622	87%
2012	38,219,588	1,041	11,416	22,924,138	60%	33,220,712	87%
2013	41,879,228	1,084	12,576	25,329,786	60%	36,591,944	87%
2014	44,997,456	1,154	13,910	27,982,938	62%	39,718,212	88%
2015	46,741,292	1,280	15,643	30,354,396	65%	41,923,916	90%

Table 2 reports the total assets of firms in million rupees for listed firms and the largest 100 and 500 firms classified by firm size in a fiscal year. Total denotes total assets and % share denotes the percentage share of the top 100 or top 500 firms. The data comprise all listed firms in CMIE Prowess database excluding banks, nonbanking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 3

Total Debt

	Overall	Top 100 Indebted		Top 500 Indebted	
Year	Total	Total	% Share	Total	% Share
2001	2,638,945	1,409,758	53%	2,174,271	82%
2002	2,681,224	1,435,669	54%	2,210,126	82%
2003	2,649,517	1,394,723	53%	2,195,480	83%
2004	2,709,010	1,455,204	54%	2,270,616	84%
2005	2,967,796	1,609,713	54%	2,521,327	85%
2006	3,547,816	1,889,931	53%	3,019,366	85%
2007	4,747,779	2,668,092	56%	4,089,739	86%
2008	6,245,643	3,604,120	58%	5,410,416	87%
2009	8,069,484	4,916,673	61%	7,127,880	88%
2010	8,455,997	5,051,171	60%	7,464,765	88%
2011	10,092,338	6,073,276	60%	8,916,145	88%
2012	11,676,308	7,140,229	61%	10,399,072	89%
2013	13,022,570	8,157,248	63%	11,696,275	90%
2014	13,753,360	8,812,603	64%	12,498,336	91%
2015	14,326,594	9,717,264	68%	13,283,816	93%

Table 3 reports the total debt in million rupees of all firms and of the top 100 and top 500 indebted firms in a fiscal year. Total denotes total assets and % share denotes the percentage share of the top 100 or top 500 firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million. Top 100 (500) denotes the 100 (500) most indebted firms ranked by total debt owed in a fiscal year.

Table 4

Leverage

	Aggregate			Median		
Year	Debt%	TL%	ICR	Debt%	TL%	ICR
2001	0.56	0.67	1.90	0.48	0.64	1.30
2002	0.57	0.70	1.93	0.47	0.66	1.32
2003	0.56	0.70	2.47	0.46	0.66	1.56
2004	0.54	0.69	3.70	0.45	0.65	2.13
2005	0.51	0.67	5.43	0.44	0.65	2.72
2006	0.48	0.65	6.26	0.41	0.63	3.53
2007	0.46	0.62	6.92	0.40	0.63	3.58
2008	0.43	0.59	6.17	0.40	0.63	3.31
2009	0.45	0.61	4.34	0.39	0.63	2.62
2010	0.42	0.60	4.89	0.36	0.61	3.12
2011	0.42	0.60	4.84	0.36	0.60	3.06
2012	0.44	0.60	3.85	0.36	0.60	2.50
2013	0.44	0.61	3.45	0.36	0.60	2.28
2014	0.44	0.61	3.55	0.36	0.60	2.29
2015	0.44	0.61	3.38	0.33	0.58	2.14

Table 4 reports data for all listed firms in the CMIE Prowess database. Debt% denotes reported debt as a percentage of debt plus tangible equity. TL% denotes the ratio of the total outside liabilities to the total assets. ICR denotes interest coverage ratio, or EBIT (earnings before interest and taxes) to interest expense including interest capitalized. "Aggregate" denotes ratios of the sum of numerator to the sum of the denominator for all listed firms in a fiscal year. "Median" denotes the fiscal year median of the individual ratios computed for each firm separately. ICR is computed only for firms with positive EBIT. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 5

Aggregate Leverage and Interest Coverage of All Firms and Most Indebted Firms

	Debt%			TL%			ICR		
Year	All	Top100	Top500	All	Top100	Top500	All	Top100	Top500
2001	0.56	0.61	0.62	0.67	0.70	0.71	1.90	1.63	1.57
2002	0.57	0.62	0.63	0.70	0.73	0.73	1.93	1.66	1.61
2003	0.56	0.64	0.64	0.70	0.74	0.75	2.47	1.99	1.99
2004	0.54	0.58	0.59	0.69	0.71	0.71	3.70	3.57	3.26
2005	0.51	0.55	0.56	0.67	0.69	0.70	5.43	5.20	4.79
2006	0.48	0.51	0.53	0.65	0.66	0.67	6.26	5.41	5.20
2007	0.46	0.50	0.50	0.62	0.64	0.64	6.92	5.69	5.73
2008	0.43	0.48	0.49	0.59	0.61	0.62	6.17	5.46	5.15
2009	0.45	0.51	0.52	0.61	0.64	0.65	4.34	3.80	3.54
2010	0.42	0.48	0.48	0.60	0.64	0.63	4.89	3.90	3.88
2011	0.42	0.49	0.47	0.60	0.64	0.62	4.84	3.70	3.63
2012	0.44	0.50	0.49	0.60	0.64	0.64	3.85	3.03	2.86
2013	0.44	0.52	0.52	0.61	0.66	0.66	3.45	2.37	2.39
2014	0.44	0.52	0.52	0.61	0.66	0.66	3.55	2.36	2.35
2015	0.44	0.52	0.52	0.61	0.66	0.67	3.38	2.15	2.12

