Credit Constraints, Bank Incentives, and Firm Export: Evidence from India

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Abstract

This paper estimates the impact of credit constraints on firms' export. The study used detailed panel data from Indian manufacturing and service firms that provide a firm-specific measure of credit access based directly on firms' annual financial statements. I was able to map these firms with the kind of banks they were borrowing. The study showed that firms borrowing from state-owned banks are less likely to exit the export market than those not borrowing from them. After controlling for liquidity and other relevant firm attributes and accounting for the endogeneity of firms borrowing from state-owned banks, the highly leveraged firm has a 1.6 percentage point lower probability of leaving the export sector and it decreases by a further 2.6 percentage point if borrowing from at least one of the state-owned banks missing their priority sector lending target. The study further showed that leveraged firms borrowing from more than one bank are less likely to leave the export sector. The analysis did not find any significant effect of policy change on firms trying to enter the export market. There was no significant effect of the policy change on non exporting small and medium enterprises. Using an indirect definition of productivity showed that the policy change did not affect the productivity of the leveraged firms.

JEL Classification: F1, G20, G21, O53

Keywords: International Trade, Banking, Soft Budget Constraints, India

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1 Introduction

The factors that affect firms' entry into, and exit from, the export sector have received growing attention in recent years. The dynamics of entry and exit decisions are different. For instance, when entering the export sector, a firm has to overcome relevant start-up costs,[1] whereas in the case of exit, the firm has already overcome that barrier but perhaps has found that it could not sustain the running costs to cater to both the domestic and the export market. The main question explored in this paper is the role played by the banking sector in affecting entry and exit decisions from export. Specifically, we ask: How is the likelihood of a firm's survival in the export sector influenced by credit market factors, especially the incentives of lending banks? We address this question by studying the experience of an emerging economy, India, where credit market frictions are allegedly very severe.

Generally, firms have two means of financing their activities: internally from retained earnings and externally by borrowing from banks and other financial institutions. The ease with which firms can access financial markets can have an important effect on their decisions. If a firm cannot gain access to adequate financing, it can be significantly hampered in its export decisions both on the extensive and intensive margins. Indeed, credit constraints have been shown to be an important determinant of international trade flows.[2].

To carry out our analysis, we exploit rich panel data at the firm level from India. Since the liberalization of its economy in the early 1990s, India has seen a large increase in export participation among its firms (imports were already high before the liberalization process). Further, with the advent of the new millennium and the dot-com boom, Indian exports have taken off, led by the service sector. We contribute to the empirical literature on the trade-finance linkages by establishing a causal relationship between banks' lending incentives and the exit/survival decision of exporting firms for a panel of around 8,000 Indian firms, which constitute about 40% of total exports and contribute about 45% to the value added in manufacturing.[3] We use information about the leverage ratio and liquidity ratio of the firms as an indicator of their financial fragility. We also use information on bank borrowing by these firms, including the type of their lending banks. The Indian banking system is largely dominated by state-owned banks in its loan and deposit markets. A broad literature has demonstrated that state-owned banks have different incentives in their lending decisions and standards relative to privately owned banks.

The main hypothesis of this paper is that, through state-owned bank, the government created a setting conducive to a problem of soft budget constraints for exporters. In India, the government makes conscious efforts to support various industries and micro, small and medium enterprises (MSMEs)

[1] Melitz, 2003
[2] Manova 2008, 2013; Minetti and Zhu 2011
[3] Kale, 2017

by mandating public sector banks to offer easy loans to them. The Reserve Bank of India mandates "domestic scheduled" banks to provide easy loans to these enterprises under the Priority Sector Lending program.[4] The goal of granting easy loans to such firms by state owned banks may induce a soft budget constraint issue, whereby a highly leveraged firm is able to remain in the export market even though it wouldn't in a non-distorted credit market (i.e., borrowing under a situation with no mandates).

The results are robust to various estimation approaches. In particular to assuage concerns about the endogeneity of export we exploit as a quasi-experiment a policy change occurred in July 2012. This policy change was related to lending by domestic scheduled banks under the priority sector lending program of the Reserve Bank of India. The idea of priority sector lending was to facilitate a holistic development of the economy through the support of the banking sector. Till 2012, export credit was considered as part of the priority sector only for foreign banks with 20 or less bank branches. But, since micro, small or medium enterprise and agriculture sector comprise a sizable part of India's export sector, it was thought that it would be appropriate to extend export credit as a part of priority sector lending also to state-owned banks to facilitate the flow funds to exporting firms. Thus, in July 2012 the Reserve Bank of India mandated that state-owned banks would also be allowed to register export credit as priority sector lending. Since micro, small or medium enterprises and agriculture sector comprise a sizable part of India's export sector, it was thought that it would be appropriate to extend export credit as a part of priority sector lending also to state-owned banks to facilitate more funds to exporting firms. This policy change allegedly created a distortion in credit access for exporting firms. In particular, it induced an environment conducive to soft budget constraints for these firms (banks were looking for easy lending options), leading to even inefficient firms being able to remain in the export market.

After controlling for liquidity and other relevant firm attributes and accounting for the endogeneity of firms borrowing from public sector banks, we find that the probability of exiting the export market is 1.6% lower for firms borrowing from a bank. That probability shrinks by a further 2.7% for a highly leveraged firm that borrows from public sector banks.

We conduct several robustness checks and extensions of the baseline results. First, we establish that firms trying to enter the export market do not benefit from the policy change. The results for entering firms are indeed insignificant, showing that the policy change does not affect entrants. This conclusion carries through when we consider non-exporting small and medium enterprises and agricultural firms. Second, we look at the effect of the policy change on the productivity of firms, by using an indirect definition of productivity. We do not find any long-term effect of the policy change on firms' productivity. This suggests that the policy change in priority sector lending helping leveraged firms

[4] Reserve Bank of India Notification, 2012

remain in the export market by a creating soft budget constraint, rather than enhancing their long-term productivity.

The remainder of this paper proceeds as follows. Section 2 provides a review of literature. Section 3 covers the institutional details of the Indian economy, while section 4 describes the data. Section 5 specifies the empirical design, and section 6 presents the results. Section 7 contains robustness check for the empirical model. Section 8 concludes and discusses avenues for further research.

2 Review of Literature

The previous literature was divided between the dynamics of entering or exiting export markets for firms concerning some institutional- or country-specific factors and the effects of financial constraints on exporting firms' extensive and intensive margins.

