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Abstract

In this study, we examine quality of the lending decisions of public sector banks (PSBs) in India with a novel dataset which allows the identification of both the banks by the ownership types and their borrowers. We use a lender type prediction model where the bank type is determined by observable risk proxies such as ex-ante credit ratings, which influence the lending decision. The analysis of the lending decisions indicate that the PSBs are more likely to lend to observably less creditworthy firms relative to the private banks (PBs). We also find that smaller firms have a higher likelihood of obtaining credit exclusively from PSBs, possibly, consistent with the directed lending programs of the government. If we exclude systemically important banks and their borrowers from the sample, the likelihood of riskier firms obtaining credit exclusively from PSBs increases. Finally, firms which are likely to be impacted by political regime changes have a higher likelihood of an exclusive borrowing relationship with PSBs. The study contributes to the contemporary debates on the role of market discipline, disclosures, and moral hazard in banking.

Keywords: banking, moral hazard, market discipline, credit rating, credit risk, state-owned banks

JEL Codes: G21; G28; G32; F33 ; D82

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1. Introduction

Market discipline, one of the three pillars in the Basel accord on banking supervision, is defined as the ability of the markets to monitor the changes in the bank's conditions and to influence its behaviour (Flannery, 2001). The market discipline is relatively ineffective where the supervisory system is able to provide implicit guarantee on the bank performance (M. Flannery & Nikolova, 2004). The market discipline turns ineffective as the stakeholders of bank liabilities have little incentives to monitor the bank. Empirical evidence strongly suggest that a banking system which has a high degree of government support and ineffective market discipline may result in poor due diligence (Covitz, Hancock, & Kwast, 2004; Nier & Baumann, 2006).

One of the countries' where the impact of government ownership can be reliably examined is India, given the nature of bank ownership, and its political and social structure. India is ranked the highest in terms of the proportion of bank assets which have at least 50% government ownership (see appendix Figure 1), as per the World Bank– Bank Regulation and Supervision Survey 2012 (BRSS). The Indian banking system give us an opportunity to test whether the lack of market discipline in the state-owned banks, where the government ownership provides implicit guarantees that protect the downside risk of minority shareholders, depositors, and other creditors, results in excessive risk taking in their lending.

In order to identify the possible influence of state ownership and the consequent weakening of market discipline in the decision making of banks in India, we compare the lending decisions of the state owned and private sector banks. In this study based on micro-level data of bank lending, we find evidence that firms with observably lower credit rating have relatively greater probability to obtain loans from the state-owned banks (henceforth PSBs) compared to the private banks (henceforth PBs). The comparison of the lending decisions of the PSBs and the PBs based on the approved loans indicates that PSBs provide loans to firms with ex-ante higher

credit risk. The finding is consistent for both short-term (ST) and long-term (LT) loans, secured loans, and other possible covariates influencing the lending decision. If we exclude firms that have a banking relationship with State Bank of India (SBI), the largest bank in India in terms of asset size, the credit profile of the firms banking with the PSBs deteriorate further. Moreover, the results indicate that PSBs lend to relatively smaller firms, possibly, consistent with the directed lending efforts of the government towards small and medium enterprises. Based on the observed differences in the lending standards between PSBs and PBs, we further explore the channels, which influence the decision through a subsample analysis based on the firm fundamentals, sectoral effects on the relative credit profiles, potential linkages with the policies of alternative governments, and business group affiliation. The sectoral results provide evidence that PSBs have higher probability to cater to the manufacturing firms and PBs have higher probability to cater to the services firms.

The paper contributes to the banking literature, especially those related to monitoring, observability of bank risk choices and moral hazard at least in three ways. First, we employ a novel dataset to unravel the opacity of the lending decisions of the banks by analysing the creditworthiness and other characteristics of the firms involved in both ST and incremental LT borrowing relationships. While a few studies have examined the wider firm-bank relationships with micro-data (Berger, Klapper, Martinez Peria, & Zaidi, 2008; Srinivasan & Thampy, 2017), the results are not reliably linked to the borrowing relationship with banks in India, given the broad definition of the bank relationship adopted in those studies. The firm level data of lending analysed in this paper isolates the lending decisions taken by banks with different ownership types and provide reliable comparisons on the relative riskiness of decisions taken by PSBs and PBs.

Second, we use the ex-ante credit ratings of firms assigned by external agencies along with firm fundamentals to understand the decision of banks. Not only does the credit rating provides an

indication of the creditworthiness of the firm, but also gains significance in the context of Basel-II regulations, which require the standardized approach to credit risk evaluation from 2008 in India. In the risk based capital charge regulations for corporate loans, banks are expected to ensure adequate risk weighted capital based on the ex-ante evaluated risk of the firm. Hence, this variable plays an important role in lending decisions since the implementation of risk sensitive capital requirements.

Finally, in an attempt to explain the results on the relative riskiness of the lending decisions between the two types of banks, we examine the possible role of several factors. The results provide evidence that the PSBs have higher propensity to cater to the manufacturing firms and PBs have higher propensity to cater to services firms. We find evidence that a greater influence of policy changes by the ruling political regime matters for banking exclusively with PSBs. However, the business group affiliation does not influence the lending decision of PSBs. To the best of our knowledge, this is the first paper to examine these three aspects in Indian banking.

The following section builds on the role of market discipline and monitoring in controlling moral hazard and establishes the theoretical basis of the study. It is followed by a discussion of the closely related studies on banking in India. The sample selection criteria and the key characteristics of the data are detailed along with the methodology in the next section. Finally, we conclude the paper with the potential implications of our results for policy makers.

2. Market Discipline and Monitoring in Indian Banking[1]

The role of market discipline in improving bank monitoring is underpinned on three pre-conditions (Nier & Baumann, 2006). First, the investors in liabilities of the bank must bear the cost of the losses incurred due to higher risk. Second is the cost implication of bank and the bank

[1] In the press release by the current RBI Governor on 25th October, 2017, Urjit Patel mentioned that the recent proposed bank recapitalization program has partial private shareholder participation. Moreover PSBs with better balance sheet position will be able to inject capital earlier for immediate credit creation as compared to weaker PSBs. This, he said provides for a good way to bring in market discipline into public recapitalization program as compared to past programs https://rbi.org.in/SCRIPTs/BS_PressReleaseDisplay.aspx?prid=42055.

managers' based on market responses to their actions and finally, the levels of disclosure has to be high enough for the market to ascertain the riskiness of the bank (Nier & Baumann, 2006). In this section, we first evaluate the theoretically predicted ability of different stakeholders to monitor the presence of state ownership in the context of Indian banking. Next, we discuss the current state of banking in India with respect to the second and third pre-condition for improved market discipline. Finally, we review how moral hazard might manifest in the context of Indian banking conditional on the role of these stakeholders and the level of market discipline.

2.1. Principal-Principal Relationships

Agency theory can be extended to include the divergence in the objectives of different shareholders, which is called the P-P conflicts in recent literature (Dharwadkar, George, & Brandes, 2000; Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). It does not consider the owners as a homogenous entity; rather, it recognizes the difference in interests, objectives and risk-reward preferences amongst the group of owners. In cases of majority state ownership, the promoter is able to exert influence on the decision of the board with relative ease compared to the minority shareholder(Su, Xu, & Phan, 2008). Such an arrangement would bring forth conflicts in terms of objectives and decision making, which increases the cost to monitor for the minority shareholder.

However, in the case of banks, the presence of implicit guarantees provided by the powerful promoter (government) protects the downside risk of the MS, which reduces their incentives to monitor. Another characteristic of the Indian banks is the level of MS held by government owned institutions such as the Life Insurance Corporation (LIC) of India. As indicated by Acharya & Subramanian (2016), LIC holds an average of 9.6% of the minority holdings in each of the PSBs, and holds as high as 22.5% in one of them. Not only is the level of government ownership high, but the other significant MS are also government owned entities. This would further undermine the influence of the outside investors.

2.2. Depositor and Creditor Monitoring

In the model proposed by Diamond & Dybvig (1983) which explains the role of intermediaries in liquidity creation, the equilibrium probability of a bank run is explained as a subgame perfect equilibrium and the run happens if the perceived probability of a bank run is higher than the equilibrium rate of withdrawals from a Bank. In this model, the authors further explain how deposit insurance is a way to arrest the bank run. However, where the banks in a country are subject to differential deposit insurances by means of an explicit component and implicit guarantees enjoyed by government-owned banks, the equilibrium rate of withdrawals to start a bank run could be different for these two sets of banks. If there is a differential in the perceived safety of deposits, then the depositors would have different incentives to actively monitor the performance of the banks.

The theoretical framework that expands the idea of deposit insurance causing moral hazard has been proposed in several studies (W. A. Boot & Greenbaum, 1992; Dewatripont & Tirole, 1993; Freixas & Rochet, 1997). In these models, moral hazard stems from the propensity of the bank managers to take excessive risk in lieu of the financial safety nets provided by deposit insurance and government guarantees. If there is a large set of depositors or other creditors who are not covered satisfactorily by the safety net, then they would have incentives to monitor the bank's activities (Demirgüç-Kunt & Huizinga, 2004) much more closely than the counterparts with higher insurance coverage. As pointed out by Diamond & Rajan (2001) in the context of government insurance in private deposits, "a fully insured bank has no more commitment ability than an "all capital" bank: one in which there is no collective action problem among claim holders".

2.3. Cost Implications and Improved Disclosure Norms

Higher accountability is the second pre-condition for market discipline to be effective and is found to be weak in PSBs. There is consistent call for improved governance standards in PSBs (Acharya & Subramanian, 2016).[2] As noted in the P. J. Nayak committee review report on the governance of board of banks in India, the governance difficulties arise from dual regulation, both by Ministry of Finance and RBI, difficulties in the appointment of independent directors, significant and widening compensation gap with PBs and weaker external vigilance enforcements.[3] Lack of performance linked incentives in PSBs (Juneja, Shankar, & Bhattacharya, 2007; Kumar, 2005; Shrivastava & Purang, 2011) may demotivate the agents from additional due diligence in the lending decisions. Agents in charge of the lending decisions impose agency costs if there inadequate incentives to prevent them from seeking private benefits. Such private benefits are better monitored and controlled in private banks as agents have stronger incentives to take more prudent decisions in the interest of the value of the bank.

Disclosure norms, the third pre-condition, have improved after the onset of Basel regulations and both Reserve Bank of India (RBI) through a series of changes to disclosure norms in line with BCBS recommendations. However, bank lending in India remains relatively opaque; the recent evidence from the financial press on the reluctance on the part of both RBI and the government to not reveal the names of the riskier assets in bank balance sheet alludes to the lack of disclosure. [4]

[2] In an interview on April 12th 2017, the ex-governor of RBI, Bimal Jalan, called for PSB boards to be made more accountable. https://www.bloombergquint.com/business/2017/04/12/public-sector-bank-boards-should-be-made-more-accountable-bimal-jalan. In another article by Mihir Sharma, the author points to the pitfalls of recapitalization without adequate reforms in PSBs and called for lesser government control in operation of these banks https://www.bloomberg.com/view/articles/2017-10-26/india-s-banks-need-more-than-a-bailout.

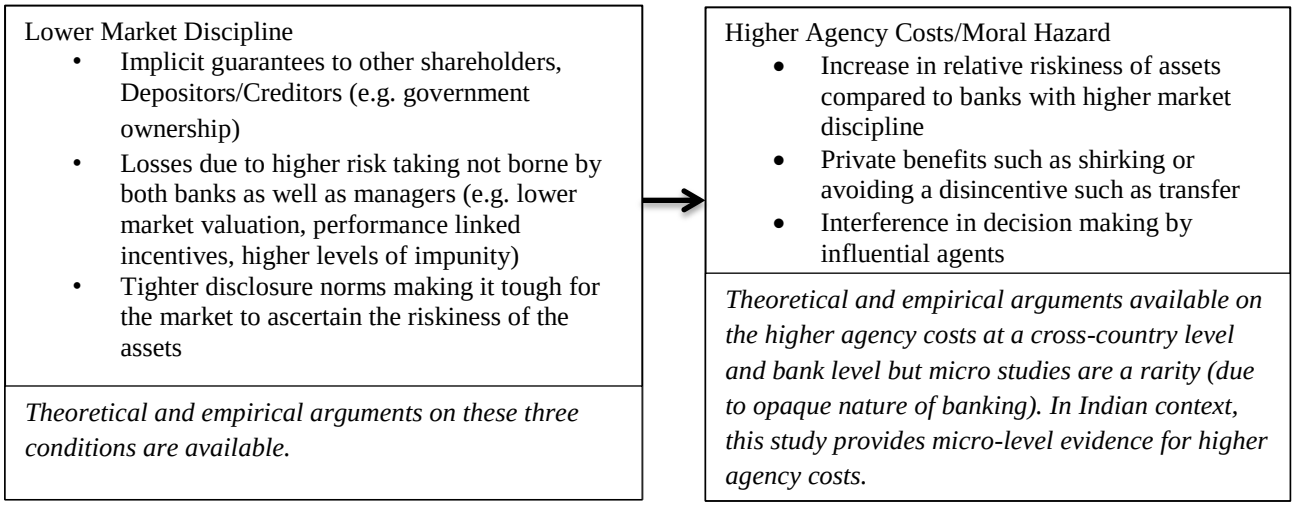
[3] The detailed committee report, published in May 2014, can be accessed from https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/BCF090514FR.pdf.

[4] http://www.thehindubusinessline.com/money-and-banking/rbi-refuses-to-disclose-list-of-loan-defaulters/article9710587.ece

2.4. Manifestation of Moral Hazard in Bank Lending

Shleifer & Vishny (1997) pointed out that while the ownership of the government-controlled firm is with the public, bureaucrats who possess concentrated control rights but not cash flow rights run the firm. Agents (bureaucrats/politicians) who are representing the principal (in case of PSBs the government) might seek private benefits by directing the lending towards riskier firms or inefficient projects while the taxpayer bears the potential costs of the bad decision. The private benefits for those agents are populist motives such as short-term political gains and favourable treatment to firms who could have donated in elections. The agent delegated with the decision-making powers might have to also oblige to the pressures of the superiors to avoid a disincentive such as job transfer. In the case of PBs, the role of markets and other creditors as monitors imparts a higher level of market discipline in decision-making. The role of market discipline in the context of higher agency costs is illustrated in Figure 2.

Figure 2: Schematic illustrating the role of Market Discipline in controlling agency costs



3. Literature Review

As the study focuses on the relative difference in the state ownership and private ownership, the literature review focuses on both studies in the context of market discipline as well as the relative performance of PSBs.