Table 5 reports three leverage measures for all listed firms in the CMIE Prowess database and for the top 100 and top 500 most indebted firms in a fiscal year. Debt% denotes reported debt as a percentage of debt plus tangible equity. TL% denotes the ratio of the total outside liabilities to the total assets. ICR denotes interest coverage ratio, or EBIT to interest expense including interest capitalized. The ratios are computed as the sum of numerator to the sum of the denominator for the relevant bucket of firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 6

Median Leverage and Interest Coverage of All Firms and Top Indebted Firms

	Debt%			TL%			ICR		
Year	All	Top100	Top500	All	Top100	Top500	All	Top100	Top500
2001	0.48	0.65	0.67	0.64	0.74	0.76	1.30	1.35	1.29
2002	0.47	0.71	0.70	0.66	0.80	0.81	1.32	1.32	1.26
2003	0.46	0.72	0.71	0.66	0.83	0.82	1.56	1.29	1.34
2004	0.45	0.66	0.68	0.65	0.77	0.79	2.13	2.13	1.85
2005	0.44	0.64	0.65	0.65	0.74	0.77	2.72	3.08	2.75
2006	0.41	0.62	0.62	0.63	0.72	0.74	3.53	3.71	3.42
2007	0.40	0.63	0.62	0.63	0.72	0.73	3.58	3.45	3.32
2008	0.40	0.59	0.59	0.63	0.69	0.70	3.31	4.05	3.34
2009	0.39	0.59	0.61	0.63	0.70	0.73	2.62	2.77	2.45
2010	0.36	0.57	0.58	0.61	0.69	0.70	3.12	3.12	2.68
2011	0.36	0.58	0.58	0.60	0.67	0.68	3.06	2.32	2.41
2012	0.36	0.60	0.58	0.60	0.70	0.71	2.50	1.84	2.01
2013	0.36	0.65	0.62	0.60	0.73	0.72	2.28	1.61	1.79
2014	0.36	0.67	0.63	0.60	0.74	0.73	2.29	1.36	1.64
2015	0.33	0.69	0.62	0.58	0.77	0.73	2.14	1.19	1.42

Table 6 reports median leverage and coverage for all listed firms in the CMIE Prowess database and for the top 100 and top 500 most indebted firms in a fiscal year. Debt% denotes reported debt as a percentage of debt plus tangible equity. TL% denotes the ratio of the total outside liabilities to the total assets. ICR denotes interest coverage ratio, or EBIT to interest expense including interest capitalized. The ratios are computed as the sum of numerator to the sum of the denominator for the relevant bucket of firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 7

Short-term Debt %			
Year	All	Top 100	Top 500
2001	21%	14%	19%
2002	21%	14%	19%
2003	23%	15%	20%
2004	23%	16%	21%
2005	19%	12%	17%
2006	22%	16%	20%
2007	22%	16%	20%
2008	25%	19%	23%
2009	23%	18%	21%
2010	23%	16%	21%
2011	31%	23%	29%
2012	33%	25%	31%
2013	32%	26%	30%
2014	32%	26%	30%
2015	30%	23%	28%

Table 7 reports the percentage of short term debt to total debt. Top 100 (500) denotes the 100 (500) largest firms ranked by the level of indebtedness in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 8

Secured Debt %			
Year	All	Top100	Top500
2001	79%	77%	78%
2002	81%	82%	81%
2003	80%	79%	80%
2004	79%	78%	79%
2005	76%	72%	75%
2006	71%	66%	70%
2007	67%	61%	65%
2008	63%	54%	61%
2009	61%	51%	58%
2010	64%	56%	62%
2011	64%	58%	63%
2012	67%	62%	66%
2013	70%	66%	69%
2014	70%	66%	70%
2015	68%	63%	67%

Table 8 reports percentage of secured debt to total debt. Secured debt represents debt that is not due to be repaid within a year and is secured in nature. Top 100 (500) denotes the 100 (500) largest firms ranked by the level of indebtedness in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, nonbanking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 9