There is a growing body of literature on export dynamics. This literature looks at the extensive margin of exports and studies what factors determine a firm's decision to enter, exit, or continue in an export market. Eaton et al. (2008) showed a significant turnaround in export markets, finding that nearly half of exporters were new entrants. Further, these new exporters are generally very small compared to average exporters, and most of them exit the market in the following year. This paper did not look at why firms are failing to continue exporting and are leaving the export market or why they are continuing in it. At the same time, Fernandes et al. (2015) analyzed micro-level data across several countries to study exporter behavior and how it varied across countries of different sizes and at various stages of development. If high-productivity firms are highly constrained and fail to invest in case of a developing economy, exporters should be relatively small in such economies (Bento and Restuccia, 2014; Hsieh and Klenow, 2009; Hsieh and Olken, 2014). This paper looks at a similar issue where most exporters in India are small and medium enterprises, which is attributed to credit constraints to productive firms. Another critical aspect of export dynamics also depends on the institutional strength of the countries to which the firms are exporting. Araujo et al. (2015) covered this issue in their paper and showed that firms are more comfortable doing business in countries with strong institutions. Chaney (2014) developed a model for international network formation, where firms gather information about future partners from current ones. Besedes et al. (2014) explored how credit constraints in the origin country affect import growth at the product level in the European Union and the United States. These papers looked at institutions and levels of development of home and foreign countries for export dynamics. We plan to look at individual firms' characteristics and analyze the credit constraint side of a firm and what role this plays in the firm deciding to exit or continue in an export market.

The issue of credit constraint in exporting firms has recently gained a lot of attention in the interna-

tional trade literature. Manova (2008) discussed the presence of financial frictions and how borrowing constraints vary across industries and affect the sectoral composition of a country's exports by limiting investment opportunities. In addition, Manova (2013) constructed a theoretical model that introduces credit constraints into a heterogeneous firm model (Ã la Melitz, 2003). She concluded that credit constraints affect a firm's domestic production, extensive margin, and intensive margin, respectively. Minetti and Zhu (2011) covered the issue of credit constraint and the ability of firms to export using micro-level data from Italy. The industrial structure in Italy is primarily small and medium-sized enterprises (SMEs), and for them, the primary source of finance comes from banks. Similar conclusions were drawn for countries like China.[5] Most of the papers in the literature use manufacturing exporting firms as part of their study, whereas in this study, the data covers non-financial firms, both manufacturing and service based, which shows that credit constraint is not limited to the manufacturing sector only.

This paper tries to merge these branches of the literature in an emerging economy where the financial sector isn't developed and banks are a significant source of credit for firms. The study becomes more interesting for India, where the majority share of loans disbursed is by state-owned banks. The existing literature primarily examines regions that are historically known to have an efficient banking system. Hence, credit constraint is only an issue from the demand side and not from the supply side. Most of the export dynamics literature emphasized firms trying to enter the export market, and not much study related to exiting firms. I specifically look at firms in the export market and factors that can affect their exit. I am trying to combine firms' decisions to leave/stay in the export market with the type of banks they borrow. The analysis uses panel data from India. The reason for using data from an emerging economy was to look at the effect of credit constraints on a firm's decision to exit or continue in an export market. Here, the question becomes even more interesting as the issue of credit constraint is facilitated not only from the firm side but also from the bank side due to the type of banks present in the Indian banking system - discussed this part under the Indian banking system. I will do a causal analysis of the impact of borrowing from a state-owned bank on a highly leveraged firm to stay in the export market. I will further see whether such an effect is limited to firms already in the export market or those trying to enter. Another contribution is the novel data I created for the study; I have made data that contains firm and bank-related financial and non-financial information. Along with this, the data also have the mapping of firms borrowing from various banks. This mapping makes the data unique as it helps find the type of banks a firm is borrowing. The idea is to create a generic model that could be replicated to any emerging economy or even a set of emerging economies.

[5] Feenstra, Li, and Yu (2014)

3 Institutional Background

3.1 Banking Sector in India

In recent years, the Indian banking sector has witnessed the emergence of many private banks and several large foreign banks. Since the liberalization of the banking sector and economy at large in 1991, the Reserve Bank of India has periodically distributed banking licenses to new banks and allowed foreign banks to operate retail banking in India. However, by and large, the banking sector is still dominated by the state-owned banks (these are corporate banks in which the government is the majority shareholder, also known as public sector banks). For example, around two thirds of total deposits are with the state-owned banks, which disburse approximately 70% of total loans and advances.[6] Also, state-owned banks hold the majority of assets; this trend not only seen for total assets but also loans and advances. This share is declining over time, albeit it still remains very high. Figure 1 shows the share of total assets as well as that of loans and advances over time.[7] Clearly, the share of assets and the share of bank advances have declined over time for state-owned banks. However, the combined share is around 70%, which shows a great dependence of firms and households to state-owned banks for access to credit. Hence, it is important to look at the effect of public banks' lending to firms and households, respectively, compared to private banks (foreign banks can be neglected given their low penetration and share). State-owned banks were heavily regulated by the Reserve Bank of India, which has led to a constraint in borrowing for different firms. It was addressed to some degree with a change in the lending policy by the Reserve Bank of India after 1997 in line with the Nayak Committee recommendations. These recommendations provided more flexibility to the state-owned banks to disburse loans than before. Although even after these recommendations, the Reserve Bank of India still retained an instrumental role in determining bank lending policy (public sector) to individual borrowers. Banerjee, Cole, and Duflo (2004) suggested that state-owned banks in India were reluctant to engage in fresh lending decisions. Inertia plays a crucial role in explaining the behavior of the loan officers in state-owned banks. It is worth noting that the government owns public banks, so the loan officer is treated as a public servant. There is no incentive structure in place to reward loan officers bringing in more loans, while, on the other hand, there is a chance of them being charged with corruption or some form of impropriety.[8] Banerjee, Cole, and Duflo (2004) further validated this in their study.

3.2 Indian Exporting Market

The Indian economy has gained considerable momentum over the last two decades, achieving and sustaining a high annual GDP growth rate. This high growth rate can, in part, be attributed to the growing contribution of the export sector to the economy. Historically, post-independence, India has focused

[6] Reserve Bank of India 2018
[7] Reserve Bank of India, 2018
[8] Kapoor et al., 2012

on self-reliance, which has meant a minimal dependence on international trade as a source of income. Due to this, a large number of people still live in abject poverty. To address this, the central government has sought to improve the well-being of people by adopting a strategy of 'import-substituting' industrialization. The government developed a complex, extensive, and often costly system of price controls and quantitative restrictions to implement this.[9]

Since the start of the millennium, the volume of export in India has been increasing, and this can be seen through exports share of GDP, which has been growing over time. Figure 2 shows exports as a share of GDP for India since 2002. From the figure, the share of exports has been growing (albeit a drop in 2009 due to the financial recession of 2007), and on average, exports account for around a fifth of the total GDP of India. This makes it essential to study the export market and factors affecting the exporting decision of various firms in India. Another characteristic of the Indian exporting market is the share of micro, small and medium enterprises (MSME here onward) involved in exporting activities; this has also been seen for other economies, be it emerging (Eaton et al., 2008) or developed (Minetti and Zhu, 2011). In the case of India, the share of MSME exports to total exports has been increasing over time, particularly since the global financial crisis of 2007. Since 2002, the share was primarily flat, declined in 2008 and 2009, after that, it increased and reached about 50% of total export. Figure 3 validates this fact, showing that from 2012 onward, the increase has been much more significant. Hence, it has become essential to look at the banking sector more carefully given the inability of these firms to easily borrow from the bond or equity markets, leaving banks as their best bet for accessing credit.