The literature on market discipline in banks has two strands. One strand examines the role of markets in disciplining the banks by the threat of deposit withdrawal and by the active monitoring of risk-sensitive subordinate debt investors (M. J. Flannery & Sorescu, 1996; Levonian, 2001; Martinez Peria & Schmukler, 2001; Morgan & Stiroh, 2001; Sironi, 2003). The other strand examines the role of market discipline which impacts the behaviour of banks such as controlling the moral hazard (Nier & Baumann, 2006), reducing the benefits of conglomeration in banking (A. W. A. Boot & Schmeits, 2000), and the role of equity capital rather than subordinate debt in actively disciplining the bank behaviour (Ashcraft, 2008). Studies that examine the role of market discipline in Indian banking are rare. Ghosh & Das (2003), which employ bank-level data, finds evidence that depositors punish banks that take excessive risk and at the same time finds no evidence to support benefits of the divestment process in either influencing the quantity or price of deposits. Another study (Bhaumik & Dimova, 2004) on the role of market discipline in Indian banks finds evidence that capital market discipline played no role in the performance of Indian banks during the period 1995-2001.

The literature on state ownership vs private ownership of banks has been explored in detail both at a cross-country level and at a country level. Cross-country studies have indicated that PSBs' performance is relatively poor as compared to its private owned counterpart (Barth, Caprio, & Levine, 2004; Cornett, Guo, Khaksari, & Tehranian, 2010; Dang, Gorton, Holmström, & Ordonez, 2017; Dinç, 2005). Single country study on the role of government ownership also finds evidence on poor performance. A study on Italian banks indicates that the lending behaviour of PSB is affected by the electoral results and finds that stronger the political party in

the area of bank-firm relationship, lower the interest rate levied (Sapienza, 2004). Another study on banks in Pakistan reveals that state-owned lenders prefer firms with higher potential political connectedness (Khwaja & Mian, 2005).

The relative riskiness of the PSBs and PBs in India has been analysed from different perspectives over the last two decades. The analysis includes bank level performance based studies, efficiency-based studies, business strategy related studies and relationship-based studies.

A study focusing on the relative performance of PSBs and PBs in India using the bank-level performance indicators and market based indicators highlighted the precarious conditions of PSBs, especially in the last 5 years, and called for active policy intervention to reform the governance structure of banks in India (Acharya & Subramanian, 2016). Several studies on the non-performing assets (NPA) in Indian banks have analysed the bank-level data (Balasubramaniam, 2012; Kaur & Singh, 2011; Rajan & Dhal, 2003), but, such studies have limitations in identifying the reasons for the increase in bad assets given the difference in objectives of PSBs and PBs.

Efficiency based studies have provided mixed evidence on the performance of PSBs. Das & Ghosh (2006) finds evidence that the performance of medium sized PSBs is relatively better and are more likely to operate at higher levels of technical efficiency. Sathye (2003) finds that the mean efficiency score of PSBs are comparable with world mean efficiency score and the efficiency of private banks was lower than public sector banks and foreign banks in India. Another underexplored strand of Indian banking is the business strategies of Indian banks. One such study explores the technology adoptions and innovations in banking services and find evidence that PSBs are late adopters of technology and lose out to PBs in terms of ex-post performance (Rishi & Saxena, 2004). Another study calls for a business process re-engineering in PSBs and redefine their organization strategies to remain competitive (Kamath et al., 2003).

Kamath et al. (2003) mention that one of the prerequisite to service all customer segments with improved efficiency is the earlier adoption of technology.

An earlier study that analysed the role of ownership of banks in India explored the propensity of a firm to have diversified banking relationship (Berger et al., 2008). The study found that more transparent firms had relationships with foreign banks as compared to less transparent firms. A similar study on relationships of firms and banks indicate that it is the large banks that maintain a relationship with both foreign and state-owned firms (Ghosh, 2016). A recent study that compared the relative cash flow sensitivity of firms having banking relationship exclusively with public sector banks (PSB) and private sector banks (PB) found that the sensitivity increased for firms that maintain an exclusive relationship with PBs and it is lower for firms that have exclusive relationships with PSBs (Srinivasan & Thampy, 2017). These studies allude to the relatively weaker profile of firms that have relationships with PSBs.

The two earlier studies (Berger et al., 2008; Srinivasan & Thampy, 2017) that have explored the role of firm-bank relationship in India have limitations. While the primary focuses of both the studies were different, they look at the characteristics of firms that have exclusive relationships with the banks. Both these studies use the CMIE prowess database to ascertain the link between firm-bank relationships. Berger et al. (2008) uses a cross-sectional logit regression for the year 2001 to analyse the firm characteristics and Srinivasan & Thampy (2017) uses a panel data from 1999 to 2013 for their study. The bank relationship used in both those studies can be in the form of borrowings, trade finance, deposit relationship or any other intermediation services offered by the bank. Moreover, if a firm has an active relationship with a bank in the current year, that doesn't necessarily imply that the firm has sought any new engagement with the bank in that year, for e.g. if a LT loan is taken from a bank, the relationship may continue for years. Any analysis of firm characteristics and bank relationship will be clouded by the broader definition of relationship and by the legacy relationship. Our paper adopts a more reliable identification of the

data, given the improved disclosure norms, and examines further the lending-borrowing relationship with banks and firms.

4. Data and Methodology

4.1. Data and Descriptive Statistics

All the firm level data is from the CMIE Prowess database on firms. This is an extensively used database on firm financials in India. We consider only non-financial firms, excluding the firms with government ownership, for this study. In order to ascertain the relative differences in lending decisions and the nature of firms that borrow from banks, we use a novel dataset provided by CMIE prowess and link it with the data on bank relationships. The CMIE data on bank relationships discloses the lending relationship maintained by each of the firms in every year.[5] The CMIE database started to provide data on ST borrowings from banks and LT borrowings from banks from 2011 onwards. These new fields, which separate current and non-current liabilities, are part of the statutory disclosure requirements as per the revised Schedule VI of the Companies Act, 1956 notified on March 1st 2011. Not only do these fields provide identification regarding the source of funds for firms, but also provide the loan types which differ in maturities and risk profiles.

We use this additional information to link the data on bank relationship (we take only commercial banks and avoid co-operative banks and other financial institutions) to isolate firms that have borrowed exclusively from a PSB, which is identified using the Reserve Bank of India data on ownership type, exclusively in a year (firms with ST borrowing and only PSB relationships), similarly for PBs and a mix of PSBs & PBs in a year (firms with ST borrowing

[5] While the order of bank relationships reported might be based on the priority of the relationships, the response received from CMIE is that this reporting is dependent on each firm's choice of reporting. The first bank in the list might or might not be its primary banker. In the data, we found instances where firms have listed them in alphabetical order and hence we do not speculate with any attribution to primary banker and do not try to associate borrowing data with the primary banker.

and a mix of bank relationships).[6] A positive ST borrowing in the current year implies an active borrowing relationship in the current year and similarly, an incremental positive LT borrowing from banks imply any new credit that has been obtained from banks in the current year.[7] As the data availability is only from 2011, we lose one year from the sample in estimating the incremental LT borrowing from banks. The sample period used for the analysis is from 2011 to 2016 (2016 indicates results for FY 2015-2016) for ST loans and 2012 to 2016 for LT loans. We choose only firms with an asset size of at least INR 10 million (approx. USD 150,000). We consider both ST and LT loans separately given the prevalence of firms seeking ST loans than LT loans as highlighted in the study by Banerjee & Duflo (2014) and also due to the relative differences in riskiness of different loan maturities.

The bank relationship data used in earlier studies (Berger et al., 2008; Srinivasan & Thampy, 2017), overstates the lending relationship by close to 2.1 times for this sample period (without any other filter), where the number of firm-year observations with any bank relationship is 22,749 and is 10,659 for any ST borrowing with mapping bank relationship in our sample period. Similarly in the sample for LT borrowings, it is 18,621 firm-years with a bank relationship and 3,330 firm-years with any positive borrowing. An estimation with the bank relationship data might lead to erroneous results given the level of inconsistency between bank relationship and bank borrowing data.[8]

The main explanatory variable used in this study is the average credit rating (ACR) of a firm during a year. We segregate the ACR into ST ACR (SACR) based on the ST and working capital loan ratings provided by the agencies and LT ACR (LACR) based on the credit rating for term loans, LT loans and medium term loans ratings provided by the agencies (trends for SACR and

[6] PBs include old private sector banks, new private sector banks and foreign banks

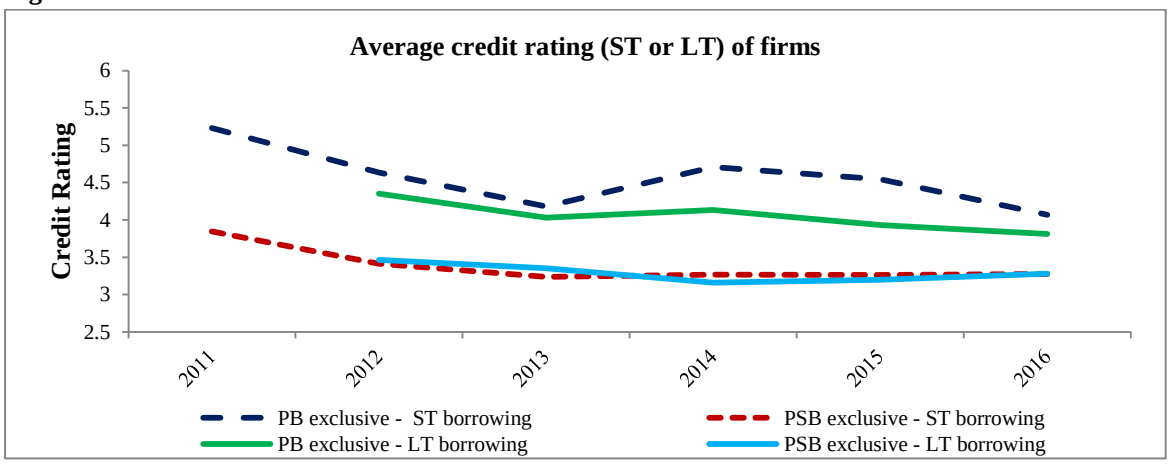
[7] The short term borrowing data from Prowess do not include the current portion of long term debt. The current liabilities reported is separated as short term borrowing, trade payable, current maturities of debt, short term advances from customers/employees , interest accrued but not due and other liabilities.

[8] The difference in estimation results using bank relationship data and bank borrowing data is presented in appendix Table A3. Except for size which is consistently negative associated with the odds of having a bank-firm lending relationship, all other variables such as leverage, ROA, tangibility and Z score coefficients are different with respect to significance or sign of the coefficients. The differences are prominent more in the case of LT borrowings.

LACR for PSBs & PBs are indicated in figure 3 and details regarding SACR and LACR by ownership type of banks is in appendix Table A1).

The rating information is also obtained from Prowess and it is the reported ratings by CRISIL (Standard & Poor group), ICRA (Moody's group), Fitch, CARE and Brickwork. All these agencies are on the accredited list of credit rating agencies used by banks for the purpose of risk weighting the bank's claims (RBI, 2012). We have coded them into rating scores ranging from 1-6 based on risk rating descriptions classified by Prowess with a rating of 1 indicating default, 2 indicating high/substantial risk, 3 indicating inadequate safety, 4 indicating moderate safety, 5 indicating adequate /high safety and 6 indicating highest safety.

Figure 3



Source: CMIE Prowess database. The above trend is for all firms that have borrowed during the year.

This variable gains importance in the context of Basel-II implementation in Indian banks. As of March 2008, all Indian banks were compliant to the standardized approach to credit risk as per the BCBS norms regarding pillar-1 capital requirements. As indicated in the Figure 2 in appendix, this regulatory change in 2008 had an impact on the number of firms getting rated in India. When we include firms with data on ST credit rating along with bank relationship data for the sample period, we have 3,151 firm year observations and 1,074 unique firms. Similarly, with data on LT credit rating for the sample period, we have 1,702 firm year observations with 969 unique firms in the baseline sample. Evidently the number of observation in LT sample is lower

given that LT loans are sought infrequently by firms. Approximately 75% of these firms in both ST and LT samples are listed firms.

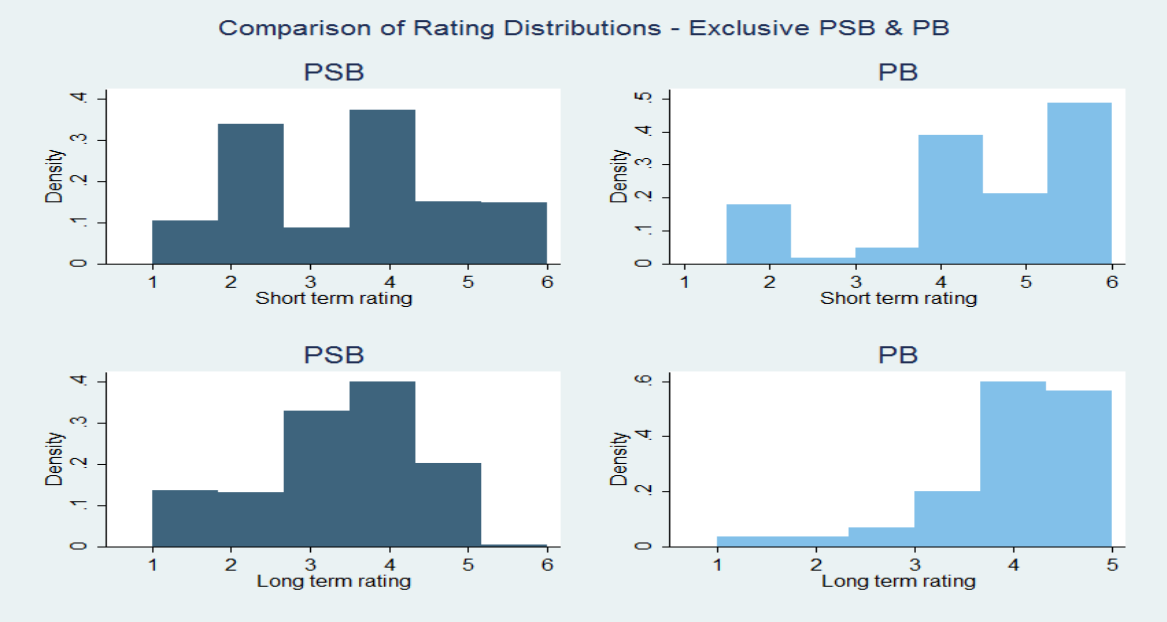
Additional controls used for this analysis include firm fundamentals such as return on assets (ROA) as a measure of profitability, leverage (Debt to Equity), tangibility (proportion of fixed assets less intangible assets to total assets), natural logarithm of total assets as a proxy for size and Altman Z-score for emerging markets (Altman, 2000), a widely used proxy for distress probability. These control variables were used in earlier studies evaluating the role of bank-firm relationships in India (Berger et al., 2008; Srinivasan & Thampy, 2017). List of variables with their definition and sources are in appendix Table A2. Table 1 shows the descriptive statistics of the variables used for the analysis and Table 2 shows the univariate analysis of the variables used in this study. Pairwise correlation for the variables is shown in appendix Table A4.