Bank Debt %			
Year	All	Top100	Top500
2001	32%	26%	29%
2002	34%	27%	32%
2003	40%	34%	38%
2004	43%	37%	41%
2005	42%	35%	39%
2006	49%	46%	47%
2007	52%	48%	50%
2008	55%	51%	54%
2009	57%	55%	57%
2010	57%	53%	55%
2011	54%	50%	53%
2012	55%	52%	54%
2013	55%	52%	54%
2014	57%	54%	56%
2015	56%	52%	55%

Table 9 reports fraction of debt taken from banks to total debt. Top 100 (500) denotes the 100 (500) largest firms ranked by the level of indebtedness in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 10

% Bank Debt that is long maturity			
Year	All	Top100	Top500
2001	33%	44%	36%
2002	38%	47%	41%
2003	43%	55%	47%
2004	46%	57%	49%
2005	53%	66%	57%
2006	55%	64%	58%
2007	57%	66%	60%
2008	55%	63%	57%
2009	60%	68%	62%
2010	60%	69%	63%
2011	59%	69%	62%
2012	59%	69%	61%
2013	60%	71%	63%
2014	60%	70%	63%
2015	65%	74%	67%

Table 10 reports fraction of debt taken from banks to total debt. Long maturity denotes maturity greater than 12 months. Top 100 (500) denotes the 100 (500) largest firms ranked by the level of indebtedness in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 11

Foreign Currency Debt

		All Firms			*Firms with positive FX Debt*		
Year	# FX Borrowers	All	Top100	Top500	All	Top100	Top500
2001	168	6%	10%	7%	21%	22%	21%
2002	163	6%	11%	8%	21%	21%	21%
2003	165	4%	6%	5%	21%	22%	21%
2004	201	5%	7%	6%	20%	20%	20%
2005	500	16%	20%	18%	27%	26%	27%
2006	537	18%	23%	20%	28%	26%	28%
2007	544	23%	29%	25%	33%	33%	34%
2008	579	23%	29%	25%	33%	34%	34%
2009	546	20%	23%	21%	33%	33%	33%
2010	545	17%	21%	19%	27%	26%	27%
2011	501	17%	21%	18%	27%	26%	27%
2012	546	17%	21%	19%	28%	27%	27%
2013	510	16%	18%	17%	26%	24%	26%
2014	456	15%	17%	15%	25%	24%	25%
2015	432	13%	15%	13%	22%	20%	21%

Table 11 reports the number of FX borrowers in each year and percentage of FX debt to total debt for all firms and firms with positive FX debt, which is any loan taken in a foreign currency. This includes external commercial borrowings and other foreign currency debt. Top 100 (500) denotes the 100 (500) largest firms ranked by the level of indebtedness in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 12

	Receivables to Sales			*Payables to Sales*		
Year	All	Top100	Top500	All	Top100	Top500
2001	16%	13%	15%	15%	15%	15%
2002	17%	16%	16%	15%	16%	15%
2003	16%	14%	15%	15%	16%	15%
2004	15%	12%	13%	15%	15%	15%
2005	14%	11%	12%	14%	16%	14%
2006	14%	11%	12%	14%	15%	14%
2007	14%	10%	12%	15%	17%	15%
2008	15%	11%	13%	15%	17%	16%
2009	14%	11%	13%	15%	17%	16%
2010	15%	12%	14%	16%	17%	16%
2011	15%	12%	15%	15%	16%	16%
2012	16%	13%	15%	15%	16%	16%
2013	16%	13%	16%	14%	16%	15%
2014	16%	13%	16%	15%	18%	17%
2015	16%	14%	16%	15%	18%	17%

Table 12 reports the ratio of trade receivables and trade payables to sales for all listed firms and for the top 100 and top 500 most indebted firms in a given fiscal year. The ratios are computed as the sum of numerator to the sum of the denominator for the relevant bucket of firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 13

Receivables to Payables

Year	All	Top100	Top500
2001	1.11	0.86	0.99
2002	1.14	1.01	1.07
2003	1.07	0.84	0.96
2004	0.98	0.78	0.85
2005	0.97	0.71	0.83
2006	1.02	0.72	0.88
2007	0.96	0.61	0.80
2008	0.97	0.66	0.83
2009	0.95	0.61	0.82
2010	0.95	0.66	0.86
2011	1.04	0.72	0.94
2012	1.06	0.79	0.96
2013	1.09	0.84	1.01
2014	1.06	0.75	0.94
2015	1.05	0.78	0.95

Table 13 reports the ratio of trade receivables to trade payables for all listed firms and for the top 100 and top 500 most indebted firms in a given fiscal year. The ratios are computed as the sum of numerator to the sum of the denominator for the relevant bucket of firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 14