3.3 Priority Sector Lending

Priority sector lending is an important role given by the Reserve Bank of India to the banks for providing a specified portion of the bank lending to a few specific sectors, like agriculture and allied activities, micro and small enterprises, poor people for housing, students for education, and to other low-income groups and weaker sections. This is essentially meant to support the all-round development of the economy as opposed to focusing only on the financial sector. At a meeting of the National Credit Council held in July 1968, it was emphasized that commercial banks should increase their involvement in the financing of priority sectors, namely agriculture and small-scale industries etc.

Presently, Priority sector lending consists of the following categories:

1. Agriculture
2. Micro, small and medium enterprises (MSMEs)

[9] Mukherjee et al., 2012

3. Export credit
4. Education
5. Housing
6. Social Infrastructure
7. Renewable Energy
8. Others

Additional details related to priority sector lending are in the Appendix.

4 Data

The data for this paper are from the Prowess database from the Center for Monitoring the Indian Economy (CMIE), a private think-tank that provides firm-level data on all companies that are traded on India's major stock exchanges (Bombay Stock Exchange and National Stock Exchange) and several other public sector undertakings, it also has data of firms that are not publicly traded. The Prowess database comprises of rich panel data and is updated on a regular basis. The Prowess database has been used in several studies, including Bertrand et al. (2002), Khanna and Palepu (1999), Fisman and Khanna (2004), Topalova (2007), Kapoor et al. (2012), and Goldberg et al. (2010).

The Prowess database contains information primarily from the annual financial statements and balance sheets of listed and non-listed companies. One benefit of this database is that it contains information on manufacturing as well as on service sector firms. Since India's service sector contributes a major share to GDP, it is really important to see how the service sector industries fare in the export market. The coverage of the Prowess database is quite extensive, whereby all the firms put together account for 75% of corporate taxes and 95% of the excise duty collected by the Indian government. [10] For all these firms, Prowess contains detailed information (compiled from audited annual accounts, stock exchanges, company announcements, etc.) on 1500 items, including quantitative information on firms production, sales, export earnings, profitability, liabilities, assets, capital, cash flow, expenditure on capital goods, raw materials, power and fuel, labor, ownership, age, etc. It also contains detailed data on financial variables, like the amount of borrowing, bank borrowing, other financial institutional borrowing, and secured and unsecured debt. The database also categorizes firms by industry according to the 12 character alphanumeric ISIN code (used to uniquely identify a security, used for trading and settlement). The list of firms spans the entire industrial composition of the Indian economy.[11] In this paper, I use firm-level data from 2002 to 2017 to cover a large span of time period, including the great financial recession of 2007 in the mid-range of the data. Along with using the firm-level data,

[10] Kapoor et.al.(2012)
[11] Prowess CMIE website

this database also provides extensive information on the banking side too, like, age, government ownership, tier 1 capital, non-performing assets, deposits, borrowing, liabilities, cash flow, investments, etc. Along with the information related to the firm and bank-specific variables, I was able to map the list of banks that are lending to firms. Since the ownership of the banks is known to us, we can easily see the effect on firms of borrowing from different types of banks.

Firm-level information is presented in Table 1 through Table 4. Table 1 provides the total number of firms along with the breakdown by sector. In total, there are $8,128$ unique firms in the sample that were active over a period of 16 years and the sample is approximately equally distributed between manufacturing and the service sector. This is helpful for the study as India is essentially a service-led economy, so we can see the effect of the service sector on the exporting part. Similarly, Table 2 shows the breakdown of firms as per their ownership status, where it can be seen that most of them ($\approx 96\%$) are privately owned. Table 3 illustrates in a given year, how many firms are exporting. The table also covers the entry and exit rate for exporting firms on a yearly basis and shows that, on average, approximately 8% of firms enter and exit the export market each year. Figure 4 illustrates the same data and it shows the trend of the total number of exporting firms in the sample along with their exit and entry rate. The trend clearly shows that the number of exporters remained the same throughout the time period. For the exit and entry rate too, we can see that the rate did not vary a lot in the first half, but some movement around and after 2011 can be seen, when they either peaked or troughed. Similarly, Table 4 provides descriptive statistics for some of the key variables that I have used in my study as firm-level controls, like total sales, total income, export earnings, profit after tax, total liabilities, total debt, cash flow, age, etc.

The paper looks at the effect of banks and their lending to various firms and how borrowing from different types of banks (state-owned vs. privately-owned) affects firms' decision to stay in or to exit the export sector. Figure 5 clearly shows that if a firm is borrowing from at least one state-owned bank, then their exit rate is lower than those firms that are not borrowing from state-owned banks. The figure shows that the exit trend for both types of firms follows the same trend, and the exit rate peaks around 2011 for both types of firms (consistent with the overall trend). Since 2012, there has been a constant decline in the exit rate, but the decline is relatively steeper for firms borrowing from at least one public bank than those borrowing from no state-owned banks. Figure 6 shows the share of bank borrowing to total borrowing and the total liabilities of firms. This shows that, on average, bank borrowing was around 40% of total borrowing, which makes its very important to look at the effect of bank borrowing on these firms as a channel for accessing credit. For India, being an emerging market economy where the majority of exporting firms are micro, small, or medium enterprises (as seen from Figure 3, also seen from the data in figure 7), access to credit through banks is an important channel, with Figure 6 showing its importance. It is also important to note that the financial market is not well developed in India and hence access to credit through banks is an important channel, and here, state-

owned banks play the most important role (Figures 1 and 5, respectively). Figure 7 shows the share of micro, small, or medium firms and agricultural firms in the data and, on average, they comprise more than half of the total firms available in the data-set. Although, the share of micro, small, or medium firms have oscillated over time, the share of agricultural firms has remained constant over time.