Table 1: Summary Statistics

Short Term Borrowing	Obs.	Mean	Std. Dev.	P(10)	P(50)	P(90)
Exclusive PSB borrowing – ST	3151	0.34	0.47	0.00	0.00	1.00
Exclusive PB borrowing – ST	3151	0.03	0.17	0.00	0.00	0.00
Mix borrowing - ST	3151	0.63	0.48	0.00	1.00	1.00
Business Group affiliation	3151	0.48	0.50	0.00	0.00	1.00
Political Influence by previous regime*	2626	0.07	0.26	0.00	0.00	0.00
Political Influence by current regime *	2626	0.18	0.38	0.00	0.00	1.00
Short term average credit rating	3151	4.15	1.54	2.00	4.00	6.00
Leverage	3151	3.11	5.67	0.63	2.18	6.06
Return on Assets	3151	3.03	7.75	-2.92	3.03	9.83
Tangibility	3151	0.40	0.28	0.09	0.36	0.77
Z-score	3151	5.56	2.35	3.51	5.43	7.94
Ln Asset	3151	8.59	1.55	6.58	8.54	10.65
Long Term Borrowing						
Exclusive PSB borrowing – LT	1702	0.35	0.48	0.00	0.00	1.00
Exclusive PB borrowing – LT	1702	0.03	0.18	0.00	0.00	0.00
Mix borrowing – LT	1702	0.61	0.49	0.00	1.00	1.00
Business Group affiliation	1702	0.43	0.49	0.00	0.00	1.00
Political Influence by previous regime*	1347	0.06	0.24	0.00	0.00	0.00
Political Influence by current regime *	1347	0.20	0.40	0.00	0.00	1.00
Long term average credit rating	1702	3.75	1.19	2.00	4.00	5.00
Leverage	1702	3.38	5.69	0.80	2.43	6.08
ROA	1702	2.32	6.11	-4.17	2.58	8.35
Tangibility	1702	0.40	0.27	0.08	0.38	0.74
Z-score	1702	5.28	1.93	3.25	5.23	7.34
Ln Asset	1702	8.52	1.62	6.43	8.47	10.70

* There is a drop in observations for these variables since these are only for listed firms. PIP and PIC variables are based on listed firms as of May 2014. Descriptions of these variables are mentioned in appendix Table 1.

Figure 5: Rating distribution of firms banking exclusively with PSBs or PBs in the sample



Source: CMIE Prowess database

Table 2: Univariate Analysis

This table shows the univariate analysis of the key variables used in the baseline estimation. Results of the t-test for the difference in means in indicated in the last column. *** Significant at 1%, ** significant at 5% and * significant at 10%.

	Exclusive PSB			Rest			Difference in means (Rest – PSB)
ST Borrowing	Obs.	Mean	Std. Error	Obs.	Mean	Std. Error	
SACR	1079	3.43	0.04	2072	4.52	0.03	1.09***
							(0.05)
Leverage	1079	3.22	0.14	2072	3.05	0.13	-0.17
							(0.21)
ROA	1079	2.42	0.19	2072	3.35	0.18	0.93**
							(0.29)
Tangibility	1079	0.44	0.01	2072	0.38	0.01	-0.05***
							(0.01)
Z-score	1079	5.64	0.07	2072	5.53	0.05	-0.11
							(0.09)
Ln Asset	1079	7.61	0.04	2072	9.09	0.03	1.48***
							(0.05)
LT Borrowing							
LACR	603	3.33	0.05	1099	4.00	0.03	0.69***
							(0.06)
Leverage	603	3.39	0.20	1099	3.37	0.18	-0.02
							(0.29)
ROA	603	2.08	0.23	1099	2.45	0.19	0.37
							(0.31)
Tangibility	603	0.44	0.01	1099	0.38	0.01	-0.06***
							(0.01)
Z-score	603	5.36	0.07	1099	5.24	0.06	-0.13*
							(0.10)
Ln Asset	603	7.64	0.06	1099	9.00	0.05	1.36***
							(0.08)

The relative distributions of both SACR and LACR for the firms in the sample are indicated in figure 5. The relative distribution of both the scores is skewed to the lower end for the PSBs as compared to the PBs. The univariate analysis of the potential variables affecting the lending decision by PSBs and the rest evaluated in Table 2 indicates that firms that borrow exclusively from PSBs have lower credit rating, lower profitability, higher tangibility, higher distress probability and are smaller in size.

4.2. Methodology

Since we intend to estimate the relative difference in the lending decisions, we use a lender type prediction model in similar lines of Carey, Post, & Sharpe, 1998. In this model, the bank type is determined by:

$$Lender = f(observable\ risk\ proxies, information\ proxies, control\ variables)$$

Observable risk proxies in the model are those variables which are ex-ante known to the lender and influence the decision. We use credit rating and z-score, which captures the creditworthiness of the firm, as the observable risk proxies. Variables that act as both information and control proxies include the firm-specific fundamentals such as leverage, size, profitability, and tangibility which has been used in similar studies (Berger et al., 2008; Srinivasan & Thampy, 2017). Finally, as explicit control variables, we control for industry effects (for 146 industries) and time effects, which is similar to the study by Carey et al. (1998).

The multivariate specification for the potential firm characteristics that determine bank-firm lending relationship can be expressed as:

$$\emptyset^{-1}(PSBBS_{i,t}) = \alpha + \beta * SACR_{i,t-1} + \theta * X_{i,t-1} + \mu_j + \tau_t + \varepsilon_{it} \quad (1)$$

where *PSBBS* is a dummy variable that takes the value 1 if the firm *i* has borrowed ST loans in the current year *t* exclusively from a PSB, *SACR* is the average ST credit rating for the firm in

the previous year *t-1*, ***X*** is a vector of firm specific control variables based on previous year financials as explained in the data section, μ_j is an industry-specific intercept, τ_t is controlling for year effects and $\varepsilon_{it} \sim N(0, \sigma^2)$ is an i.i.d error term. In alternative specifications, we use the *PSBBL* and *LACR* which corresponds to incremental LT borrowing exclusively from PSBs and average LT credit rating respectively. The similar specification is used for PBs with variables *PBBS* and *PBBL*.

We use pooled Ordinary Least Square (OLS) probit models to estimate the determinants of the lending decision by banks. All models are estimated with clustered standard errors at firm-level and are corrected for heteroscedasticity. In alternate estimations, we do control for other potentially mitigating factors to ex-ante higher credit risk or influences that can lead to banks overlooking the creditworthiness. These possible mitigants or influences include existing relationship, additional security in terms of collateral, the potential political influences that benefits the firm and higher reputation of the holding company (Business groups).

5. Results and Discussion

5.1. Baseline Estimation

In this section, we discuss the results of the multivariate analysis specified in the methodology section (specify the equation). The baseline specification results are presented in Table 3. Models (5) and (6) indicate that relatively observably riskier firms, in terms of SACR, have higher likelihood of banking exclusively with PSBs as compared to the banking exclusively with PBs. Similarly if we consider LT loans, as indicated in Models (7) and (8), the likelihood of banking exclusively with PSBs is greater for a riskier firm. These models are repeated in Models (1)-(4) to indicate the effect of industry controls. While the results remain robust with and without industry controls, we lose some firm year observations given the lack of variation in dependent

variable within certain industries. The coefficient of the controls does indicate mixed results and hence the effects will be detailed in the upcoming sections.

Table 3: Determinants of lending decisions by PSBs/PBs – Baseline estimation

The dependent variable use in Models (1), (3), (5) and (7) is a dummy which takes the value 1 if the firm has borrowed short term loans (Model (1) and (5)) or long term loans (Model (3) and (7)) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for Models (2), (4), (6) and (8) which borrow exclusively from a PB. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Adding Industry effects to the estimation causes probit model to drop observations if there is no variation in the dependent variables within an industry. Hence Models (1)-(4) is shown without industry effects to illustrate the difference in the number of observations we lose while adding industry fixed effect. All the estimations incorporate industry fixed effects despite this and those without are for illustrative purpose only.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB	Model 5 ST Borrowing from PSB	Model 6 ST Borrowing from PB	Model 7 LT Borrowing from PSB	Model 8 LT Borrowing from PB
$SACR_{t-1}$	-0.206***	0.220***			-0.178***	0.231***		
	(0.031)	(0.052)			(0.033)	(0.069)		
LACRt-1			-0.235***	0.375***			-0.238***	0.287***
			(0.041)	(0.081)			(0.045)	(0.082)
$Leverage_{t-1}$	-0.002	-0.030	0.004	-0.012	-0.005	-0.005	-0.002	-0.003
	(0.005)	(0.030)	(0.006)	(0.016)	(0.006)	(0.025)	(0.007)	(0.013)
ROA_{t-1}	0.006	0.017*	0.005	-0.021	0.006	0.022*	0.012	-0.025*
	(0.005)	(0.010)	(0.008)	(0.014)	(0.005)	(0.011)	(0.008)	(0.015)
$Tangibility_{t-1}$	0.329**	-1.252***	0.432***	-0.605**	-0.214	-1.352***	0.116	-1.048**
	(0.161)	(0.305)	(0.163)	(0.285)	(0.203)	(0.404)	(0.223)	(0.412)
$Z\text{-}score_{t-1}$	0.020	0.003	-0.004	-0.011	0.020	-0.009	-0.003	-0.018
	(0.019)	(0.033)	(0.025)	(0.048)	(0.020)	(0.032)	(0.026)	(0.041)
$Log\ asset_{t-1}$	-0.364***	-0.293***	-0.319***	-0.326***	-0.412***	-0.430***	-0.334***	-0.436***
	(0.038)	(0.057)	(0.041)	(0.056)	(0.045)	(0.067)	(0.046)	(0.071)
Constant	3.140***	-0.197	2.956***	-0.553	2.863***	1.531*	3.341***	1.633**
	(0.344)	(0.510)	(0.386)	(0.563)	(0.577)	(0.879)	(0.844)	(0.772)
Firm years	3366	3366	1850	1850	3151	1748	1702	999
Industry Effects	No	No	No	No	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.208	0.143	0.175	0.118	0.272	0.298	0.228	0.254

We do a similar analysis for firms banking with a mix of PSBs and PBs and the results are indicated in appendix Table A5.1. We also do similar analysis with firm that have exclusive borrowings from PSBs and PBs and the results indicate a higher differential between PSBs and PBs (results in appendix Table A5.1 Models (5)-(6)). Further, in appendix Table A5.2, we show that the relative riskiness rank orders by comparing firms borrowing from mix of PSBs and PBs versus firms borrowing exclusively from PSBs (Models (1)-(2)); then we compare firms borrowing exclusively from PBs versus those borrowing from a mix of PSBs and PBs (Models

(3)-(4)). Results indicate that the creditworthiness of the firms progressively increases from those borrowing exclusively from PSBs to mix of PSBs and PBs to exclusively from PBs.

Marginal average effect of the main explanatory variable for Models (5)-(8) is shown in appendix table A6. The effects indicate that a one unit drop in SACR would correspond to an increase in probability of 6.0% for borrowing exclusively from PSBs. Hence, if we consider the score going down from the 75 percentile to 25 percentile (2.5 unit movement in SACR), probability increases by 15.0%. Similarly, for LT loans, if the score of a firm goes down from 75 percentile to 25 percentile (2 unit movement in LACR), the probability of banking exclusively with PSBs increases by 16.6%.

5.2. Secured Borrowing

Further to the baseline results which compares the relative profiles of firms that the PSBs/PBs have lent to, we now turn our analysis to understand this difference of risk profiles in more detail. The results indicated in Table 4 analyses the earlier result for secured and unsecured borrowing by firms.

If we look at the number of observations in Models (1) – (4) and then compare with the observations in earlier table, it is pretty evident that most of the lending is backed by collateral. This is more evident if we look at the observation in model (5)-(6), where we consider only unsecured short term borrowings. There are no unsecured long term borrowings, which is in line with the banks' standards to back higher exposure with some pledged collateral.

The results of the secured borrowings are in line with baseline estimation. The coefficients of the explanatory variable SACR and LACR compared (only in means) with baseline table indicates that banks lower the standards in the presence of additional collateral, possibly due to added safety. However this difference is not statistically significant. The analysis on unsecured loans indicates broadly a similar result obtained in the baseline estimation.

Table 4: Determinants of Secured Lending & unsecured lending decisions by banks
The dependent variable use in models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term secured loans (1) or long term secured loans (3) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for models (2) and (4) which borrow exclusively from a PB. All models have been controlled for industry and year fixed effects. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Models (5)-(6) do the same analysis for unsecured borrowings from banks. Number of observations is quite low for these estimations since most of the lending is secured lending.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB	Model 5 ST Borrowing from PSB	Model 6 ST Borrowing from PB
$SACR_{t-1}$	-0.180***	0.229***			-0.201**	0.494***
	(0.033)	(0.069)			(0.079)	(0.184)
LACRt-1			-0.238***	0.342***		
			(0.057)	(0.111)		
$Leverage_{t-1}$	-0.005	-0.002	-0.012	0.015	0.015	-0.098
	(0.006)	(0.024)	(0.010)	(0.019)	(0.012)	(0.079)
ROA_{t-1}	0.007	0.022*	0.013	-0.025	0.019	-0.004
	(0.005)	(0.012)	(0.010)	(0.017)	(0.019)	(0.033)
$Tangibility_{t-1}$	-0.206	-1.288***	0.161	-1.168**	-0.593	-4.831*
	(0.203)	(0.404)	(0.279)	(0.520)	(0.583)	(2.554)
$Z\text{-}score_{t-1}$	0.016	-0.002	-0.015	-0.008	-0.036	0.280**
	(0.021)	(0.034)	(0.030)	(0.043)	(0.060)	(0.116)
$Log\ asset_{t-1}$	-0.408***	-0.430***	-0.352***	-0.420***	-0.349***	-0.288*
	(0.045)	(0.068)	(0.054)	(0.088)	(0.098)	(0.159)
Constant	2.878***	1.486*	3.472***	1.302	4.441***	-2.346
	(0.580)	(0.891)	(0.867)	(0.871)	(1.266)	(1.699)
Firm Years	3108	1712	1077	527	539	188
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.270	0.297	0.254	0.242	0.242	0.485

5.3. Role of Domestic Systemically Important Banks & New Private Sector Banks

In this section we evaluate the effects of Domestic Systemically Important Banks (D-SIBs) and the new private sector banks (NPB: banks which were incorporated after the 1990's and as used in the bank-level evaluation by (Acharya & Subramanian, 2016)). The results are indicated in Table 5. The results in Models (1)-(4) substantiate the role of D-SIBs (especially SBI) in ameliorating the effect of the overall riskiness of PSBs. When we exclude those firms that have a banking relationship with D-SIBs from the analysis on borrowings, we are left with a sample that is close to $1/5^{th}$ of the baseline sample, given the larger contribution of D-SIBs to baseline sample. The result in Model (1) and (3) indicate even higher probability for a firm with a lower credit rating as compared to the baseline results in Table 3, Models (5) and (7). This would mean that SBI was considerably reducing the riskier behaviour of other PSBs to a large extent. When

we consider the marginal effects of SACR (detailed in appendix Table A6), drop from the 75 percentile to 25 percentile (3 unit movement in SACR) results in an increase in probability of banking exclusively with PSBs by 34.8%. Similarly for LT loans, if the score of a firm goes down from 75 percentile to 25 percentile (1 unit movement in LACR), the probability of banking exclusively with PSBs increases by 14.8%.