Leverage - Debt Ratio

Year	All					Top 100					Top 500				
	p10	p25	p50	p75	p90	p10	p25	p50	p75	p90	p10	p25	p50	p75	p90
2008	0.00	0.07	0.40	0.65	1.06	0.34	0.46	0.60	0.71	0.79	0.33	0.45	0.59	0.73	0.83
2009	0.00	0.06	0.39	0.66	1.01	0.39	0.48	0.60	0.76	0.88	0.36	0.48	0.61	0.75	0.88
2010	0.00	0.04	0.36	0.62	0.93	0.39	0.49	0.59	0.72	0.82	0.34	0.46	0.59	0.73	0.86
2011	0.00	0.06	0.36	0.62	0.89	0.40	0.50	0.60	0.71	0.79	0.35	0.46	0.59	0.72	0.83
2012	0.00	0.06	0.36	0.63	0.92	0.38	0.54	0.63	0.76	0.86	0.35	0.48	0.62	0.75	0.93
2013	0.00	0.05	0.36	0.63	0.91	0.41	0.54	0.68	0.79	0.94	0.35	0.48	0.63	0.77	0.98
2014	0.00	0.04	0.36	0.63	0.92	0.42	0.54	0.69	0.79	0.93	0.34	0.50	0.64	0.79	1.05
2015	0.00	0.03	0.33	0.61	0.92	0.38	0.52	0.70	0.85	1.16	0.33	0.50	0.63	0.83	1.18

Table 14 reports debt ratio for all listed firms in the CMIE Prowess database and for the top 100 and top 500 most indebted firms in a fiscal year. Debt Ratio denotes reported debt as a percentage of debt plus tangible equity. p10, p25, p50, p75 and p90 denote the 10^{th}, 25^{th}, 50^{th}, 75^{th} and the 90^{th} percentiles of debt ratio. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million. Top 100 (500) denotes the 100 (500) most indebted firms ranked by total ***bank debt*** owed in a fiscal year.

Table 15

Interest Coverage Ratio

Year	All					Top 100					Top 500				
	p10	p25	p50	p75	p90	p10	p25	p50	p75	p90	p10	p25	p50	p75	p90
2008	-0.45	1.53	3.31	8.80	38.12	1.00	1.81	3.40	5.41	10.69	0.41	1.81	3.10	5.68	10.64
2009	-0.85	1.11	2.62	7.21	32.73	0.41	1.29	2.59	4.02	7.42	0.00	1.27	2.41	3.92	6.92
2010	-0.19	1.46	3.12	8.96	43.19	0.97	1.48	2.45	3.75	7.76	0.54	1.40	2.48	4.02	7.05
2011	-0.21	1.50	3.06	8.48	50.10	0.45	1.56	2.23	3.09	5.97	0.21	1.36	2.27	3.86	6.89
2012	-0.62	1.20	2.50	7.05	34.88	0.02	1.09	1.68	2.83	5.65	-0.16	0.92	1.78	3.24	5.10
2013	-0.84	1.11	2.28	6.25	35.75	-0.55	0.35	1.48	2.62	3.58	-0.56	0.74	1.68	2.76	4.99
2014	-0.76	1.05	2.29	6.44	40.02	-0.50	0.29	1.30	2.47	4.35	-0.46	0.49	1.56	2.72	5.25
2015	-1.07	0.86	2.14	6.77	45.00	-0.62	0.12	1.10	2.14	4.55	-0.66	0.27	1.41	2.57	5.22

Table 15 reports interest coverage ratio (ICR) for all listed firms in the CMIE Prowess database and for the top 100 and top 500 most indebted firms in a fiscal year. Interest coverage ratio denotes EBIT to interest expense including interest capitalized. p10, p25, p50, p75 and p90 denote the 10^{th}, 25^{th}, 50^{th}, 75^{th} and the 90^{th} percentiles of ICR. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million. Top 100 (500) denotes the 100 (500) most indebted firms ranked by total ***bank debt*** owed in a fiscal year.

Table 16

Debt by Interest Coverage Ratio

Panel A : Total Debt

Year	Total	Total Debt by Interest Coverage					% of Total Debt by Interest Coverage				
		ICR<1	ICR<1.25	ICR<1.5	ICR<1.75	ICR<2	ICR<1	ICR<1.25	ICR<1.5	ICR<1.75	ICR<2
2008	6,245,643	847,562	1,058,416	1,213,517	1,397,357	1,560,871	14%	17%	19%	22%	25%
2009	8,069,484	1,354,462	1,555,377	1,945,154	2,255,609	2,667,399	17%	19%	24%	28%	33%
2010	8,455,997	1,026,750	1,223,073	1,871,149	2,472,747	2,767,986	12%	14%	22%	29%	33%
2011	10,092,338	1,420,592	1,842,696	2,503,868	3,054,298	3,941,526	14%	18%	25%	30%	39%
2012	11,676,308	2,168,684	3,274,948	4,125,108	5,119,723	5,640,656	19%	28%	35%	44%	48%
2013	13,022,570	3,273,077	4,589,579	5,697,248	6,640,199	7,229,155	25%	35%	44%	51%	56%
2014	13,753,360	4,141,389	5,832,281	6,578,424	7,749,722	8,323,551	30%	42%	48%	56%	61%
2015	14,326,594	4,866,663	6,489,679	7,490,631	7,893,166	8,450,888	34%	45%	52%	55%	59%