An important aspect of the study is to look at the banking side and supply of credit to various firms. The bank data are presented in the Prowess database but more detailed data are looped in from the Reserve Bank of India's asset and liability database of various scheduled commercial banks for the fiscal year 2018-19. This database is used to get information regarding extensive asset and liability information for various 'scheduled commercial' banks, which can finally be used to calculate priority sector lending for various banks and to check which banks are missing their priority sector target and which do not. This will help us to check how those banks who miss their priority sector target react to the policy change be it public or private sector banks (foreign banks are not of great importance). I have merged this data with prowess database to create an extensive database for this study.

Along with the variables that were available in the data-set, I have also created some of other variables to use in the analysis. The dependent variable used in the study is a dummy variable defined as conditional on exporting in period $t-1$, whether the firm is continuing to export or is exiting the export market (1 for exiting and 0 for surviving). The exit probability is used to understand the effect of credit constraint on a firm in exiting the exporting market. Further, I use the information of the type of banks a firm is borrowing and how it helps to create a soft budget constraints for firm who are borrowing from state-owned banks compared to not borrowing from them. I also define leverage ratio (debt to capital ratio) in a broader and narrower sense (bank borrowing to total asset) and liquidity ratio (cash flow to asset ratio) in the general form, as used in most of the literature.

5 Empirical Strategy

It is reasonable to expect that credit constraints, size of firm and ownership would affect both the extensive and intensive margins of trade. Additionally, it will also affect the firms decision to enter, exit or continue in the market as well. Also, the size and ownership of the firm are important factor whether a firm will be able to borrow from market and banks. In this study I am using borrowing from banks (primarily public banks) as an indicator for credit constraint. The firms who are not able to borrow from these banks are more credit constraint and will need to borrow from market (Banerjee and Duflo (2014)) which will affect their exporting and production decision. In the preliminary analysis, I try to capture the correlation/pattern between firms' leverage, their decision to stay/exit the export market and how borrowing from banks are affecting those decisions. These preliminary analysis are not a causal inference, later I will use a policy change to establish causality.

Preliminary specification for analyzing the effects of credit constraints on the extensive margin of export for firm f in industry i at time t is:

$$E_{fit} = \alpha + \beta leverage_{ft} + \gamma X_{ft} + \varphi_i + \psi_t + \epsilon_{fit} \tag{1}$$

Where E_{fit} is the probability of a firm to exit the export market in t conditional on exporting in $t-1$. Whereas $leverage_{ft}$ is the standard leverage ratio that act as a proxy for financial constraint. X_{ft} is a vector of firm specific characteristics like size, profitability, age, ownership etc. φ_i and ψ_t are industry and time dummy.

In the above specification, size is defined as log of sales, age is just age of the firm. The expected sign for these variables should be negative as large and old firms tend to exit less if in the market. The variable of interest is 'leverage' as it captures credit constraint, an expected co-efficient should be positive, demonstrating highly leveraged firms tend to exit the market. Further, the effect of leverage may not be very obvious here as there might be firms who are highly liquid in nature and they can survive even being highly leveraged. So, I included liquidity ratio in the equation to see the effect of leverage in presence of liquidity. The specification will be:

$$E_{fit} = \alpha + \beta leverage_{ft} + \delta liquidity + \gamma X_{ft} + \varphi_i + \psi_t + \epsilon_{fit} \tag{2}$$

The co-efficient for liquidity is expected to be negative as more liquid firms will tend to stay in the export market in the short run. The argument is that the coefficient for leverage is still positive and showing that credit constraint nature of a particular firm and how it is affecting the export decision. Leverage ratio are very common measure of financial constraints in finance literature. Buch et.al. (2014) used tangible asset as a proxy for fixed cost of exporting and I can argue that tangible asset ratio is synonymous to leverage ratio. Higher tangible asset ratio means more stressed firm leading to a higher probability of exit. Buch et.al. (2014) also used cash flows (similar to liquidity) as a source of internal fund which can be used to relax financial constraint.

It is important to note that firms can get loans from the bank to relax their credit constraint and hence it becomes really important to have a look at the pattern of borrowing for these firms. As, it was discussed in the earlier section that in India more than 70% of the total loan is disbursed by the state-owned banks and remaining share is majorly serviced by handful of large private sector banks. Now, it is very important to see the effect on firms who are borrowing from a bank or have a relation with a bank on their decision to stay/exit the export market. Can it be the case that firms who are highly leveraged in term of bank borrowing (narrower definition of leverage) are staying in the export market compared to less leveraged one. If this is the case then it becomes imperative to look at the pattern of borrowing for the firms, like the type of bank they are borrowing from, number of banks they are borrowing from etc. In order to address the question of whether or not firms borrowing from a

particular type of banks are less likely to leave than the one who are not able to borrow, I include the bank borrowing dummy (or number bank borrowed from) along with the interaction between the leverage ratio and bank borrowing dummy, yielding the following specification:

$$E_{fit} = \alpha + \beta leverage_{ft} + \delta liquidity + \gamma X_{ft} + \tau bank_{ft} + \rho(leverage_{ft} * bank_{ft}) + \varphi_i + \psi_t + \epsilon_{fit} \tag{3}$$

Here, $bank_{ft}$ is a dummy for the type of bank the firm f is borrowing in period t and $leverage_{ft} * bank_{ft}$ is the respective interaction between the two. The coefficient for interaction term should be negative, implying that those firms which are borrowing from a particular type of banks are less likely to exit the export market compared to the one which are not borrowing. I have used different types of bank borrowing dummies to test the hypothesis like firms borrowing from atleast one public bank, firm borrowing from only public bank and firm borrowing from more than one bank. Also, for leverage ratio, I have used the standard definition of debt to equity ratio, asset to capital ratio. Alongside these indicators I have added bank borrowing indicators such as bank borrowing to asset ratio (which is used as a narrower definition to leverage ratio). This result will validate that those firms that are borrowing from banks are less likely to leave the export market despite being highly leveraged.

5.1 Policy Change

As discussed earlier, priority sector lending is an important role given by the Reserve Bank of India to various scheduled banks for an all round development of the economy as opposed to focusing on financial sector only. Providing export credits to exporting firms was one of the several categories where bank can provide loan under priority sector lending. Till 2012, export credit was part of priority sector for foreign banks with 20 or less bank branches, but in July 2012, the Reserve Bank of India mandated that state-owned banks were also allowed to register export credit as priority sector lending.The idea of priority sector lending was to facilitate a holistic development of the economy and India being an emerging economy, this can be achieved through banking sector. Export credit was initially assigned to foreign banks only for priority sector, the reason being their low penetration to small towns and villages where most of the fund for priority sector can be allocated. But, it was seen earlier that micro, small or medium enterprises, and the agriculture sector comprise a sizable part of India's export part; hence it made sense to add export credit to state-owned banks as part of priority sector lending to facilitate more funds to exporting firms.