Table 5: Role of Domestic Systemically Important Banks & New Private sector banks
The dependent variable use in Models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term secured loans (1) or long term secured loans (3) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for Models (2) and (4) which borrow exclusively from a PB. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Models (5)-(6) do the same analysis for firms that borrow exclusively from New private sector banks (Axis Bank, DCB Bank, HDFC Bank, ICICI Bank, Yes Bank, Kotak Mahindra Bank, and IndusInd Bank)

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB	Model 5 ST Borrowing from NPB	Model 6 LT Borrowing from NPB
$SACR_{t-1}$	-0.301***	0.310***			0.115	
	(0.073)	(0.101)			(0.077)	
LACRt-1			-0.373***	0.481***		0.311**
			(0.113)	(0.164)		(0.143)
$Leverage_{t-1}$	-0.015	0.016	0.009	0.074	-0.005	-0.034**
	(0.012)	(0.036)	(0.017)	(0.056)	(0.009)	(0.017)
ROA_{t-1}	0.014	0.049**	0.038**	-0.022	0.024*	0.028
	(0.012)	(0.023)	(0.015)	(0.021)	(0.012)	(0.021)
$Tangibility_{t-1}$	-0.037	-2.145***	0.493	-0.853	0.371	-0.093
	(0.404)	(0.634)	(0.424)	(0.678)	(0.418)	(0.475)
$Z\text{-score}_{t-1}$	0.027	-0.099	-0.024	-0.088	-0.086**	-0.095
	(0.040)	(0.063)	(0.041)	(0.072)	(0.040)	(0.067)
$Log\ asset_{t-1}$	-0.215**	-0.448***	-0.097	-0.527***	-0.023	-0.095
	(0.088)	(0.126)	(0.087)	(0.124)	(0.054)	(0.067)
Constant	2.944***	1.840	3.098***	1.672	-0.609	0.404
	(0.884)	(1.142)	(0.999)	(1.053)	(0.801)	(1.381)
Firm Years	649	444	371	266	1260	532
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.250	0.327	0.181	0.260	0.102	0.120

Next, we consider the relative performance of NPBs and are indicated for both ST and LT in Models (5) and (6). The dependent variable takes a value 1 if the firm is exclusively banking with the NPBs and 0 if the firm is banking with any of the other PSBs or PBs or a mix of both. The results indicate a relatively better performance by the NPBs with higher probability for banking with a creditworthy firm.

5.4. Rating Constraint Evaluation

One of the constraints that we face in this analysis is the data availability of publicly disclosed rating data. Not all the firms that have a borrowing from a bank have publicly disclosed the rating data. Hence it is better to understand the effects of lending decisions on unrated firms using the observation risk proxies and information proxies which are based on firm fundamentals. In this exercise, we give a score of 0 to all firm years with no rating. Further we use a dummy to indicate whether a firm is rated or not and then interact this dummy with the revised ST and LT score variables. The results of this analysis are presented in Table 6 Models (1)-(2) for ST and Models (5)-(6) for LT. The takeaway from these estimations is that the unrated firm tend to bank exclusively with PBs rather than PSBs.

While, there is no reason to believe that non-disclosure of rating would mean a bad rating, we look at the firm fundamentals of unrated firms to compare the relative ex-ante health of the firms. The comparison is done using the Models (3)-(4) for ST and (7)-(8) for LT. The broad takeaway from here is that the firms banking exclusively with PBs have relatively higher profitability as compared to those banking exclusively with PSBs. Other coefficients except for size is either insignificant in both or is significant only for one of the models. More disclosure on ratings would reveal more about the relative health, however, given the unrated firms' fundamental, PBs tend to lend to profitable firms ceteris paribus.

In addition, we evaluate the baseline estimation using an average rating based on all debt instruments that were rated for the firm in a year rather than separating into SACR or LACR. This yields us a larger sample and the results are presented in appendix Table A7. The results with the average credit rating also yield similar separation between PSBs and PBs in terms of the relative credit profiles of the borrowers.

Table 6: Rating data constraint evaluation

The dependent variable use in Models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) or long term loans (3) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for Models (2) and (4) which borrow exclusively from PBs. In the same way, we do the estimations for long term borrowing in Models (5)-(8). Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Additional control variables rated indicates if a firm is rated or not and ST score here is given a value 0 if the firm is unrated. PTB is the price to book value for the listed firms. Models (3), (4), (7) and (8) are estimations for unrated firms only.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 ST Borrowing from PSB	Model 4 ST Borrowing from PB	Model 5 LT Borrowing from PSB	Model 6 LT Borrowing from PB	Model 7 LT Borrowing from PSB	Model 8 LT Borrowing from PB
ST score$_{t-1}$	-0.001	-0.051***			0.042**	-0.074***		
	(0.009)	(0.014)			(0.017)	(0.024)		
Rated	0.393***	-0.593***			0.934***	-0.841***		
	(0.048)	(0.073)			(0.128)	(0.256)		
ST score$_{t-1}$ * Rated	-0.064***	0.069***			-0.225***	0.117*		
	(0.011)	(0.018)			(0.034)	(0.067)		
Leverage	0.005*	0.002	0.004	0.004	0.001	0.003	0.002	0.006
	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.006)	(0.005)	(0.006)
ROA$_{t-1}$	-0.004**	0.003	-0.004*	0.002	-0.007	0.001	-0.010**	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.001)	(0.005)	(0.006)
Tangibility$_{t-1}$	-0.110*	-0.167*	-0.054	-0.166	-0.020	-0.123	-0.103	-0.022
	(0.065)	(0.100)	(0.065)	(0.110)	(0.144)	(0.166)	(0.185)	(0.208)
Z-score$_{t-1}$	0.001	0.000	0.001	0.000	0.001	0.002	0.000	0.003
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Log asset$_{t-1}$	-0.295***	-0.147***	-0.198***	-0.160***	-0.279***	-0.207***	-0.181***	-0.211***
	(0.018)	(0.021)	(0.019)	(0.024)	(0.030)	(0.036)	(0.034)	(0.044)
Constant	1.631***	-0.087	1.120***	-0.407*	2.077***	0.378	1.449***	-0.558
	(0.231)	(0.262)	(0.247)	(0.241)	(0.410)	(0.460)	(0.436)	(0.604)
Firm year	11810	10999	5605	5165	2995	2503	1119	927
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.154	0.141	0.109	0.089	0.180	0.210	0.151	0.161

5.5. Alternate Estimations & Listed Firms

In this section, we look at the baseline specification using an ordered probit model with a ordinal variable as a dependent variable. This variable takes the value 1 if the firm has borrowed short term loans in the current year from PBs, 2 if the borrowing is from a mix of PB/PSB and 3 if the borrowing if from PSBs exclusively. The results in Table 7 Models (1)-(4) are consistent with the earlier findings that riskier firms tend to bank exclusively with PSBs.

All non-linear fixed effects model drops firms with only one year of borrowing and has limitations while dealing with firm dummies, which is known as the incidental parameters problem. Hence we account for firm fixed effects using a dependent variable which takes the

value 1 if the firm has borrowed any loan in that year exclusively from PSBs and 0 from the rest. The main explanatory variables for this regression are the average rating rather than by loan type. We do these estimations to increase the observations available to control for firm fixed effects. Further, these estimations are done using a linear probability model (LPM) rather than probit, given that probit estimations have convergence issues in the presence of firm fixed effect dummies. The results are indicated in appendix Table A7-Model (9). Results are consistent with the baseline estimations and we find that the relative riskiness of firms banking exclusively with PSBs is higher. Further, we estimate the fixed effects model using a conditional logit model. This model also suffers from the limitation that only those firms with time variant dependent variable are used for analysis and hence there is significant drop in observations in the final results (from roughly 3000 observations used in baseline without firm fixed effects to 900 with fixed effects). Although not shown in the tables, the results are consistent with the baseline results for ST loans. In the case of LT loans, the drop in observations is too large (drops to close to only 100 observations) to draw any meaningful insights.

In Table 7 Models (3)-(4), we control for the past borrowing relationship by introducing the past year borrowing relationship (a detailed analysis on past borrowing relationship is in appendix Table A8 and the results are consistent with baseline estimations after controlling for the past borrowing and also the interaction of past relationship on both SACR and LACR). The analysis indicates that past relationship matters a firm with existing exclusive relationship with PSBs continue to get the loan from PSBs. The result on SACR and LACR still is consistent with the baseline estimation. The persistence in borrowings is also a function of the type of loan.

We expect ST loans rather than LT loans to be persistent in which case a bank tends to roll over the working capital/cash credit facility.

In the next set of estimations in Table 7 Models (5)-(8), we do the baseline estimations only for listed private firms with the additional informational variable, Price to Book value that factors in the present value of future growth opportunities of the firm. Moreover, as evidenced in the study

by (Gopalan, Gopalan, & Koharki, 2017) on credit ratings in India, ratings of unlisted firms are relatively less monitored by the agency and tend to follow the downgrades of the listed firms in similar industries. We control for this effect by estimating baseline specification for listed firms only. The overall results remain robust even for listed firms.

Table 7: Robustness check with Ordered Probit model & Listed firms

The dependent variable use in models (1) and (3) is an ordinal variable which takes the value 1 if the firm has borrowed short term loans in the current year from PBs, 2 if the borrowing is from a mix of PB/PSB and 3 if the borrowing if from PSBs exclusively. A similar variable is used for models (2) and (4) for long term borrowings. Models (3) and (4) use the lag of short term borrowing or long term borrowing as additional controls. Models (5)-(8) is a robustness of the baseline estimation with listed private firms. The dependent variable use in models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term loans (5) or long term loans (7) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for models (6) and (8) which borrow exclusively from a PB. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Constant term for Models (5)-(8) to be considered from the Cut1: Constant row in the table.

	Model 1 ST Borrowing	Model 2 LT Borrowing	Model 3 ST Borrowing	Model 4 LT Borrowing	Model 5 ST Borrowing from PSB	Model 6 ST Borrowing from PB	Model 7 LT Borrowing from PSB	Model 8 LT Borrowing from PB
SACRt-1	-0.175***		-0.145***		-0.180***	0.323***		
	(0.029)		(0.027)		(0.037)	(0.086)		
LACRt-1		-0.226***		-0.193***			-0.188***	0.308**
		(0.040)		(0.052)			(0.053)	(0.126)
ST borrowing			2.773***					
			(0.122)					
LT borrowing				0.499***				
				(0.141)				
$Leverage_{t-1}$	-0.004	-0.002	-0.004	-0.002	-0.010	-0.028	-0.003	-0.076
	(0.005)	(0.005)	(0.005)	(0.006)	(0.008)	(0.032)	(0.009)	(0.054)
ROA_{t-1}	0.002	0.014	-0.003	0.002	0.003	0.046**	0.008	-0.014
	(0.005)	(0.009)	(0.006)	(0.011)	(0.007)	(0.018)	(0.009)	(0.022)
$Tangibility_{t-1}$	-0.031	0.304	0.191	0.219	-0.153	-1.812***	0.130	-1.552**
	(0.179)	(0.206)	(0.168)	(0.246)	(0.243)	(0.588)	(0.256)	(0.619)
$Z\text{-}score_{t-1}$	0.015	0.000	0.009	-0.001	0.02	-0.026	-0.027	-0.028
	(0.019)	(0.024)	(0.022)	(0.027)	(0.026)	(0.040)	(0.029)	(0.044)
$Log\ asset_{t-1}$	-0.250***	-0.190***	-0.068**	-0.156***	-0.415***	-0.499***	-0.367***	-0.426***
	(0.034)	(0.035)	(0.034)	(0.040)	(0.052)	(0.090)	(0.054)	(0.097)
PTB_{t-1}					0.009	-0.052	0.001**	-0.056
					(0.011)	(0.045)	(0.001)	(0.063)
Cut1: Constant	-3.895***	-3.956***	-2.865***	-3.229**	2.937***	1.775*	3.751***	1.785*
	(0.848)	(1.129)	(0.876)	(1.305)	(0.629)	(1.000)	(0.936)	(1.039)
Cut2: Constant	-1.034	-1.289	0.589	-0.635				
	(0.818)	(1.119)	(0.845)	(1.285)				
Firm Year	3366	1850	3168	1067	2553	1292	1383	591
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.218	0.184	0.471	0.176	0.261	0.353	0.227	0.239

In addition, we also do estimations with both age and interest coverage as additional controls and the results are indicated in appendix Table A9. Results are in line with the baseline estimation results. The results indicate that PBs have higher likelihood of lending to older firms.

5.6. Controlling for Loan Amount

In this paper, we are modelling the relative decision making of PSBs and PBs based on ex-ante observable risk proxies. The loan amount is potentially an endogenous variable which is a function of both the amount sought and the risk appetite of the bank. Given this econometric constraint, we try to evaluate the role of amount borrowed in two ways. In the first specification, we control for the amount borrowed by the firm by taking the contemporaneous value of the loan amount reported by the firm in that year. This is assuming that the amount sought is the amount approved. The results of this analysis are shown in Table 8 and the results are consistent with the baseline results.

Although not reported, we do a subsample analysis of the baseline estimations using above and below median amount borrowed, both ST as well as LT. The key takeaway from this analysis is regarding the relative better performance of PBs. The results reveal that the better risk profile for firms banking with PBs is driven by the firms borrowing more. This further strengthens the argument in favour of PBs, which has higher standards when it comes to higher loan amounts. However, such a distinction is not seen in PSBs.

5.7. Potential Channels Affecting the Difference in Lending Decisions

The results from the baseline estimation reveals that the PSBs do cater to lower sized firms relatively and is in line with the social objectives to direct credit to firms at the lower end of the size spectrum. In the estimation sample, the size of the firm at the lowest one percentile is INR 236 million, which is close to the ceiling for getting classified as a Micro Small or Medium Enterprise (MSME) firm.[9] Other than the size effects, we consider the social objectives to be minimal given that the analysis is done on private firms with limited liability and profit maximising objectives. In addition, we do control for industry effects in our analysis to control

[9] The investment ceiling in plant and equipment for a MSME enterprise, which comes under the priority sector lending norms, is INR 100 million. If we assume that the plant and equipment is roughly 40% (close to the mean tangibility in our sample) of the assets of an MSME, this translates to a maximum asset size of INR 250 million.

for directed lending to any particular industry of strategic interest. Analysis of the credit rating coefficients reveals that the decision taken by PSBs after ex-ante knowing the credit rating of the firm is relatively poor as compared to the PBs. Even if we compare the fundamentals ignoring the rating, the firms banking with PSBs are relatively of lower profitability and lower Z-score. In this section, we try to look at possible reasons for the results obtained in the earlier section for PSBs.