Panel B : Bank Debt

Year	Total	Bank Debt by Interest Coverage					% of Bank Debt by Interest Coverage				
		ICR<1	ICR<1.25	ICR<1.5	ICR<1.75	ICR<2	ICR<1	ICR<1.25	ICR<1.5	ICR<1.75	ICR<2
2008	3,421,474	368,045	474,447	578,846	693,017	819,886	11%	14%	17%	20%	24%
2009	4,625,787	723,703	847,858	1,107,021	1,301,808	1,606,777	16%	18%	24%	28%	35%
2010	4,779,071	562,838	683,334	1,136,989	1,396,585	1,603,190	12%	14%	24%	29%	34%
2011	5,474,855	727,635	921,532	1,303,235	1,668,152	2,247,436	13%	17%	24%	30%	41%
2012	6,381,228	1,323,119	1,910,563	2,387,467	3,036,179	3,368,015	21%	30%	37%	48%	53%
2013	7,164,374	1,910,992	2,726,248	3,430,688	3,969,398	4,365,863	27%	38%	48%	55%	61%
2014	7,828,558	2,446,858	3,516,819	3,983,978	4,632,684	5,001,476	31%	45%	51%	59%	64%
2015	7,973,007	3,065,487	4,021,911	4,728,633	4,960,299	5,293,890	38%	50%	59%	62%	66%

Table 16 reports total debt or bank debt, by interest coverage categories. Total denotes total debt or bank debt in million rupees in the relevant interest coverage bucket and % denotes the percentage share of debt in the relevant interest coverage bucket to total debt or bank debt of all listed firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 17

Loss Making Firms

Year	# Firms	% Loss making	% Assets	% Debt	% Capex	% PBDITA
2001	3,366	47.4%	27%	44%	N/A	8%
2002	3,490	49.3%	28%	47%	14%	8%
2003	3,385	45.8%	20%	40%	17%	4%
2004	3,267	40.9%	15%	33%	10%	2%
2005	3,202	35.1%	9%	22%	2%	1%
2006	3,262	29.0%	9%	22%	6%	0%
2007	3,322	26.9%	8%	15%	2%	0%
2008	3,386	27.2%	11%	18%	17%	1%
2009	3,459	33.0%	13%	22%	15%	3%
2010	3,446	27.2%	9%	14%	3%	2%
2011	3,411	25.3%	11%	16%	3%	2%
2012	3,348	31.1%	14%	25%	22%	4%
2013	3,330	32.3%	19%	32%	14%	6%
2014	3,235	33.7%	22%	34%	14%	7%
2015	2,988	33.3%	21%	37%	24%	4%

Table 17 reports the number of listed firms with zero or negative profit before taxes in a fiscal year. The % firms denotes the percent of firms in this category as a fraction of the number of listed firms in the fiscal year. Data comprise all listed firms in CMIE Prowess database excluding banks, non-banking finance companies, finance companies, state-owned and central government enterprises and firms with Total Assets below ₹ 1 million or missing. Top 100 (500) denotes the 100 (500) largest firms ranked by the level of indebtedness in a fiscal year. %Assets, %Debt, %Sales, %Capex, %PBDITA represent as a fraction of corresponding figures for all listed firms in a fiscal year.

Table 18

Panel A : Distribution of Debt For Firms with ICR<=1.0

Year	# Firms	Total	p10	p25	p50	p75	p90
2008	483	847,563	6.8	44.9	241.9	1,077.3	3,705.1
2009	630	1,354,462	6.7	60.0	350.0	1,551.7	3,977.0
2010	459	1,026,750	7.9	66.5	358.9	1,435.2	4,274.0
2011	453	1,420,592	10.3	82.6	428.8	1,962.0	6,180.1
2012	573	2,168,684	14.7	91.3	585.4	2,374.7	8,699.1
2013	607	3,273,077	18.4	112.8	626.3	2,921.9	12,065.0
2014	619	4,141,389	21.6	156.1	796.5	3,819.4	15,230.3
2015	623	4,866,663	28.8	130.5	799.1	4,471.2	16,722.4