This policy shift creates an exogenous shock in the credit market and for firms seeking credit will increase substantially in form of export credits.[12] It is important to see how the banks who are missing

[12]Reserve Bank of India

their priority sector targets are reacting to loaning to leveraged firms after the policy shift. It can be argued that these firms who are already in the exporting market and have past relation with the banks can be seen as low hanging fruits for the banks to fulfill their target. Since, this is an exogenous shock, it can be used to treat the endogeneity that was there in bank's lending pattern to different types of firm across various industries. It is important to see how the banks who are missing their priority sector targets are reacting to loaning to leveraged firms already in the export market after the policy shift. The analysis will be a difference in difference analysis, with the policy shock of 2012 used as a time variance for exogenous shock and the treatment groups are those exporting firms who are borrowing from state-owned banks who are missing their priority sector target.
The specification with adding priority sector policy change will be:

$$E_{fit} = \alpha + \beta leverage_{ft-1} + \delta liquidity_{ft-1} + \tau PSL_{ft} + \rho(leverage_{ft-1} * PSL_{ft}) + \gamma X_{ft-1} + \varphi_i + \psi_t + \epsilon_{fit} \quad (4)$$

Here, E_{fit} , $liquidity_{ft-1}$, $leverage_{ft-1}$, and X_{ft-1} have the same definition as earlier equations, where as PSL_{ft} is defined as priority sector dummy. PSL_{ft} is the dummy variable which takes value 1 if any of the public sector bank from which a firm is borrowing misses its priority sector lending target after 2012 and 0 otherwise. This creates those firms borrowing from defaulting banks as treatment firms against those who are not borrowing from such banks. Coefficient of interest are β, τ and ρ respectively. The sign for β, τ and ρ are expected to be negative, implying that the highly leveraged firms who are borrowing from banks who are missing on their priority sector targets have a lower probability of leaving the export market than the firms who are not able to borrow from these banks.

In the previous equation I have not added the effect of public sector bank in the mix. Adding public sector banks might reduce the effect on priority sector dummy and its interaction but the the sign for interaction should still remain the same. The specification can be rewritten with bank dummy as:

$$E_{fit} = \alpha + \beta leverage_{ft-1} + \delta liquidity_{ft-1} + \tau PSL_{ft} + \rho(leverage_{ft-1} * PSL_{ft}) + \nu bank_{ft} + \gamma X_{ft-1} + \varphi_i + \psi_t + \epsilon_{fit} \quad (5)$$

Here coefficient of interests are β, τ and ρ respectively and ρ should be negative, showing that borrowing from a public sector bank who are missing the priority sector target will result in a lower probability of leaving the export sector.

6 Results

6.1 Results without bank information

Table 5 presents the baseline results for the effect of the leverage ratio on firms decision to exit or continue in the export market. Here, I am looking at different definitions of leverage ratio (asset to capital, debt to capital, or bank borrowing to asset ratios), while in the result I am controlling for firm-specific variables [13], year, region and industry fixed effects. The results for firm controls are quite intuitive and they make sense with respect to the exit decision of firms. Similarly, when I look at the leverage ratio coefficients, in the first 2 columns, they are positive, showing that more-leveraged firms are more likely to exit from the export market compared to those less leveraged (with a probability of 2.3%); [14] whereas in the last column, firms that are more leveraged in terms of bank borrowing have a lesser chance of exiting compared to those that cannot. If a firm is borrowing from the bank, then the probability of it exiting the export market reduces too (1.7% when borrowing from banks compared to 1.7% when borrowing from any source).[15] Clearly, there is a difference in the number of observations when I look at the result for the leverage ratio related to the debt and capital and that from bank borrowing, which is due to the fact that there are some firms that are not reporting their borrowing information, it is assumed in the study that these firms have no source of bank borrowing. It is important to point out that in all results, I am using firm-level controls along with the region, year, and industry level dummy to capture the respective fixed effects.

In Table 6, I include different indicators of liquidity ratio (cash flow in the financial activity to asset ratio and total cash flow to asset ratio) along with different measures of the leverage ratio. It is to be kept in mind that in all these results, I am using firm-level controls and the region, year, and industry specific dummies for fixed effects. Adding the liquidity ratio to the equation shows that the result with respect to the leverage ratio becomes more stronger (when I take it as the ratio of debt to capital and otherwise), showing that there is a higher probability of exit for highly leveraged firms (approximately 2.5%.[16] in both measure of leverage) However, when I look at the leverage ratio in terms of the bank borrowing to asset ratio (narrower definition), then the results are still significant and negative but smaller than the earlier result due to the effect of liquidity. It is important to note that the liquidity ratio is not significant in columns 3 and 6, but economically it makes sense. Overall, I can say that adding a liquidity ratio to the model further consolidates the fact that the more leveraged (financially constrained) firms are more likely to exit the export market compared to lesser leveraged firms.

[13] Note: Firm controls consists of age, log of sales, profit to sales ratio, ownership status

[14] Difference of 75th and 25th percentile value of leverage ratio multiplied with the coefficient of leverage ratio gives, $2.438 * 0.0095 = 0.023$

[15] Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.0069 = -0.017$

[16] Difference of 75th and 25th percentile value of leverage ratio multiplied with the coefficient of leverage ratio gives, $2.438 * 0.0103 = 0.025$

6.2 Include type of bank to the model

In the previous subsection, we saw that more-leveraged firms are more likely to exit the export market compared to others. However, when we look at leverage in terms of bank borrowing, it showed that leveraged firms have a lower probability to leave export market. Now, we further examine what happens to the firms' exit decision when we add information about type of bank a firm is borrowing into the model and interact it with the leverage ratio (both debt as well as borrowing one). Borrowing from the type of bank can be seen as a measure of credit constraint (Banerjee and Duflo (2014)), hence it can affect a firm's decision to continue or exit the export market.

6.2.1 Firms borrowing from atleast one state-owned bank

In India where more than 70% of total loans are given out by state-owned banks, it is interesting to see the effect of borrowing from a state-owned bank compared to not borrowing from a state-owned bank at all. This can show what happens to a leveraged firm when they borrow from at least one state-owned bank. In Table 7, I included a dummy variable for borrowing from at least one state-owned bank and also interacting with other measures of leverage ratio (be it from a debt or borrowing side). interaction term shows the effect of borrowing from at least one state-owned bank on a leveraged firm's decision to exit or continue in the export market. The results clearly show that firms borrowing from at least one state-owned bank have a lower probability of exiting the export market compared to those not borrowing from state-owned banks. The probability is around 2% when leverage ratio is calculated using capitals and around 3% when leverage is calculated using bank borrowings. It is important to turn our attention to the leverage ratio and their respective interaction with the dummy variables. Interestingly, none of the interaction terms with any of the leverage terms were significant, other than the one with bank borrowing. This means that if a firm is borrowing from banks and if one of the banks is a state-owned bank, then it will further reduce the firm's probability of exiting the export market by 3.5% [17](in addition to 1.4%[18] when not borrowing from state-owned banks). Whereas, in the case of the leverage ratio using capital for its definition, the interaction terms were not significant, but the leverage ratio was significant, implying that leveraged firms that are borrowing or not borrowing from a state-owned banks do not differ significantly in terms of the probability of them exiting the export market, where the probability was similar and was equal to approximately[19](similar to the figure in Table 5). Other such cases are discussed in appendix.