Table 8: Robustness: Baseline estimation with borrowed amount

The dependent variable use in Models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) or long term loans (3) exclusively from PSBs in the current year and 0 if the firm has a relationship with any other bank irrespective of borrowing status. A similar dummy variable is used for Models (2) and (4) which borrow exclusively from a PB. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Additional control variables used in this estimation is the contemporaneous value of the amount borrowed by the firm.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB
$SACR_{t-1}$	-0.177***	0.235***		
	(0.033)	(0.069)		
$LACR_{t-1}$			-0.235***	0.290***
			(0.045)	(0.083)
Short term $amount_t$	0.022***	-0.025		
	(0.008)	(0.063)		
Long term incremental amountt			0.020	-0.043
			(0.017)	(0.059)
$Leverage_{t-1}$	-0.005	-0.002	-0.002	-0.002
	(0.006)	(0.025)	(0.007)	(0.013)
ROA_{t-1}	0.007	0.022*	0.011	-0.026*
	(0.005)	(0.012)	(0.008)	(0.015)
$Tangibility_{t-1}$	-0.216	-1.361***	0.116	-1.066**
	(0.205)	(0.405)	(0.225)	(0.421)
$Z\text{-score}_{t-1}$	0.017	-0.011	-0.001	-0.02
	(0.020)	(0.032)	(0.026)	(0.041)
Log $asset_{t-1}$	-0.455***	-0.418***	-0.356***	-0.425***
	(0.045)	(0.077)	(0.045)	(0.075)
Constant	3.203***	1.445	3.491***	1.566**
	(0.584)	(0.940)	(0.842)	(0.788)
Firm years	3132	1740	1702	999
Industry Effects	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes
Pseudo R^2	0.275	0.299	0.230	0.255

5.7.1. Sectoral Characteristics

We look at the role of any broad sectoral level indicators that could affect the relative differences in the credit risk profiles of the firms banking exclusively with PSBs and PBs. We factor in sectoral effects by using an additional identification variable which takes the value 1 if the firm

is classified as a manufacturing firm by prowess database and 0 if it is classified as a services firm. In the data cleaning stage, we avoid some data points where the firm is classified both under services as well as manufacturing. We do the estimation for sectoral level differences controlling for with and without industry effects. While the overall results on SACR and LACR remain consistent, the results on sectors reveal some interesting insights (see Table 9). Manufacturing firms have higher probability of banking exclusively with PSBs and this result is consistent through Models (1)-(4). Even when we control for industry effects, except for the estimation with LT borrowing exclusively from PSBs Model (7), the results are consistent.

The relative riskiness from the interaction of sector and score indicates that there is a high likelihood of riskier services firms to borrow exclusively from PSBs and a high likelihood for better services firms to borrow exclusively from PBs. When it comes to manufacturing firms, the interaction term indicates similar differences between PSBs and PBs, albeit small. The propensity of manufacturing firms to have higher likelihood to borrow exclusively from PSBs is also in line with the anecdotal mention that PSBs prefer asset backed financing, whereas, the PBs prefer cash flow based financing.

5.7.2. Subsample Analysis

In this section, we look at the relative difference in results for below and above median subsamples based on asset size, leverage and ROA. When we compare size effect for the ST loans (Table 10 Models (1)-(4)), the revelation is regarding the PBs, whose better risk selection seems to be driven by larger sized firms in their short term loan portfolio. Whereas, in the case of PSBs, the size subsample coefficients are different in means, indicating that the lower overall risk profile of firms is driven by the larger firms in the group. However, the difference in estimated coefficients is not statistically significant. When it comes to leverage, while the results in Models (5)-(8) do not reveal much about PSBs, the better quality of firms banking with PBs seems to be driven by lesser levered firms.

Table 9: Sectoral effects on the baseline results

The dependent variable use in Models (1), (3), (5) and (7) is a dummy which takes the value 1 if the firm has borrowed short term loans (1)/(5) or long term loans (3)/(7)exclusively from a PSB in the current year and 0 if the firm has borrowed exclusively from PB or mix of PSB/PB. A similar dummy variable is used for Models (2)/(6) and (4)/(8) which borrow exclusively from a PB. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. The Models (1)-(4) do not interaction term to gauge the sectoral effects. However, models (5)-(8) have the relative riskiness of the sectors too.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB	Model 5 ST Borrowing from PSB	Model 6 ST Borrowing from PB	Model 7 LT Borrowing from PSB	Model 8 LT Borrowing from PB
$SACR_{t-1}$	-0.175***	0.220***			-0.170*	0.385***		
	(0.035)	(0.074)			(0.089)	(0.137)		
$LACR_{t-1}$			-0.242***	0.243**			-0.432***	0.710***
			(0.049)	(0.096)			(0.112)	(0.214)
Manufacturing	0.631**	-0.871*	0.378	-1.032**	0.653	0.078	-0.344	1.491
	(0.262)	(0.450)	(0.263)	(0.488)	(0.437)	(0.814)	(0.498)	(1.084)
Manufacturing * $Score_{t-1}$					-0.006	-0.211	0.211*	-0.665***
					(0.092)	(0.147)	(0.119)	(0.235)
$Leverage_{t-1}$	-0.005	0.000	-0.002	-0.026	-0.005	-0.001	-0.001	-0.025
	(0.006)	(0.024)	(0.007)	(0.023)	(0.006)	(0.025)	(0.007)	(0.020)
ROA_{t-1}	0.006	0.022*	0.013	-0.025*	0.006	0.023**	0.012	-0.019
	(0.005)	(0.012)	(0.008)	(0.015)	(0.005)	(0.012)	(0.008)	(0.015)
$Tangibility_{t-1}$	-0.266	-1.307***	0.08	-1.325***	-0.267	-1.367***	0.093	-1.424***
	(0.204)	(0.408)	(0.231)	(0.466)	(0.205)	(0.406)	(0.233)	(0.443)
$Z\text{-}score_{t-1}$	0.012	-0.002	-0.007	-0.002	0.012	0.000	-0.006	0.000
	(0.020)	(0.031)	(0.027)	(0.039)	(0.020)	(0.031)	(0.027)	(0.039)
Log $asset_{t-1}$	-0.410***	-0.442***	-0.334***	-0.417***	-0.410***	-0.445***	-0.335***	-0.430***
	(0.048)	(0.071)	(0.048)	(0.073)	(0.048)	(0.071)	(0.048)	(0.075)
Constant	2.529***	1.898**	3.316***	1.777**	2.509***	1.208	4.193***	-0.288
	(0.580)	(0.898)	(0.861)	(0.805)	(0.640)	(1.099)	(0.933)	(1.207)
Firm Year	2917	1633	1534	895	2917	1633	1534	895
Industry Effects	No	No	No	No	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.263	0.307	0.203	0.290	0.263	0.311	0.205	0.314

Similarly, in appendix Table A10, we evaluate the subsamples based on LT loans. Size based analysis (possible control for consortium/syndicated loans) is broadly consistent with ST loans regarding PBs, however, the chances of lower risk profiles banking with PSBs exclusively is driven by small firms rather than larger firms (based on mean coefficients), however this is not statistically significant.

Leverage based subsamples in Models (5)-(8) do not reveal much regarding relative profiles for both PSBs and PBs. Subsample analysis based on ROAs as indicated in Models (9)-(12) reveal that the relative better risk profiles of firms borrowing exclusively from PBs is driven by firms

with lower profitability. To summarize, the lower risk profile of firms banking exclusively with PSBs seems to be broadly consistent across all the subsamples. This could be due to the fact that they are left with no choice in selecting customers or could be due to potential influencers, which we try to explore in the next sub section. However if PSBs are indeed left with no choice, given the current context of the NPA crisis and capital requirements, it is better to put the money in safer assets rather than continue to lend to riskier firms. The PBs have higher probability of choosing better risk profiles and the subsample analysis shows that the likelihood is driven by PBs choosing firms with lower leverage and larger size.

5.7.3. Potential Influencers

The credit rating data provides more than firm fundamentals by enhancing the market discipline aspect with publicly available credit profile of the firms that banks are lending to. The decision to lend/ not lend can broadly depend on the ability and intent of the underwriting bank. The ability could have been the reason should observable rating information was not available. Moreover, if the PSBs have better ability to evaluate the creditworthiness of the firm beyond the firm fundamentals, the decision could have hinged on that information and we would not be able to soundly distinguish from the decision of PBs. However, the rating by an external agency carries comprehensive information on the creditworthiness of the firm including analyst estimates of the prospects of the firm and is ex-ante known to the banks. Moreover, the rating has capital adequacy implications to the bank. Therefore, we believe that the possibility of adverse selection issues in the decision to lend to private firms is remote.

In terms of agent level decision making, we explore two possibilities of potentially higher agency costs. The first possibility is the interference by agents, other than the delegated officers, who exert undue influence in the organization, in this case, the agents who are in charge of the government. As stated earlier, the political view of PSBs indicates that the banks are used to

direct credit to populist projects or inefficient projects as per the direction of the influential agent. The second possibility is at the decision making level. In which case, the delegated officers could make a suboptimal decision due to lack of additional due diligence. This might be due to agent's interest in private benefits such as leisure or might be due to lack of incentives such as performance-based pay.

While the second aspect of agency costs is tougher to isolate at this level of aggregation, we make an attempt to unravel the role of political interference in decision making. Alternatively, the decisions could be influenced if the firm is owned by a business group who are considered to have better access to government officials by virtue of their diversified industrial presence. We try to evaluate these two channels in this section of the study. We do not rule out the possibility that PBs could also exhibit rent-seeking behaviour and get influenced by the firms with potential political influences or the business groups. Hence, we evaluate those banks as well in this analysis.

5.7.3.1. Potential Political Influence

The first step in ascertaining the political influence or interference is to identify and classify the firms in the sample with potential for political influence (PI). Only a few studies have been conducted in India with regards to PI. Amongst those few studies, corporate governance indicators such as the board of directors with political affiliation or linking a certain sector to the political parties were considered (Narayanaswamy, 2013; Sukhtankar, 2012). Other types of studies have tried to understand the PI based on a financial market performance of firms during state elections (Datta & Ganguli, 2014; Ghosh, 2011). We employ a similar event study to classify the firms with potential political influence. The strategy that we employ is to compute the cumulative abnormal return (CABR) using a market model during the period between the start of exit poll results and the next working day after the election results.

The general election in India was last held in April/May 2014 with exit polls coming out on 13th of May and the final results on 17th of May. The election result went against the previous ruling regime, which was in power for the previous 10 years. This was a political regime shift where we get two sets of PI firms, one in which the results indicated a beneficial influence from the current regime (henceforth called as PIC) and the second in which the results indicated that some firms might not get the same benefits that it enjoyed during the previous regime (henceforth called as PIP). This view is in line with the comment made by Fisman (2001) that the business-politics connections tend to shift considerably over time. To get this classification, we use one standard deviation above and below the mean of the CABR.[10]

The mean and standard deviation of CABR for 2014 is approximately -0.2% and 8.8% respectively. We end up with roughly 375 firms on both sides of the PI spectrum. This number represents roughly 13% of all listed firms. This estimate is not far from earlier studies such as the one by Narayanaswamy (2013) in which the number of BSE 500 firms that were found to be politically connected was 77, which is roughly 15% of the overall sample of that study. Moreover, in the final sample used for estimations shown in Table 13 Models 3 & 4, the number of firms drops to 38 for PIP and 75 for PIC. As acknowledged by other scholars in this area, PI measure is a complicated measure in countries where the political decisions are decentralized (Fan, 2016; Fisman, 2001). Given the federal structure of India, it adds further complexity in isolating PI. However, in order to explore the channels through which lending decisions can be influenced, we are using an approximate measure based on an event study analysis which has been used in other seminal works on PI and firm performance (Cooper, Gulen, & Ovtchinnikov, 2010; Fisman, 2001).

2014 PIP has the advantage that it would incorporate the benefits lost by PIPs that were potentially influenced over the course of the second term (2009-2014). Since 2009 elections did

[10] Market returns are computed using NIFTY index and price of firms is taken from Prowess. If a firm is listed in both Bombay Stock Exchange (BSE) and National Stock Exchange (NSE), we have taken the NSE price.

not have a regime change, we do not classify PIPs using that election period. We further identify PIPs, based on firms who had a CABR of more than one standard deviation above mean, from the 2004 market data during the election results period.

This would be robust as compared to 2009 since that period also had a political regime shift. The mean and standard deviation of CABR for 2004 is roughly 2.5% and 12% respectively. However, the limitation with 2004 data is that the overall number of firms listed was much lower compared to 2014. We end up with 153 firms potentially affiliated to the previous ruling regime, however when we use the filters for estimation, the number drop considerably to conduct any meaningful estimations.

Based on these classifications, we look at the role of PIP for the period that was favourable until 2014 and look at the role of PIC for the period after 2014. We flip this analysis to see the effect of current ruling regime on PIP and the role of previous ruling regime on PIC. The results indicate that PI matters, albeit the effects are weak due to marginally significant results in some instances.

The key takeaways from both Tables 11 and 12, is that PIP had higher probability of banking exclusively with PSBs during the previous regime when they had beneficial PI, whereas, PIC had lower probability during the same period. This result is consistent across both LT and ST loans. In the current regime, however, the PIP firms with higher rating is preferred indicating a shift (see Table 11, Model 3). We do not find evidence of higher likelihood of obtaining credit from PSBs for PIC during the current regime, however, we do find evidence that such firms are preferred by PBs (coefficient for PIC*current regime in Table11, Model 8) and are preferred by PBs even with a lower rating relative to others (see coefficient (marginally insignificant) for PIC *current regime*LACR in Table 11, Model 8).

5.7.3.2. Business Groups

We identify business groups as per the prowess classification of firms into different groups. The analysis results indicated in Table 13 evaluates the role of business groups in obtaining credit by virtue of their ownership. We do not find evidence of differential treatment of business groups as compared to normal private firms in PSBs. However, we do find that PBs have a lower probability of lending to firms affiliated with business groups. In addition, if they decide to lend to a BG affiliated firm, only firms with higher credit rating have better chances of obtaining credit.

5.7.4. Potential Strategic Differences

Another possible reason for such difference in lending decisions might be due to differential organization strategy and structure of PSBs and PBs. It is found in the literature and reviewed in section 3 that PBs tend to be early adopters of technology and hence are nimbler in decision making. Such differences might stem from the overall governance structure of the organization at a macro level and from the delegation levels of the agent in charge of decision making at the micro level. While we do not have the data at this aggregate level to ascertain the relative differences in organization structure, business strategy, procedures and policies, we do find evidence that the better performance of PBs is driven by larger size of firms, possibly due to their relative competitiveness is ensuring client retention. We estimate baseline estimation for the right most decile based on asset size and observe that the average marginal effects are significantly lower for PBs to lend to less creditworthy firms (2% per unit change in rating in baseline and 7.7% in right most decile). This effect is not seen for firms borrowing from PSBs. The results provide evidence regarding the competitiveness of PBs to hold on to bigger and safer firms.

In addition, if we look at the results of Appendix Tables 8 & 9 regarding past borrowing relationships, we see that PBs tend to drop the credit standards for firms with existing relationships, providing evidence of possible evolution of decision making process for existing customers by acknowledging the intent displayed by the firm with PBs. The relative better performance of PBs in selecting better firms corroborates the findings of earlier studies (Berger et al., 2008; Gormley, 2010; Srinivasan & Thampy, 2017).