Panel B : Distribution of Debt for Firms with ICR<=2.0

Year	# Firms	Total	p10	p25	p50	p75	p90
2008	862	1,560,871	14.4	62.4	280.5	1,102.1	3,659.1
2009	1,117	2,667,399	13.5	80.7	397.8	1,568.1	4,611.4
2010	909	2,767,986	19.3	101.7	464.0	1,825.4	5,133.3
2011	922	3,941,526	29.7	130.5	550.1	2,364.8	8,434.5
2012	1,127	5,640,656	30.1	132.0	610.7	2,605.6	10,446.5
2013	1,202	7,229,155	34.8	140.6	669.6	2,834.0	10,989.6
2014	1,160	8,323,551	36.4	156.1	654.4	3,278.0	13,622.3
2015	1,141	8,450,888	45.0	164.1	688.4	3,626.6	14,198.4

Table 18 reports the distribution of debt each year for firms with interest coverage less than or equal to 1.0 (Panel A) and with ICR less than or equal to 2.0 (Panel B). Debt is in million rupees. p10, p25, p50, p75 and p90 denote the 10th, 25th, 50th, 75th and the 90th percentiles of total debt. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 19

Distance to Default : All Firms

Year	# Firms	p10	p25	p50	p75	p90
2008	2089	0.50	1.10	1.83	2.87	4.27
2009	2259	-0.05	0.40	1.03	1.87	3.02
2010	2325	0.72	1.51	2.27	3.28	4.59
2011	2432	0.46	1.17	2.07	3.35	5.17
2012	2478	0.03	0.77	1.80	3.23	5.38
2013	2473	-0.39	0.41	1.54	3.18	5.89
2014	2298	-0.33	0.56	1.74	3.33	5.84
2015	2171	0.28	1.14	2.24	3.78	6.08

Table 19 reports the distance to default DTD for a sample of listed nonfinancial firms. The sample comprises all listed firms in the CMIE Prowess database for which we can obtain a match with the NUS RMI Credit Risk Initiative data. The table reports the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and the 90^{th} percentiles, respectively.

Table 20

Distance to Default for Banks

Year	# Banks	p10	p25	p50	p75	p90
2008	41	0.69	1.09	1.47	2.11	2.46
2009	42	-0.36	-0.02	0.44	0.79	1.51
2010	40	0.71	1.10	1.38	2.03	2.24
2011	41	0.43	1.13	1.71	2.32	3.23
2012	40	-0.47	-0.01	0.66	1.63	2.12
2013	42	-0.76	-0.27	0.78	1.90	2.84
2014	42	-1.05	-0.70	-0.36	1.96	2.77
2015	42	-0.65	-0.37	0.14	2.16	3.11

Table 20 reports the distribution of the distance to default DTD for banks. The sample comprises all listed Indian banks in the NUS RMI Credit Risk Initiative database.

Table 21

Distance to Default

Panel A : Government Owned Banks

Year	# Banks	p10	p25	p50	p75	p90
2008	24	0.60	0.92	1.23	1.56	2.41
2009	25	-0.38	-0.19	0.28	0.64	0.81
2010	24	0.51	1.04	1.21	1.69	2.21
2011	25	0.43	1.10	1.48	1.97	3.23
2012	24	-0.86	-0.19	0.27	0.99	1.68
2013	26	-0.86	-0.41	0.10	0.88	1.25
2014	26	-1.40	-0.87	-0.67	-0.36	0.91
2015	26	-0.71	-0.59	-0.16	0.02	2.16

Panel B : Old Private Banks

Year	# Banks	p10	p25	p50	p75	p90
2008	7	0.75	0.93	2.15	2.24	2.45
2009	7	0.33	0.36	0.77	1.51	1.58
2010	7	1.01	1.09	1.42	2.10	2.70
2011	7	0.13	0.29	1.71	3.15	3.44
2012	7	-0.46	0.60	1.14	2.09	2.16
2013	7	-0.87	1.21	1.66	2.30	2.94
2014	7	-0.90	-0.31	1.97	2.13	2.90
2015	7	-0.54	0.61	0.76	2.29	3.43

Panel C : New Private Banks

Year	# Banks	p10	p25	p50	p75	p90
2008	6	1.34	1.62	2.14	2.78	4.33
2009	6	-0.02	0.31	0.71	0.98	1.96
2010	6	1.18	1.76	1.97	2.12	3.17
2011	6	1.94	2.20	2.70	3.23	4.94
2012	6	0.92	1.48	2.05	2.94	3.47
2013	6	1.79	1.90	2.22	2.96	5.11
2014	6	0.76	1.80	2.11	2.77	3.84
2015	6	2.01	2.29	2.93	3.75	5.58

Table 21 reports the distribution of the distance to default DTD for a sample of listed banks from the NUS RMI Credit Risk Initiative. Banks are government owned, old private, or new private banks. New private banks include Axis, HDFC, ICICI, IndusInd, Kotak Mahindra, and Yes Bank.