[17]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $1.71 * -0.0204 = 0.035$

[18]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.054 = 0.014$

[19]Difference of 75th and 25th percentile value of leverage ratio multiplied with the coefficient of leverage ratio gives, $2.438 * 0.0091 = 0.022$

6.3 Priority Sector Lending policy change

The lending pattern of state-owned banks to firms is not exogenous in nature and there are some sort of endogeneity to the type to firms they are lending, be it related to the type of industries, relation with banks, objective of state-owned banks. In short, we can say that there is some kind of sorting happening between banks and firms. In this subsection, we will look at the policy change of 2012 in the priority sector lending, which is used for the difference-in-difference analysis to establish causality and to treat endogeneity in the previous results as it is clear that banks might be interested in providing loans to particular type of firms. Our coefficient of interest will be the interaction term between the priority sector lending dummy and leverage ratio in terms of bank borrowing. To further motivate the result, figure 8 shows the effect of credit shock on treated and control firms. Here treated firms are those that are borrowing from at least one state-owned bank that is missing their priority lending target. In contrast, control firms are those firms that are borrowing from state-owned banks that are not missing their lending target. Clearly, the plot shows that treated firms have a lower probability of leaving the export market than control firms since the policy change.

Table 11 includes the dummy variable for firms borrowing from public banks missing their priority sector target and its interaction with the leverage ratio (both definitions). Clearly, the priority sector dummy was negative in all cases and significant in the case where leverage was defined as bank borrowing to total asset, implying firms borrowing from banks missing their priority sector target have a lower probability of exiting the export market because they now have access to easy credit compared to other firms. The results show that the firms' probability to exit the market is approximately 1.2% lower (this result is valid for the cases where leverage ratio is used as bank borrowing to total assets) than for those firms not able to borrow from banks that are missing their targets. Looking at the result for the leverage ratio and their respective interaction with the dummy variables, the interaction with the leverage ratio in terms of bank borrowing is significant. This means that if a firm is leveraged in terms of bank borrowing and that bank is missing their priority sector target, then it will further reduce the firm's probability of exiting the export market by approximately 2.7% [20](in addition to 1.6% [21] when not borrowing). Whereas, in the case of leverage ratio using debt to capital for its definition, the interaction term was not significant but the leverage ratio was significant, implying no difference to the leveraged firms that are borrowing from banks missing their target or not missing target. This result shows that banks are actually looking for low hanging fruits to fulfill their priority sector target and for doing so, they are actually providing credit to firms that are more leveraged (in terms of bank borrowing), hence effectively creating a soft budget constraint.

Table 12 present results from the same analysis but with a state-owned bank dummy added in as a

[20]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of interaction gives, $0.0494 * -0.5453 = 0.0269$

[21]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.063 = 0.012$

control to see the effect of adding the firms decision to borrow from at least one state-owned bank. The table shows similar results to the previous table but now the priority sector dummy is becoming non-significant as opposed to the earlier case. The public bank dummy is negative and significant and its value varied from 1.7% to 3.3% depending on the definition of leverage ratio used. The interaction term between the leverage ratio (bank borrowing to total assets) is negative and significant, showing that if the firm borrows from a public bank that is missing its target, then the probability of these firms exiting the export market is lowered by 2.6%,[22] which is similar to the earlier result where the bank dummy was not added (in addition to 1.7% [23] when not borrowing). Whereas, in the case of the leverage ratio using debt to capital for its definition, the interaction term was not significant but the leverage ratio was significant, implying that there was no difference to leveraged firms borrowing from banks that are missing their target or not missing. These results are consistent with the previous results in Table 11, showing that adding a bank dummy to the equation does not make a big difference to the interaction in terms of the sign or significance (only that the priority sector dummy is becoming non-significant).

The banks that are missing their target have to buy priority sector certificates or invest in rural infrastructure development fund, which have a rate of return equivalent to the baseline bank rate (which is generally lower than the existing lending rate under priority sectors). This actually creates a situation where banks may not be willing to provide loans to highly leveraged firms when they are close to their priority sector target, i.e., missing their target by only a small percent; while on the contrary, their willingness increases when they are far from hitting their target. Eventually they will not care about their target achievement if they are far from the target, where an outside option of buying a priority sector certificate or invest in rural infrastructure development fund is considered better than investing in some risky project. Tables 13 and 14 tried to test this hypothesis that banks closer or far from their target may not lend to these leveraged firms, while the banks in the middle will do it. Here, the priority sector lending missing value was put under a 5% bracket to see how banks react to their lending decision once they are far away from their target percentage. The hypothesis held well and the interaction term for bank borrowing and the priority sector dummy were significant and negative for 5% - 10% and 10% - 15%, respectively, and non-significant for 0 - 5% and above 15%, respectively. This is consistent when adding the public bank dummy as a control in the equation (Table 14). This is an interesting result as it shows that banks that are not far away from achieving their target but not very close either are the ones creating a soft budget constraint for those highly leveraged firms in the form of providing easy credit for them.

[22] Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of interaction gives, $0.0494 * -0.532 = -0.0261$

[23] Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.063 = -0.012$

6.4 Placebo Test

This part looks at the placebo test for the policy change. We investigates the effect of the priority sector lending policy change on medium and small enterprises, and agricultural firms that are not at all exporting.[24] As the policy change primarily affected exporting medium and small enterprises, and agricultural firms, it was important to see that the non-exporting firms under these groups were not affected in any sense by the change in policy. It might have been the case that banks missing their targets might have provided extra loans to non-exporting firms rather than providing loans to newly added firms as a form of export credit. Hence, non-exporting medium and small enterprises, and agricultural firms present to us a good case of fake treatment group to do our placebo test. Tables 15 and 16 shows the effect of the policy change on medium and small enterprises, and agricultural firms that are not exporting. These results show whether the change in policy helped them to shift from being a non-exporter to an exporter, or whether they remained the same or were even adversely affected. Table 15 shows the effect of the policy change on non-exporting medium and small enterprises, and it is clear from the results that the policy change had no effect on the decision of these non-exporting firms. Both the priority sector dummy and its interaction with the leverage ratio (in terms of the debt to capital or bank borrowing to the total assets) coefficients are insignificant; hence we could not infer anything from these (although in an economic sense, the interaction of the priority sector dummy and bank borrowing variable was positive, implying firms with a higher bank borrowing to asset ratio will have a higher probability of remaining as a non-exporter if they borrow from banks that are missing their priority sector target). Similarly, table 16 shows the effect of policy change on non exporting agriculture firms, it is clear from the results that the policy change had no effect on the decision of those non-exporting firms. The coefficients of the priority sector dummy and its interaction with the bank borrowing to asset ratio were insignificant, and hence any economic or statistical inference does not make sense (although the bank borrowing to asset ratio was negative and significant, implying that agricultural firms with higher bank borrowing leverage have a lower probability of staying as a non-exporter). The result establishes that the policy change did not have a significant effect on the medium and small enterprises, and agricultural sector non-exporters. The placebo test reveals a zero impact on the fake treatment group; hence, it supports our parallel trend assumption for the model.