6. Potential Improvements

The analysis on bank lending decision is incomplete without looking at the rejected decisions since this can further strengthen or weaken the argument that PSBs are taking potentially sub-optimal decisions. If the firms that approach the PSBs are worse than the firms that they lend to, then they are devoid of choice and are lending to the better firms among the ones that approach them. Even though, the lack of choice must not be an excuse to lend to riskier firms by putting the capital at risk. Similarly for PBs, if they decide to reject all riskier firms that approach them, then we can conclusively say that they tend to pick the better risk firms amongst all the firms that approached them for loans.

The analysis could have been improved if there was credit rating information on all the firms in the sample. One possible limitation is the conflicts of interest in credit ratings. However, this would bias the ratings upwards for most of the firms in the sample unless the rating agencies are selective in such conflicts. There is evidence in a recent study by Baghai & Becker (2017) that ratings of firms that seek non-rating services, from the credit rating agencies accredited by RBI, tend to be rated higher. However, such firms are only 4.4% of their overall sample. Finally, the analysis can be further strengthened should the data be available linking each firm to the bank. However, this would almost completely eliminate the opaqueness of corporate banking assets in India with specific details and may not be in the interest of both firms and banks. While it is better to analyse further using granular data, we are wary of the pitfalls of full disclosure.

Table 10: Subsample analysis based on fundamentals – Short term borrowings

The dependent variable use in Models (1)-(2), (5)-(6) and (9)-(10) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for Models (3)-(4), (7)-(8) and (11)-(12) which borrow exclusively from a PB. All models have been controlled for industry and year fixed effects. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Med refers to the median value for the respective analysis variable in the baseline specification for short term borrowing. While the probit regressions are run with full sample which is 3125 firm year observations for ST sample, the drop in observations in a particular estimation is dependent on the relative variation in dependent variable with an industry. Hence even if we estimate below and above median, observations need not be distributed equally.

	Model 1 PSB > Med Size	Model 2 PSB <= Med Size	Model 3 PB > Med Size	Model 4 PB < =Med Size	Model 5 PSB > Med Lev	Model 6 PSB <= Med Lev	Model 7 PB > Med Lev	Model 8 PB <= Med Lev	Model 9 PSB > Med ROA	Model 10 PSB <= Med ROA	Model 11 PB > Med ROA	Model 12 PB < = Med ROA
$SACR_{t-1}$	-0.247***	-0.123***	0.872***	0.196**	-0.170***	-0.203***	0.111	0.397***	-0.251***	-0.166***	0.245*	0.288***
	(0.051)	(0.047)	(0.189)	(0.094)	(0.047)	(0.054)	(0.139)	(0.119)	(0.056)	(0.042)	(0.127)	(0.099)
$Leverage_{t-1}$	-0.005	-0.008	0.005	0.018	-0.008	0.015	-0.051	0.012	-0.048	-0.004	-0.023	0.021*
	(0.009)	(0.009)	(0.041)	(0.028)	(0.007)	(0.023)	(0.032)	(0.089)	(0.031)	(0.006)	(0.098)	(0.011)
ROA_{t-1}	0.010	0.011*	-0.009	0.052***	-0.007	0.011*	0.105**	0.021	0.000	0.013*	0.027	0.043
	(0.010)	(0.007)	(0.012)	(0.020)	(0.012)	(0.007)	(0.047)	(0.024)	(0.011)	(0.008)	(0.024)	(0.029)
$Tangibility_{t-1}$	-0.207	-0.135	-5.189***	-1.011***	0.207	-0.306	-1.181	-2.227***	-0.185	-0.127	-1.735**	-1.872***
	(0.375)	(0.237)	(1.938)	(0.391)	(0.310)	(0.273)	(0.875)	(0.660)	(0.304)	(0.251)	(0.684)	(0.628)
$Z\text{-}score_{t-1}$	0.046	-0.014	-0.043	-0.027	0.102*	0.003	-0.729***	-0.019	-0.036	0.03	-0.025	-0.103
	(0.038)	(0.027)	(0.073)	(0.044)	(0.058)	(0.024)	(0.191)	(0.044)	(0.038)	(0.028)	(0.053)	(0.074)
$Log\ asset_{t-1}$	-0.184*	-0.431***	-0.547**	-0.449***	-0.408***	-0.396***	-0.547***	-0.603***	-0.387***	-0.383***	-0.500***	-0.688***
	(0.095)	(0.073)	(0.247)	(0.120)	(0.062)	(0.069)	(0.163)	(0.105)	(0.064)	(0.053)	(0.105)	(0.125)
Constant	2.000*	2.650***	3.776	2.699**	1.858**	2.989***	5.853***	3.325***	4.666***	2.454***	2.932**	4.532***
	(1.155)	(0.768)	(2.517)	(1.277)	(0.785)	(0.796)	(1.923)	(1.164)	(0.705)	(0.641)	(1.342)	(1.293)
Firm year	1017	1340	298	711	1332	1183	501	497	1211	1336	502	594
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.148	0.177	0.417	0.261	0.266	0.293	0.328	0.341	0.293	0.253	0.330	0.364

Table 11: Political Influences and lending decisions of PSBs & PBs- Long term borrowings

The dependent variable used in all models is a dummy which takes the value 1 if the firm has borrowed long term loans exclusively from PSBs in the current year and 0 if the firm has borrowed from PBs exclusively or a mix of PSB/PB in the same year. PIP takes the value one if the firm is potentially benefited by the political influences with the previous ruling regime as per the event study detailed in the paper and 0 otherwise. PIC takes the value one if the firm is potentially benefited by the political influences with the current ruling regime and 0 otherwise. The other control variables are chosen as per the significance seen in baseline estimation. All models have been controlled for industry and year fixed effects. Standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Each model is for a sub period based on ruling or incumbent affiliation and the years under study is shown in the years in study variable in the table.

	Exclusive Borrowing from PSBs				Exclusive Borrowing from PBs			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
PIP*Previous Regime	**0.446*** **		-0.859		**0.600*** **		1.584	
	(0.151)		(0.662)		(0.218)		(1.018)	
PIC*Previous Regime		**-0.509*** **		-0.706		0.064		-3.947*
		(0.152)		(0.542)		(0.191)		(2.038)
Current Regime Dummy	-0.061	-0.088	0.687**	0.906**	0.163	0.076	-0.508	-0.135
	(0.089)	(0.092)	(0.314)	(0.373)	(0.143)	(0.143)	(0.899)	(0.966)
PIP*Current Regime	-0.284		**-3.505** **		-0.442		2.087	
	(0.252)		(1.713)		(0.362)		(1.482)	
PIC*Current Regime		0.035		-0.926		0.170		3.635
		(0.197)		(0.794)		(0.229)		(2.337)
PIP*$LACR_{t-1}$*Previous Regime			0.243				-0.237	
			(0.200)				(0.310)	
PIC*$LACR_{t-1}$*Previous Regime				0.101				**1.019** **
				(0.140)				(0.438)
PIP*$LACR_{t-1}$ *Current Regime			**0.897** **				-0.580	
			(0.424)				(0.374)	
PIC*$LACR_{t-1}$ *Current Regime				0.212				**-0.748**
				(0.196)				(0.499)
$LACR_{t-1}$ * Current Regime			-0.176**	-0.220**			0.277	0.199
			(0.077)	(0.093)			(0.197)	(0.222)
$LACR_{t-1}$*Previous Regime			-0.171***	-0.168***			0.208	0.08
			(0.058)	(0.062)			(0.135)	(0.137)
$Leverage_{t-1}$			-0.002	-0.004			-0.026	-0.02
			(0.011)	(0.011)			(0.024)	(0.026)
Ln $Asset_{t-1}$			-0.345***	-0.333***			-0.352**	-0.431***
			(0.059)	(0.056)			(0.103)	(0.112)
ROA_{t-1}			0.009	0.009			-0.012	-0.007
			(0.010)	(0.009)			(0.025)	(0.024)
$Tangibility_{t-1}$			0.201	0.138			-1.445**	-1.508***
			(0.278)	(0.274)			(0.616)	(0.584)
$Zscore_{t-1}$			-0.004	-0.006			0.008	-0.016
			(0.032)	(0.030)			(0.043)	(0.038)
Constant	-0.102	-0.093	3.345***	3.266***	-1.127***	-1.100***	1.332	2.599**
	(0.421)	(0.421)	(0.967)	(0.945)	(0.401)	(0.400)	(1.120)	(1.171)
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm years	2108	2108	1285	1285	1624	1624	529	529
Pseudo R^2	0.102	0.107	0.210	0.212	0.145	0.133	0.232	0.247

Table 12: Political Influences and lending decisions of PSBs & PBs- Short term borrowings

The dependent variable used in all models is a dummy which takes the value 1 if the firm has borrowed short term loans exclusively from PSBs in the current year and 0 if the firm has borrowed from PBs exclusively or a mix of PSB/PB in the same year. PIP takes the value one if the firm is potentially benefited by the political influences with the previous ruling regime as per the event study detailed in the paper and 0 otherwise. PIC takes the value one if the firm is potentially benefited by the political influences with the current ruling regime and 0 otherwise. The other control variables are chosen as per the significance seen in baseline estimation. All models have been controlled for industry and year fixed effects. Standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Each model is for a sub period based on ruling or incumbent affiliation and the years under study is shown in the years in study variable in the table.

	Exclusive Borrowing from PSBs				Exclusive Borrowing from PBs			
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
PIP*Previous Regime	**0.299*** **		-0.482		**0.266***		0.447	
	(0.104)		(0.502)		(0.147)		(1.100)	
PIC*Previous Regime		**-0.418*** **		-0.839**		**-0.259***		-0.465
		(0.102)		(0.407)		(0.142)		(1.311)
Current Regime Dummy	-0.069*	-0.072*	0.057	0.018	0.347***	0.329***	2.440***	1.847***
	(0.038)	(0.039)	(0.212)	(0.215)	(0.063)	(0.062)	(0.663)	(0.600)
PIP*Current Regime	0.008		**-0.976**		-0.077		**-1.542***	
	(0.087)		(0.601)		(0.107)		(0.862)	
PIC*Current Regime		0.032		0.084		0.015		1.728
		(0.081)		(0.545)		(0.155)		(1.800)
PIP*$SACR_{t-1}$*Previous Regime			0.183				-0.067	
			(0.145)				(0.246)	
PIC*$SACR_{t-1}$*Previous Regime				0.127				0.125
				(0.094)				(0.273)
PIP*$SACR_{t-1}$ *Current Regime			**0.331****				0.262	
			(0.150)				(0.241)	
PIC*$SACR_{t-1}$ *Current Regime				-0.029				-0.350
				(0.125)				(0.390)
$SACR_{t-1}$ * Current Regime			-0.040	-0.022			-0.347***	-0.234**
			(0.046)	(0.048)			(0.130)	(0.117)
$SACR_{t-1}$*Previous Regime			-0.190***	-0.200***			0.475***	0.445***
			(0.040)	(0.043)			(0.103)	(0.108)
$Leverage_{t-1}$			-0.005	-0.006			0.007	0.009
			(0.007)	(0.007)			(0.022)	(0.023)
Ln $Asset_{t-1}$			-0.433***	-0.412***			-0.523***	-0.530***
			(0.057)	(0.056)			(0.098)	(0.099)
ROA_{t-1}			0.005	0.007			0.032*	0.03
			(0.006)	(0.006)			(0.019)	(0.019)
$Tangibility_{t-1}$			-0.179	-0.238			-2.397***	-2.459***
			(0.247)	(0.248)			(0.614)	(0.610)
$Zscore_{t-1}$			0.032	0.027			-0.005	0.001
			(0.024)	(0.024)			(0.041)	(0.040)
Constant	-0.374	-0.288	2.976***	2.900***	-1.186***	-1.127***	1.229	1.385
	(0.302)	(0.308)	(0.672)	(0.657)	(0.325)	(0.322)	(1.105)	(1.085)
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm years	8187	8187	2451	2451	6992	6992	1104	1104
Pseudo R^2	0.082	0.085	0.259	0.260	0.110	0.110	0.367	0.367

Table 13: Influences on lending decisions by PSBs/PBs – Business groups

The dependent variable use in Models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) or long term loans (3) exclusively from PSBs in the current year and 0 if the firm has a relationship with any other bank irrespective of borrowing status. A similar dummy variable is used for Models (2) and (4) which borrow exclusively from a PB. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB
$SACR_{t-1}$	-0.169***	0.184**		
	(0.040)	(0.076)		
$LACR_{t-1}$			-0.251***	0.240**
			(0.056)	(0.105)
BGA	0.267	-1.272**	-0.084	-0.547
	(0.258)	(0.605)	(0.335)	(0.766)
Credit rating * BGA_{t-1}	-0.033	0.207	0.029	0.152
	(0.059)	(0.129)	(0.085)	(0.183)
$Leverage_{t-1}$	-0.005	0.000	-0.002	-0.003
	(0.006)	(0.021)	(0.007)	(0.013)
ROA_{t-1}	0.007	0.020*	0.013	-0.024
	(0.005)	(0.011)	(0.008)	(0.014)
$Tangibility_{t-1}$	-0.255	-1.441***	0.117	-1.048**
	(0.205)	(0.417)	(0.225)	(0.411)
$Z\text{-score}_{t-1}$	0.019	-0.009	-0.004	-0.013
	(0.020)	(0.032)	(0.026)	(0.041)
Log $asset_{t-1}$	-0.426***	-0.418***	-0.336***	-0.444***
	(0.047)	(0.066)	(0.047)	(0.068)
Constant	2.878***	1.766**	3.410***	1.834**
	(0.579)	(0.870)	(0.853)	(0.790)
Firm years	3151	1748	1702	999
Industry Effects	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes
Pseudo R^2	0.273	0.308	0.228	0.256

7. Conclusion

The characteristics of government ownership in banks, such as implicit guarantees and lack of cost implications as a result of increased riskiness, suggest that the state-owned banks in India have relatively weak influence of market induced discipline. Such an environment is conducive to promote moral hazard and might result in relatively riskier lending decisions from these banks. Using a novel bank-firm level data, we try to examine the lending decisions of state owned Indian banks and compare the relative riskiness of the lending decisions of PSBs and PBs. We find evidence that PSBs have greater propensity to lend to

observably riskier firms relative to PBs. The result is robust with additional covariates, alternative estimations and out of sample test using information of unrated firms.

We further analyse the possible reasons for this difference in the lending behaviour using a subsample analysis based on fundamentals, differences based on sector type, and other plausible channels of influencers of lending decisions. While we do not find that the PSBs discriminate based on size, leverage or profitability in their lending decisions, we find that they consistently lend to riskier firms. The PBs, on the other hand, do provide LT credit to firms with lower leverage and higher profitability. The analysis on the potential influencers of the lending decisions reveals that potential benefit out of political regimes may matter. A firm that would potentially benefit from the ruling regime has a higher likelihood of banking exclusively with PSBs.

The findings of this paper contribute to the literature on market discipline, disclosures and moral hazard in banking systems dominated by state ownership. The results do reveal that there is a systematic difference in the lending decision of banks which vary on the market induced discipline. The findings of imprudent lending standards by the PSBs presented in the study are corroborated by the accentuating banking stress in India. While the most recent announcement regarding the recapitalization of the PSBs is in the best interest of the stability of the Indian banking sector, it would be advisable for policymakers to consider the lending behaviour of PSBs revealed in the study to formulate policies aimed to improve the monitoring and accountability of PSBs.