Table 22

Sales

Year	All	Top 100	Top 100	Top 500	Top 500
2001	5,022,882	2,008,346	40%	3,379,953	67%
2002	5,026,839	1,880,748	37%	3,287,453	65%
2003	5,340,643	1,924,655	36%	3,488,059	65%
2004	6,258,440	2,436,031	39%	4,421,223	71%
2005	7,950,935	3,357,759	42%	5,744,720	72%
2006	9,535,251	3,930,104	41%	6,660,642	70%
2007	12,337,740	4,984,006	40%	8,661,362	70%
2008	14,941,919	6,209,783	42%	10,270,301	69%
2009	17,521,822	7,505,091	43%	12,140,930	69%
2010	19,348,644	8,284,480	43%	13,355,665	69%
2011	23,857,210	10,406,720	44%	16,603,818	70%
2012	28,036,080	12,613,436	45%	19,744,222	70%
2013	30,506,668	13,763,563	45%	21,307,826	70%
2014	31,738,278	14,162,371	45%	21,910,890	69%
2015	31,531,790	14,186,736	45%	21,342,168	68%

Table 22 reports sales in million rupees for all listed firms and for the top 100 and top 500 most indebted firms in a fiscal year. We report the absolute sales and for the top 100 and 500 most indebted firms, sales as a fraction of the total for all listed firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 23

EBITDA

Year	All	Top100	Top100	Top500	Top500
2001	805,986	359,678	45%	554,579	69%
2002	803,922	359,676	45%	561,598	70%
2003	875,608	369,611	42%	598,756	68%
2004	1,047,128	487,930	47%	772,611	74%
2005	1,396,145	686,308	49%	1,038,505	74%
2006	1,676,610	743,198	44%	1,172,738	70%
2007	2,370,513	1,050,030	44%	1,670,348	70%
2008	3,096,588	1,481,005	48%	2,202,405	71%
2009	3,338,733	1,669,216	50%	2,389,209	72%
2010	3,800,433	1,745,684	46%	2,665,940	70%
2011	4,413,205	1,960,881	44%	2,975,744	67%
2012	4,598,671	2,072,119	45%	3,095,455	67%
2013	4,958,202	2,091,435	42%	3,193,481	64%
2014	5,334,004	2,239,086	42%	3,331,759	62%
2015	5,441,539	2,384,604	44%	3,336,617	61%

Table 23 reports EBITDA, or earnings before interest, depreciation, and taxes, in million rupees for all listed firms and for the top 100 and top 500 most indebted firms in a fiscal year. We report the absolute EBITDA amount and for the top 100 and 500 most indebted firms, the amount as a fraction of the total for all listed firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 24

Capital Expenditure

Year	All	Top100	Top100	Top500	Top500
2002	487,388	337,942	69%	423,706	87%
2003	299,928	166,514	56%	249,368	83%
2004	285,940	166,177	58%	242,846	85%
2005	552,711	339,047	61%	472,194	85%
2006	1,002,980	704,988	70%	884,201	88%
2007	1,099,199	627,923	57%	932,823	85%
2008	1,185,645	598,089	50%	947,962	80%
2009	2,174,776	1,503,370	69%	1,935,947	89%
2010	1,999,115	1,392,804	70%	1,736,049	87%
2011	1,717,199	1,049,291	61%	1,415,377	82%
2012	1,764,182	985,631	56%	1,483,431	84%
2013	2,046,175	1,116,083	55%	1,627,001	80%
2014	2,055,296	1,275,035	62%	1,711,526	83%
2015	2,066,861	1,377,910	67%	1,744,730	84%

Table 24 reports the capital expenditure in million rupees for all listed firms and for the top 100 and top 500 most indebted firms in a fiscal year. We report the absolute capital expenditure and for the top 100 and 500 most indebted firms, the amount as a fraction of the total for all listed firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 25

Sales Growth			
Year	All	Top 100	Top 500
2002	7.1%	14.4%	8.8%
2003	8.0%	11.1%	8.6%
2004	16.4%	18.4%	18.0%
2005	24.5%	32.6%	26.7%
2006	17.7%	17.3%	17.1%
2007	27.2%	29.6%	28.4%
2008	19.3%	20.2%	19.5%
2009	15.6%	19.3%	18.1%
2010	11.4%	15.2%	13.6%
2011	20.3%	21.5%	20.1%
2012	18.2%	22.9%	19.6%
2013	9.6%	9.6%	9.0%
2014	6.0%	5.5%	5.5%
2015	2.3%	-2.2%	-0.3%

Table 25 reports the aggregate sales growth for all listed firms and for the top 100 and top 500 most indebted firms in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 26

Profit Margins

Year	All	Top100	Top500
2001	16%	18%	16%
2002	16%	19%	17%
2003	16%	19%	17%
2004	17%	20%	17%
2005	18%	20%	18%
2006	18%	19%	18%
2007	19%	21%	19%
2008	21%	24%	21%
2009	19%	22%	20%
2010	20%	21%	20%
2011	19%	19%	18%
2012	16%	16%	16%
2013	16%	15%	15%
2014	17%	16%	15%
2015	17%	17%	16%