7 Robustness check

7.1 Effect of policy change on firms entering export sector

The study was primarily based on firms that are already in the export market and at any time t hey are deciding whether to stay in or exit the export market. The results show that firms that are highly leveraged and that borrow from state-owned banks have a lower probability of exiting the export market compared to other firms. But, this does not establish that firms that are not in the export markets

[24] The policy change include export credit for MSME and agriculture under “domestic scheduled" commercial banks

do not experience the same effect. In this part, I wanted to test the hypothesis that firms that want to enter the export market are not able to benefit from the change in policy change of priority sector lending and it's only those already in the market that benefit. Table 17 shows the regression results, where the dependent variable was changed from exiting firms to the probability of a firm entering the export market to see the effect of policy change on their decision to enter the market. The results show that there was no significant effect on firms' entry decision due to the change in policy. The priority sector dummy and its interaction with the bank borrowing to asset ratio were not significant; hence showing that the policy change had no effect on entering firms (although the interaction of the priority sector dummy and debt to capital was significant and negative, which further established the fact that the policy change had no effect on entering firms). Even the public bank dummy was insignificant in nature, showing that public bank borrowing helped highly leveraged firms already in the export market. These results clearly show that banks (primarily state-owned banks) are going for low hanging fruits in the form of highly leveraged firms that are already in the export market to fulfill their priority sector lending target.

7.2 Profitability indicator and bank borrowing

As a robustness check, I tried to see whether the policy change in priority sector lending had an effect only on firms already in the export market or if it had an effect on other types of firms too. In this part, I tried to see how the health of firms (in the sense of their profitability) shape their decision to stay in or exit the export market given their access to borrowing from state-owned banks. Table 18 through to 20 help me to draw this inference and in general allow concluding on whether the health of a firm (defined in terms of its profitability) affects its decision to stay in/exit the export market and how leverage, in terms of bank borrowing, is shaped for these firms.

Table 18 shows the regression results for firms in the export market and those deciding to stay in/exit the market. Here, I have used the leverage ratio for these firms along with the public bank dummy and their interaction to see the effect of these variables on firms' decision to stay in the market. I have also controlled the equation with various indicators of profitability of the firm and interacted it with the public bank dummy to assess the effect of the firms' decision to borrow from state-owned banks given their health. The public bank dummy was negative and significant for all the cases, but all interaction terms for leverage were insignificant, implying that when I control for firms profitability, firms' leverage ratio (primarily in terms of bank borrowing) become redundant. The interaction of profitability and the public bank dummy were insignificant, implying profitable firms' borrowing from public banks are not significantly different from firms' not borrowing from state-owned banks (although the sign of interaction was negative, showing these firms will have a lower probability of exiting the export market).

In Table 18, I can see the effect of adding the profitability of firms and its interaction with the public bank dummy on the firms' decision to stay in/exit the export market. The coefficients were not significant, while the profitability variables used were continuous in nature. This can be one reason for not seeing any significance in the results, whereby it can very well be the case that there is a threshold for firms' profitability level and crossing that might lead firms' to decide to exit/stay in the export market given their borrowing trend. Table 19 shows the same idea where a cutoff was created for the profitability variable and the dummy variable takes the value 1 if the profitability variable of a firm is above the median value and 0 otherwise. The results are similar to that in Table 18, i.e., there was no effect when using a cutoff dummy for profitability and interacting it with the public bank dummy. Although the public bank dummy was negative and significant as before, the leverage ratio was also significant with the respective sign for different leverage ratios. The interaction term for the profitability cutoff and public bank dummy were negative but not significant.

Tables 18 and 19 show that the results from adding profitability to the equation did not give significant results (although the signs made economic sense). I further tried to look at the results by sub-sampling the data into firms that are above the median cutoff range of profitability and below the cutoff. The idea behind this sub-sampling was to see whether highly profitable firms react differently than less profitable firms in terms of being leveraged and able to access funding from state-owned banks. Table 20 captures the effect of borrowing from state-owned banks on leveraged firms under the two sub-samples created. The coefficient for the public bank dummy was negative and significant for almost all the cases in the sub-sample, showing that firms' probability to exit the market decreases if they are borrowing from a state-owned bank. The coefficient for the leverage ratio was also significant and had the sign as expected (negative for bank borrowing and positive for the debt to capital). An interesting result was seen in the case of sub-sampling the data with respect to the cutoff value for profitability in terms of the profit to capital ratio; here the interaction of the public bank dummy with bank borrowing changed the sign for the sub-sample, implying more profitable firms have a higher probability of leaving the export market if they are borrowing from state-owned banks and are highly leveraged (the sign was positive), whereas a less profitable firm will have a lower probability of exiting the export market (sign was negative). When, I did sub-sampling with respect to the cutoff for the profit to sales, the result was not significant for those firms above the median cutoff profitability (but the sign made economic sense). These results were not significant when I looked at the interaction between the public bank dummy and debt to capital ratio, but their coefficient sign made economic sense. Table 20 shows that the profitability of the firms was an important factor for firms to make borrowing decisions and whether they stay in/exit the export market. It can be seen from the results that primarily less profitable firms have a tendency to create soft budget constraints by acquiring loans from banks, even if they are highly leveraged.

7.3 Productivity indicator, bank borrowing and effect of policy change

This part looks at the effect of the leverage ratio on various indicators of productivity. I further look at what happens when I look at those firms that are borrowing from public sector banks. I used a few indicators for productivity, namely the log of the sales to capital ratio and the sales to asset ratio. The rationale of using sales to capital as an indicator of productivity is that it gives an indication of the level of production for which sales are used as a proxy for the level of capital or investment made by a firm. In this case, I define productivity in the form of the sales that a firm makes for the level of investment it makes. Another indicator that I looked as an indicator of productivity is the sales to asset ratio; this can be seen to be similar to the sales to capital ratio but here I looked at productivity in the form of the total sales made by a firm relative to the total assets of the firm. These two indicators were used by me to see how the leverage and borrowing pattern of firms affect their productivity.