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Appendix

Appendix Table A1: Average Credit Rating by Bank ownership type

The table provides SACR and LACR for firms by ownership type of banks. No data on banks is for firms which don't report the active banking relationships that the firm has. Firms borrowing exclusively from PSBs are consistently the least rated (in means) firms.

LACR	2011	2012	2013	2014	2015	2016
Exclusive PSB	3.49	3.28	3.27	3.22	3.27	3.29
Mix PSB/PB	4.23	4.10	4.03	4.00	4.09	4.11
Exclusive PB	4.46	4.25	4.16	4.19	4.25	4.10
No Data on Banks	3.59	3.54	3.49	3.58	3.70	3.95
SACR						
Exclusive PSB	3.90	3.46	3.36	3.32	3.30	3.32
Mix PSB/PB	4.89	4.63	4.52	4.41	4.47	4.48
Exclusive PB	5.31	4.81	4.74	5.05	4.87	4.38
No Data on Banks	4.12	3.86	3.72	3.81	4.03	4.33

Appendix Table A2: Data definitions and sources

Variables	Definition and construction
PSBBS	This is a dummy variable which takes the value one if the firm has borrowed any short term loans exclusively from PSBs in year *t* and zero if it is borrowed short term loans exclusively from PBs or from a mix of both PB/PSB
PSBBL	This is a dummy variable which takes the value one if the firm has borrowed any incremental long term loans exclusively from PSBs in year *t* and zero if it has borrowed any incremental long term loans exclusively from PBs or from a mix of PB/PSB
PBBS	This is a dummy variable which takes the value one if the firm has borrowed any short term loans exclusively from PBs in year *t* and zero if it is borrowed short term loans from PSBs or a mix of PB/PSB
PBBL	This is a dummy variable which takes the value one if the firm has borrowed any incremental long term loans exclusively from PBs bank in year *t* and zero if it has borrowed any incremental long term loans from PSBs or a mix of PB/PSB
BGA	This is a dummy variables which takes the value 1 if the firm has a business group affiliation and 0 otherwise
PIP	This is a dummy variable which takes the value 1 if the firm is potentially benefited by the influences of the previous ruling regime based on 2014 event study and 0 otherwise
PIC	This is a dummy variable which takes the value 1 if the firm is potentially benefited by the influences of the current ruling regime based on 2014 event study and 0 otherwise
SACR	This is average credit rating of the firm given by the rating agencies in a year for short term loans or working capital loans. The rating is coded from 1-6 with 1 being the higher risk and 6 being the lowest risk.
LACR	This is average credit rating of the firm given by the rating agencies in a year for Long term loans. The rating is coded from 1-6 with 1 being the higher risk and 6 being the lowest risk.
Leverage	The ratio of total borrowing of the firm to the book value of equity.
ROA	The ratio of profit after tax to the average assets of the firm

Tangibility	This ratio captures the level of fixed assets such as plant and machinery to total assets
Z-score	This is the Altman z-score for emerging market and uses the following formula to arrive at the score: 3.25 + 6.56 *(Net Working capital/Total assets) + 3.26*(Retained earnings / Total assets) + 6.72*(PBITDA/Total assets) + 1.05*(Book value of equity/ Total liabilities). The score gives an indication of the propensity of a firm to be in distress in the future. Lower the score, higher the chances to be in distress.
Ln Asset	Natural logarithm of the total assets of a firm (in million INR), a measure of the size of the firm.

Appendix Table A3: Comparing banking relationships and borrowing

The dependent variable use in models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term loans (model 1) or long term loans (model 3) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for models (2) and (4) which borrow exclusively from PBs. All models have been controlled for industry and year fixed effects. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Models (5) and (7) have a dummy variable which takes the value 1 if the firm has exclusive relationship with PSBs and 0 otherwise. Models (6) and (8) have a dummy variable which takes the value 1 if the firm has exclusive relationship with PBs and 0 otherwise. Model (5)-(6) is different from Models (7)-(8) only in terms of the number of years. This is done so as to mimic the effect of long term data availability in the baseline estimations where we lose one year of data in estimating incremental long term borrowings. Only listed private firms were considered for this study to be consistent with the earlier study (Srinivasan & Thampy, 2017) on relationships.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB	Model 5 Exclusive Relationship with PSB	Model 6 Exclusive Relationship with PB	Model 7 Exclusive Relationship with PSB	Model 8 Exclusive Relationship with PB
$Leverage_{t-1}$	0.008*	0.006	0.010	0.007	0.017***	-0.017*	0.017***	-0.019**
	(0.004)	(0.006)	(0.007)	(0.010)	(0.004)	(0.009)	(0.004)	(0.009)
ROA_{t-1}	-0.009***	0.011**	-0.016**	0.004	-0.004*	0.001	-0.004*	0.001
	(0.003)	(0.004)	(0.006)	(0.009)	(0.002)	(0.002)	(0.002)	(0.002)
$Tangibility_{t-1}$	-0.044	-0.352**	-0.045	-0.179	0.059	-0.269**	0.059	-0.272**
	(0.111)	(0.158)	(0.184)	(0.248)	(0.082)	(0.105)	(0.086)	(0.107)
$Z\text{-}score_{t-1}$	-0.003	0.000	-0.009	0.010	-0.000*	0.000	-0.000***	0.000
	(0.003)	(0.003)	(0.011)	(0.009)	(0.000)	(0.000)	(0.000)	(0.000)
$Log\ asset_{t-1}$	-0.310***	-0.179***	-0.287***	-0.282***	-0.213***	-0.145***	-0.210***	-0.140***
	(0.020)	(0.024)	(0.032)	(0.037)	(0.015)	(0.017)	(0.016)	(0.018)
Constant	2.044***	-0.074	2.500***	0.68	0.692***	0.3	0.650***	0.266
	(0.316)	(0.348)	(0.482)	(0.517)	(0.219)	(0.201)	(0.225)	(0.204)
N	9069	8008	2338	1832	12830	12155	10772	10084
Pseudo R^2	0.166	0.139	0.171	0.187	0.135	0.144	0.137	0.140
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix Table A4: Pairwise Correlations based on the sample used for Short term borrowings

	PSBBS	PBBS	BGA	PIP	PIC	SACR	LACR	Leverage	ROA	Tangibility	Z-score	Ln Asset
PSBBS	1.00											
PBBS	-0.13	1.00										
BGA	-0.17	-0.06	1.00									
PIP	0.11	0.04	-0.12	1.00								
PIC	-0.15	-0.04	0.08	-0.13	1.00							
SACR	-0.33	0.05	0.28	-0.12	0.08	1.00						
LACR	-0.29	0.04	0.24	-0.10	0.07	0.94	1.00					
Leverage	0.01	-0.04	-0.00	-0.01	0.01	-0.20	-0.21	1.00				
ROA	-0.06	0.07	0.01	-0.02	-0.00	0.42	0.45	-0.12	1.00			
Tangibility	0.09	-0.09	0.10	-0.01	-0.09	-0.07	-0.07	0.02	-0.10	1.00		
Z-score	0.02	0.10	-0.08	0.01	-0.06	0.30	0.34	-0.19	0.64	-0.21	1.00	
Ln Asset	-0.45	-0.09	0.39	-0.15	0.25	0.42	0.33	0.02	0.04	-0.12	-0.12	1.00

Appendix Table A5.1: Estimations for Mix borrowing relationships

The dependent variable use in models (1) and (2) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) or long term loans (2) from a Mix of PSBs/PBs in the current year and 0 if the firm has borrowed exclusively from PBs or exclusively from PSBs. A similar dummy variable is used for models (3) and (4) which borrow exclusively from without industry effects. Models (5) & (6) uses a dummy variable which take the value 1 if the firm has borrowed short term loans (5) or long term loans (6) exclusively from PSBs and 0 if the firm has borrowed exclusively from PBs. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%.

	Model 1 ST Borrowing from Mix	Model 2 LT Borrowing from Mix	Model 3 ST Borrowing From Mix	Model 4 LT Borrowing from Mix	Model 5 ST Borrowing From PSB	Model 6 LT Borrowing from PB
SACRt-1	0.145***		0.166***		-0.382***	
	(0.032)		(0.030)		(0.100)	
LACRt-1		0.190***		0.165***		-0.522***
		(0.045)		(0.042)		(0.157)
$Leverage_{t-1}$	0.006	0.003	0.004	-0.002	-0.020	-0.002
	(0.006)	(0.007)	(0.005)	(0.006)	(0.041)	(0.046)
ROA_{t-1}	-0.009*	-0.008	-0.007	0.002	-0.050*	0.026
	(0.005)	(0.008)	(0.005)	(0.008)	(0.026)	(0.021)
$Tangibility_{t-1}$	0.353*	0.097	-0.124	-0.288*	1.322***	1.516**
	(0.199)	(0.211)	(0.158)	(0.161)	(0.511)	(0.644)
$Z\text{-}score_{t-1}$	-0.018	0.010	-0.025	0.004	0.026	-0.004
	(0.020)	(0.026)	(0.019)	(0.025)	(0.052)	(0.079)
$Log\ asset_{t-1}$	0.446***	0.391***	0.404***	0.371***	0.238**	0.345***
	(0.044)	(0.047)	(0.038)	(0.042)	(0.095)	(0.096)
Constant	-3.634***	-4.415***	-3.442***	-3.272***	-0.287	-0.094
	(0.577)	(0.736)	(0.344)	(0.392)	(0.982)	(1.020)
Firm years	3201	1712	3366	1850	646	394
Industry Effects	Yes	Yes	No	No	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.264	0.229	0.211	0.181	0.394	0.323

Appendix Table A5.2: Rank ordering the riskiness

The dependent variable use in models (1) and (2) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) or long term loans (2) from a Mix of PSBs/PBs in the current year and 0 if the firm has borrowed exclusively from PSBs. In models (3) and (4) the dependent variables takes the value 1 if the firm has borrowed exclusively from PBs and 0 if it has borrowed exclusively from a mix of PSBs/PBs. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%.

	Model 1 ST Borrowing from Mix	Model 2 LT Borrowing from Mix	Model 3 ST Borrowing From PBs	Model 4 LT Borrowing from PBs
SACRt-1	0.171***		0.177**	
	(0.034)		(0.079)	
LACRt-1		0.230***		0.148*
		(0.047)		(0.085)
$Leverage_{t-1}$	0.004	0.002	-0.005	-0.002
	(0.006)	(0.007)	(0.023)	(0.014)
ROA_{t-1}	-0.008	-0.012	0.019	-0.018
	(0.006)	(0.009)	(0.012)	(0.015)
$Tangibility_{t-1}$	0.252	-0.046	-1.351***	-0.838*
	(0.206)	(0.224)	(0.489)	(0.443)
$Z\text{-score}_{t-1}$	-0.018	0.007	-0.005	-0.031
	(0.021)	(0.028)	(0.038)	(0.041)
$Log\ asset_{t-1}$	0.444***	0.379***	-0.591***	-0.592***
	(0.048)	(0.049)	(0.089)	(0.093)
Constant	-3.397***	-4.213***	3.056***	3.578***
	(0.606)	(0.920)	(0.980)	(0.879)
Firm years	3049	1639	1193	662
Industry Effects	Yes	Yes	No	No
Year Effects	Yes	Yes	Yes	Yes
Pseudo R^2	0.283	0.244	0.341	0.314

Appendix Table A6: Marginal effects of SACR and LACR

The table indicates the marginal effect of SACR, columns (1)-(2) and LACR, columns (3)-(4). *** Significant at 1%, ** significant at 5% and * significant at 10%.

	(1) ST Borrowing from PSB	(2) ST Borrowing from PB	(3) LT Borrowing from PSB	(4) LT Borrowing from PB
At means Marginal effects - Baseline	-0.060***	0.009***	-0.083***	0.016***
	(0.011)	(0.003)	(0.016)	(0.005)
Average Marginal Effects - Baseline	-0.047***	0.020***	-0.068***	0.027***
	(0.009)	(0.006)	(0.013)	(0.008)
At means Marginal effects – Without D-SIBs	-0.116***	0.042***	-0.148***	0.096***
	(0.028)	(0.013)	(0.045)	(0.031)
Average Marginal Effects – Without D-SIBs	-0.087***	0.050***	-0.120***	0.097***
	(0.020)	(0.016)	(0.034)	(0.032)

Appendix Table A7: Determinants of lending decisions by PSBs/PBs – estimation with average credit rating

The dependent variable use in Models (1), (3), (5) and (7) is a dummy which takes the value 1 if the firm has borrowed short term loans (Model (1) and (5)) or long term loans (Model (3) and (7)) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for Models (2), (4), (6) and (8) which borrow exclusively from a PB. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Adding Industry effects to the estimation causes probit model to drop observations if there is no variation in the dependent variables within an industry. Hence Models (1)-(4) is shown without industry effects to illustrate the difference in the number of observations we lose while adding industry fixed effect. Model (9) uses a linear probability model with firm fixed effects. The dependent variable takes the value 1 if the firm has borrowed in an year exclusively from a PSB and 0 if it has borrowed exclusively from a from PBs or mix of PSB/PB. Models (10) and (11) use a panel fixed effects linear probability model to estimate the relative riskiness of firms borrowing from exclusive PSBs, mix of PSBs/PBs and exclusive PBs. The coefficient for average rating variable in model (11) is marginally insignificant if the standard errors are clustered at firm level, the reported standard errors in model (11) are without clustering.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB	Model 5 ST Borrowing from PSB	Model 6 ST Borrowing from PB	Model 7 LT Borrowing from PSB	Model 8 LT Borrowing from PB	Model 9 Exclusive Borrowing from PSB	Model 10 Borrowing from Mix versus exclusive PSB	Model 11 Borrowing from Mix versus exclusive PSB
Average Rating$_{t-1}$	-0.213***	0.261***	-0.232***	0.256***	-0.243***	0.285***	-0.232***	0.297***	-0.021***	0.023***	0.005*
	(0.026)	(0.050)	(0.040)	(0.075)	(0.024)	(0.047)	(0.036)	(0.070)	(0.007)	(0.006)	(0.003)
Leverage$_{t-1}$	0.000	0.004	0.000	-0.011	0.002	-0.005	0.004	-0.02	0.000	0.000	0.000
	(0.004)	(0.007)	(0.006)	(0.015)	(0.003)	(0.010)	(0.006)	(0.017)	(0.001)	(0.000)	(0.000)
ROA$_{t-1}$	0.001	0.005	0.011	-0.029**	0.003	-0.002	0.004	-0.024**	0.001	-0.001	-0.001***
	(0.004)	(0.007)	(0.008)	(0.012)	(0.004)	(0.008)	(0.007)	(0.011)	(0.001)	(0.001)	(0.000)
Tangibility$_{t-1}$	-0.114	-0.539**	0.184	-0.934***	0.226**	-0.469***	0.444***	-0.548**	0.073	-0.042	0.003
	(0.134)	(0.209)	(0.211)	(0.346)	(0.107)	(0.166)	(0.155)	(0.251)	(0.065)	(0.053)	(0.028)
Z-score$_{t-1}$	0.027**	0.002	0.015	0.000	0.018	0.005	0.009	0.011	-0.003	0.002	0.008***
	(0.012)	(0.018)	(0.024)	(0.034)	(0.011)	(0.019)	(0.023)	(0.037)	(0.005)	(0.004)	(0.002)
Log asset$_{t-1}$	-0.379***	-0.299***	-0.309***	-0.410***	-0.353***	-0.262***	-0.307***	-0.299***	-0.048	0.057**	0.005
	(0.029)	(0.039)	(0.044)	(0.062)	(0.025)	(0.038)	(0.039)	(0.054)	(0.030)	(0.026)	(0.009)
Constant	3.437***	0.129	3.678***	0.957	3.224***	-0.961***	2.829***	-0.594	0.517*	0.043	-0.044
	(0.420)	(0.492)	(0.625)	(0.661)	(0.216)	(0.300)	(0.355)	(0.462)	(0.278)	(0.218)	(0.085)
Firm years	6797	5642	1912	1209	7016	7016	2074	2074	7136	6822	4404
Industry Effects	Yes	Yes	Yes	Yes	No	No	No	No	Yes	No	No
Firm Fixed Effects	No	No	No	No	No	No	No	No	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.247	0.192	0.231	0.222	0.201	0.088	0.183	0.104	0.888	0.250	0.001

Appendix Table A8: Controlling for past borrowing relationship

The dependent variable use in models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) or long term loans (3) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for models (2) and (4) which borrow exclusively from a PB. All models have been controlled for industry and year fixed effects. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. The past borrowing dummy takes value 1 if the firm has borrowed at least once in the last 3 years.