Table 26 reports the aggregate profit margins, or the ratio of earnings before interest, depreciation, and taxes to sales for all firms and for the top 100 and top 500 most indebted firms in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 27

Capital Formation Rate			
Year	All	Top 100	Top 500
2002	20%	28%	23%
2003	12%	12%	12%
2004	11%	12%	11%
2005	20%	23%	21%
2006	33%	42%	36%
2007	29%	30%	30%
2008	25%	23%	25%
2009	38%	50%	43%
2010	28%	34%	30%
2011	20%	21%	20%
2012	18%	18%	19%
2013	20%	19%	19%
2014	18%	20%	19%
2015	18%	20%	18%

Table 27 reports the ratio of capital expenditure in fiscal *t* to net fixed asset in fiscal *t-1* for all listed firms and for the top 100 and top 500 most indebted firms in a fiscal year. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 28

Financing Deficits

Year	All	Top 100	Top 100 %	Top 500	Top 500 %
2002	531,642	328,819	62%	459,624	86%
2003	261,113	134,800	52%	211,437	81%
2004	341,227	142,266	42%	298,249	87%
2005	621,199	380,161	61%	551,970	89%
2006	1,055,706	611,427	58%	903,237	86%
2007	1,598,818	936,973	59%	1,413,186	88%
2008	2,495,878	1,520,828	61%	2,126,265	85%
2009	3,111,806	2,183,201	70%	2,913,398	94%
2010	1,266,039	515,013	41%	934,010	74%
2011	2,836,475	1,810,506	64%	2,398,245	85%
2012	2,936,750	1,706,786	58%	2,661,618	91%
2013	2,717,984	1,599,355	59%	2,408,734	89%
2014	2,935,036	1,869,043	64%	2,555,590	87%
2015	1,659,160	1,159,361	70%	1,480,004	89%

Table 28 reports financing deficits, or the changes in assets net of retained earnings, in million rupees for all listed firms and for the top 100 and top 500 most indebted firms in a fiscal year. We report the absolute financing deficits and deficits as a fraction of the total deficit for all listed firms. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 29

Ratio of Debt Issuance to Financing Deficit

Year	Aggregate			Median		
	All	Top 100	Top 500	All	Top 100	Top 500
2002	29%	43%	35%	36%	55%	53%
2003	37%	49%	48%	40%	72%	75%
2004	21%	33%	31%	47%	77%	69%
2005	35%	35%	42%	43%	84%	74%
2006	52%	63%	62%	51%	76%	78%
2007	56%	65%	62%	48%	76%	77%
2008	55%	65%	62%	47%	75%	74%
2009	61%	67%	64%	48%	73%	73%
2010	33%	41%	44%	39%	89%	73%
2011	48%	56%	55%	40%	65%	69%
2012	56%	66%	61%	45%	69%	70%
2013	57%	75%	66%	44%	74%	71%
2014	52%	66%	62%	39%	77%	70%
2015	54%	69%	65%	41%	76%	68%

Table 29 reports the percentage of financing deficit met through debt for all listed firms and for the top 100 and top 500 most indebted firms in a fiscal year. Aggregate refers to the totals for a given year and median refers to the financing patterns for the median firm. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.

Table 30

Financing Deficit Fama-MacBeth Regressions

	All Firms		*Top 100 Indebted*		*Top 500 Indebted*	
Year	Coefficient	R^2	Coefficient	R^2	Coefficient	R^2
2002	0.46	49%	0.75	71%	0.62	69%
2003	0.56	57%	0.81	86%	0.76	82%
2004	0.50	58%	0.70	85%	0.66	77%
2005	0.57	60%	0.74	87%	0.75	83%
2006	0.63	70%	0.81	93%	0.82	92%
2007	0.57	62%	0.79	89%	0.77	88%
2008	0.49	59%	0.77	88%	0.67	80%
2009	0.51	60%	0.56	58%	0.64	79%
2010	0.36	44%	0.74	80%	0.58	72%
2011	0.29	36%	0.64	59%	0.58	62%
2012	0.46	53%	0.68	64%	0.60	70%
2013	0.34	40%	0.71	51%	0.41	35%
2014	0.42	46%	0.63	63%	0.61	51%
2015	0.42	46%	0.61	55%	0.58	57%

Table 30 reports results of a cross-sectional regression of debt issued in a fiscal year on financing deficit for the year. All coefficients and the adjusted R2 are significant at 1%. Top100/500 denotes top 100/500 most indebted firms in fiscal t-1 where t denotes the year in which the regression is estimated. The data comprise all listed firms in CMIE Prowess database excluding banks, non-banking financial corporations, government-owned entities, and firms with total assets below ₹ 1 million.