	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing from PSB	Model 4 LT Borrowing from PB
$SACR_{t-1}$	-0.172***	0.274***		
	(0.043)	(0.083)		
$LACR_{t-1}$			-0.198***	0.307***
			(0.058)	(0.110)
$PSBBS_{t-1}$	2.594***			
	(0.279)			
$PSBBS_{t-1}$*$SACR_{t-1}$	-0.027			
	(0.068)			
$PBBS_{t-1}$		5.631***		
		(1.281)		
$PBBS_{t-1}$*$SACR_{t-1}$		-0.538**		
		(0.266)		
PSBBLt-1			1.844***	
			(0.355)	
PSBBLt-1*LACRt-1			0.068	
			(0.094)	
PBBLt-1				1.761
				(1.210)
PBBLt-1*LACRt-1				0.204
				(0.286)
$Leverage_{t-1}$	-0.008	-0.019	-0.009	0.001
	(0.009)	(0.046)	(0.010)	(0.011)
ROA_{t-1}	0.006	0.011	0.01	-0.031
	(0.007)	(0.012)	(0.012)	(0.022)
$Tangibility_{t-1}$	-0.132	-1.087**	0.187	-2.090***
	(0.239)	(0.530)	(0.241)	(0.521)
$Z\text{-}score_{t-1}$	0.004	0.028	0.004	-0.03
	(0.030)	(0.049)	(0.034)	(0.075)
Log $asset_{t-1}$	-0.304***	-0.493***	-0.393***	-0.441***
	(0.046)	(0.080)	(0.045)	(0.075)
Constant	0.201	1.666*	3.252***	2.180**
	(0.586)	(0.947)	(0.678)	(0.968)
Firm years	1990	1062	1374	648
Industry Effects	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes
Pseudo R^2	0.545	0.606	0.409	0.452

Appendix Table A9: Estimations with Age of firm and Interest coverage as additional controls

The dependent variable use in models (1) and (3) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) or long term loans (3) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for models (2) and (4) which borrow exclusively from a PB. All models have been controlled for industry and year fixed effects. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%.

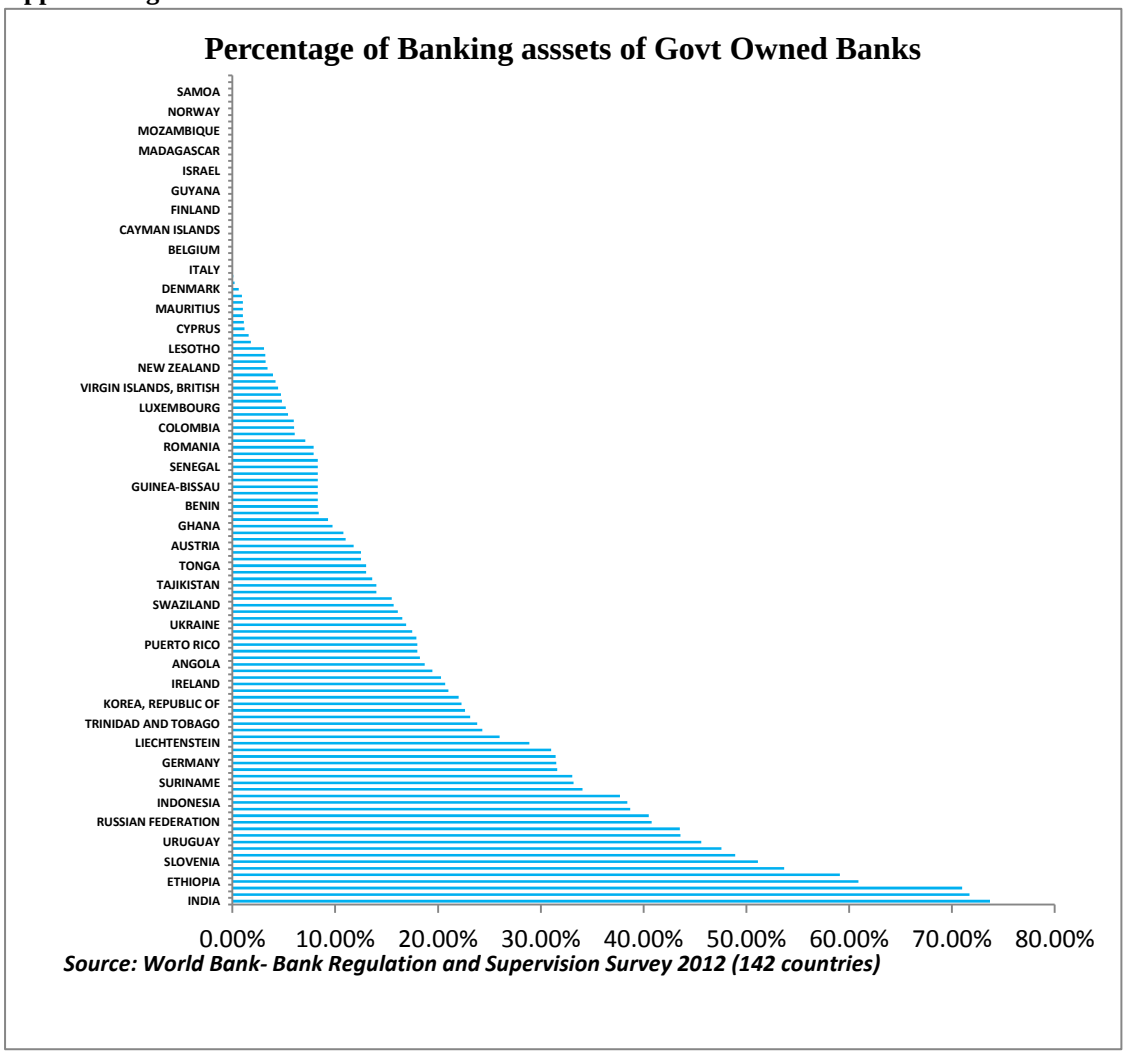
	Model 1 ST Borrowing from PSB	Model 2 ST Borrowing from PB	Model 3 LT Borrowing From PSB	Model 4 LT Borrowing from PB
SACRt-1	-0.180***	0.216***		
	(0.033)	(0.066)		
$LACR_{t-1}$			-0.245***	0.278***
			(0.047)	(0.084)
$Leverage_{t-1}$	-0.005	-0.004	-0.001	0.000
	(0.006)	(0.025)	(0.007)	(0.016)
ROA_{t-1}	0.006	0.021*	0.013	-0.027*
	(0.005)	(0.012)	(0.008)	(0.015)
$Tangibility_{t-1}$	-0.203	-1.391***	0.106	-1.089**
	(0.206)	(0.409)	(0.228)	(0.430)
$Z\text{-score}_{t-1}$	0.023	0.014	-0.002	-0.017
	(0.021)	(0.036)	(0.027)	(0.040)
$Log\ asset_{t-1}$	-0.413***	-0.444***	-0.343***	-0.437***
	(0.045)	(0.066)	(0.046)	(0.073)
Age_t	-0.001	0.008**	0.003	-0.001
	(0.003)	(0.004)	(0.003)	(0.005)
$Interest\ Coverage_{t-1}$	0.000	0.000	0.000	0.002
	(0.000)	(0.000)	(0.000)	(0.003)
Constant	2.945***	1.357	3.369***	1.663**
	(0.602)	(0.872)	(0.851)	(0.799)
Firm years	3143	1743	1670	973
Industry Effects	Yes	Yes	No	No
Year Effects	Yes	Yes	Yes	Yes
Pseudo R^2	0.275	0.310	0.230	0.258

Appendix Table A10: Subsample analysis based on fundamentals – Long term borrowings

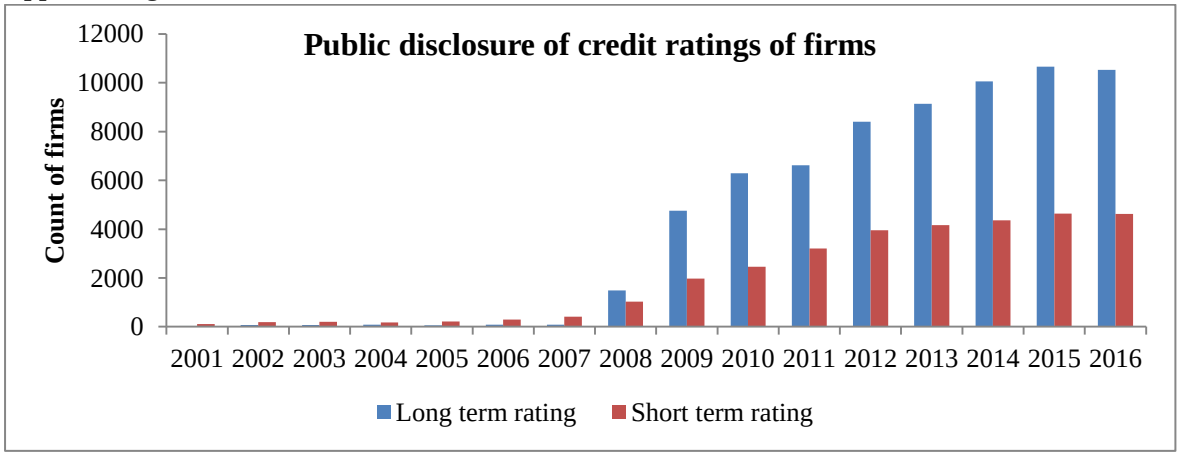
The dependent variable use in Models (1)-(2), (5)-(6) and (9)-(10) is a dummy which takes the value 1 if the firm has borrowed short term loans (1) exclusively from PSBs in the current year and 0 if the firm has borrowed exclusively from PBs or mix of PSB/PB. A similar dummy variable is used for Models (3)-(4), (7)-(8) and (11)-(12) which borrow exclusively from a PB. All models have been controlled for industry and year fixed effects. Robust standard errors clustered at firm level are presented in parenthesis. *** Significant at 1%, ** significant at 5% and * significant at 10%. Med refers to the median value for the respective analysis variable in the baseline specification for long term borrowing. While the probit regressions are run with full sample which is 1702firm year observations for LT sample, the drop in observations in a particular estimation is dependent on the relative variation in dependent variable with an industry. Hence even if we estimate below and above median, observations need not be distributed equally.

	Model 1 PSB > Med Size	Model 2 PSB < =Med Size	Model 3 PB > Med Size	Model 4 PB < =Med Size	Model 5 PSB > Med Lev	Model 6 PSB < =Med Lev	Model 7 PB > Med Lev	Model 8 PB < =Med Lev	Model 9 PSB > Med ROA	Model 10 PSB <= Med ROA	Model 11 PB > Med ROA	Model 12 PB < =Med ROA
$LACR_{t-1}$	-0.194***	-0.239***	0.642**	0.168	-0.225***	-0.251***	0.259*	0.249**	-0.167*	-0.288***	0.087	0.496***
	(0.067)	(0.067)	(0.261)	(0.132)	(0.066)	(0.077)	(0.138)	(0.126)	(0.101)	(0.057)	(0.162)	(0.115)
$Leverage_{t-1}$	0.002	-0.005	0.016	-0.100**	-0.001	0.007	0.009	0.077	-0.045	-0.001	-0.027	-0.003
	(0.008)	(0.013)	(0.024)	(0.039)	(0.007)	(0.027)	(0.020)	(0.072)	(0.049)	(0.007)	(0.080)	(0.012)
ROA_{t-1}	0.013	0.011	-0.044	0.03	-0.029*	0.027**	0.068*	-0.039**	-0.013	0.044***	-0.008	-0.058***
	(0.013)	(0.011)	(0.051)	(0.021)	(0.015)	(0.012)	(0.038)	(0.020)	(0.020)	(0.013)	(0.030)	(0.021)
$Tangibility_{t-1}$	-0.248	0.357	-1.285	-0.521	0.039	0.371	0.458	-1.571***	0.348	-0.076	-2.090***	-0.426
	(0.396)	(0.285)	(0.861)	(0.451)	(0.352)	(0.322)	(0.691)	(0.559)	(0.321)	(0.300)	(0.799)	(0.425)
$Z\text{-}score_{t-1}$	0.012	-0.027	0.128	-0.128	0.245***	-0.064	-0.537***	0.012	-0.044	-0.005	0.001	-0.027
	(0.043)	(0.036)	(0.083)	(0.081)	(0.080)	(0.043)	(0.159)	(0.040)	(0.052)	(0.037)	(0.077)	(0.044)
$Log\ asset_{t-1}$	-0.183*	-0.365***	-0.106	-0.740***	-0.367***	-0.347***	-0.650***	-0.478***	-0.338***	-0.390***	-0.619***	-0.376***
	(0.099)	(0.083)	(0.254)	(0.138)	(0.067)	(0.067)	(0.111)	(0.110)	(0.070)	(0.061)	(0.131)	(0.099)
Constant	2.320**	3.044***	-3.608	4.980***	3.901***	3.804***	5.104***	2.405**	4.712***	6.080***	3.791***	-0.624
	(1.080)	(0.903)	(2.726)	(1.192)	(0.848)	(0.923)	(1.560)	(0.992)	(1.093)	(0.761)	(1.233)	(0.926)
Firm year observations	638	820	154	432	791	788	231	421	772	802	374	263
Industry Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pseudo R^2	0.133	0.179	0.260	0.305	0.269	0.259	0.337	0.258	0.208	0.299	0.334	0.268

Appendix Figure 1



Appendix Figure 2



Source: CMIE Prowess database