Table 21 shows the effect of the leverage and borrowing pattern on the different indicators of productivity.The table shows that firms that are borrowing from state-owned banks were less productive compared to those not borrowing from state-owned banks (this was true for both the productivity variables that I used in my analysis). This made sense, as state-owned banks lend to those firms that are generally highly leveraged (as I have seen earlier) and their objective of lending to such firms is not profit maximization but welfare maximization; hence they lend to sectors that are low in profitability and also productivity. When I looked at the leverage ratio as debt to capital, I found that more-leveraged firms were less productive, but when I looked at the leverage ratio as bank borrowing, I found that more-leveraged firms were more productive, indicating that when firms are leveraged and borrowing from a bank, then they are more productive compared to other firms (it is important to note that these numbers were not significant statistically but I was trying to look at economic significance). The coefficient for the priority sector lending dummy variable was insignificant, although the signs were the opposite for the different productivity variables. Similarly, the coefficient of interaction of the priority sector lending dummy and leverage ratio was not significant but it had a negative effect on productivity when I looked at bank borrowing as an indicator of the leverage ratio. Although the effect of the bank borrowing leverage ratio had a positive effect on productivity, firms that were benefiting from the priority sector lending were less productive than those firms that were not using the benefits of priority sector lending. It is important to note that most of the coefficients were statistically insignificant, but economically these coefficients make sense when I look at the relation between productivity, leverage, and the bank borrowing status.

8 Conclusion

In this paper, I contribute to the empirical literature on trade-finance linkages. In particular, I studied the causal impact of credit constraints on exporting firms with regard to their decision to exit or continue in the export market and how borrowing from state-owned banks created a soft budget constraint

to less efficient firms. The main findings in this paper are that more-leveraged firms (in terms of debt to capital) have a disadvantage over less leveraged firms, and on an average, they have a 2% higher probability of exiting the export market. Additionally, when I added liquidity to the model, it showed that firms with a higher level of liquidity have a lower probability of leaving the market, while highly leveraged firms have an even higher chance of exiting the market. These results support the conclusion that those firms that are able to borrow, be it from banks or any other institution, have a lower probability of exiting the market (on an average of 1.5%). Given the banking system of India, I used the firms' borrowing information from various types of banks (public and nonpublic) as a dummy for credit availability. The results for the bank borrowing information showed that firms borrowing from at least one public sector (state-owned) bank have an additional 5% lower probability of exiting the export market compared to those borrowing from any bank, hence showing that these firms have better access to credit than the other firms. This result also holds for firms that borrow from more than one bank (additional 4% lower probability of exiting the export market compared to firms borrowing from one or no bank), be it public or private. However, I did not find any significant result for firms that were borrowing from only public sector banks.

The causal relation was established using a difference-in-difference approach and the exogenous shock used was the change in priority sector lending pattern for "domestic scheduled" banks in July 2012. The result showed that, on average, highly leveraged firms (in terms of bank borrowing to total assets) have a 1.7% lower probability of exiting the market and, in addition, a 2.6% lower probability of exiting the export market when these highly leveraged firms are borrowing from banks that are missing their priority sector targets. Along with this, when a public bank dummy was added, it was found that firms borrowing from these banks have a lower probability of exiting the export market in the range of 1.7% to 3.3%, depending on the variable used for the leverage. The policy shock related to priority sector lending turned out an important shock as it helped to purge out the endogeneity in the lending pattern of banks to various firms.

The robustness checks for the various indicators established the validity of the results. I did various robustness checks in the form of checking how firms that are entering the export market react to the policy change. The robustness check showed that this shock did not have any significant effect on these firms; hence establishing that the policy mostly affected the firms already in the export market and their exit/stay in decision. A similar robustness check was done for non-exporting MSMEs and agricultural firms. The results for both kinds of firms were not significant in nature; hence it helped me to conclude that only exporting MSMEs and agricultural firms were the ones affected by the change in policy (and this should be the case as the policy adds export credit to these sectors). Finally, I also did some robustness checks using the profitability of the firm and tried to see whether adding profitability to the equation would change the result or not. I used profitability in the form of a variable as well as a cutoff dummy as a control for the equation and interacted this with a public bank dummy. The

results were not significant in nature, although the sign of coefficient made economic sense. I further sub-sampled the data as per the cutoff of profitability and check how firms that are highly profitable perform compared to firms that are not that profitable. The results showed that highly profitable firms have a higher probability of exiting the export market if they are borrowing from state-owned banks and are highly leveraged in terms of bank borrowing. This result reversed when I looked at firms that are not highly profitable in nature; this result shows that firms that are low in profitability are the ones that are able to have a soft budget constraint, which is not the case with highly profitable firms. I also looked at some of the productivity indicators and analyzed the effect of the leverage and borrowing pattern on productivity. The results showed that firms borrowing from state-owned banks are less productive compared to firms not borrowing from them. The result also showed that firms that are borrowing from banks and have high leverage are more productive, although the results were not significant in nature. It was further shown that firms with high leverage and that were borrowing from banks but using the benefit of priority sector lending were less productive than firms not using the benefit of priority sector lending, but it is to be noted that the results here were not significant either.

The study clearly shows that the presence of public sector (state-owned) banks in the Indian economy is creating a distortion in the credit market from the supply side. This distortion is helping highly leveraged firms to stay in the export market, which would have not been the case in an ideal situation. The public sector (state-owned) bank lending pattern is creating a soft budget constraint for these leveraged firms. This hypothesis was further confirmed using an exogenous policy shock in the form of priority sector lending, along with policy analysis, while various robustness checks also established the proposition of a soft budget constraint for these leveraged firms.

There a few things that I am planning to look at further in this direction; for instance, it is important to look at the spatial distribution of those firms that are exporting along with the distribution of bank branches for public and non public sector banks. This will, however, help me to see the pattern of borrowing for these firms and allow me to deduce any spatial relation between exporting firms and their respective credit access. Since, I have the panel data for firms and banks financial variables, I am trying to gather information from bank branches regarding their locations for analyzing the time-line of the data I have for firms' finances. The bank branch location along with the firms' location will be helpful for me in understanding the relation between firms borrowing and their credit access. Another important aspect that can be looked at is the quality of the bank (as I am talking about the supply side of credit). I have financial information about banks (like NPA, tier 1 capital, total loan, borrowing, government ownership etc.), which will help me to create a variable for the quality of banks that a particular firm is borrowing from and how that is creating a credit constraint problem for the firm.

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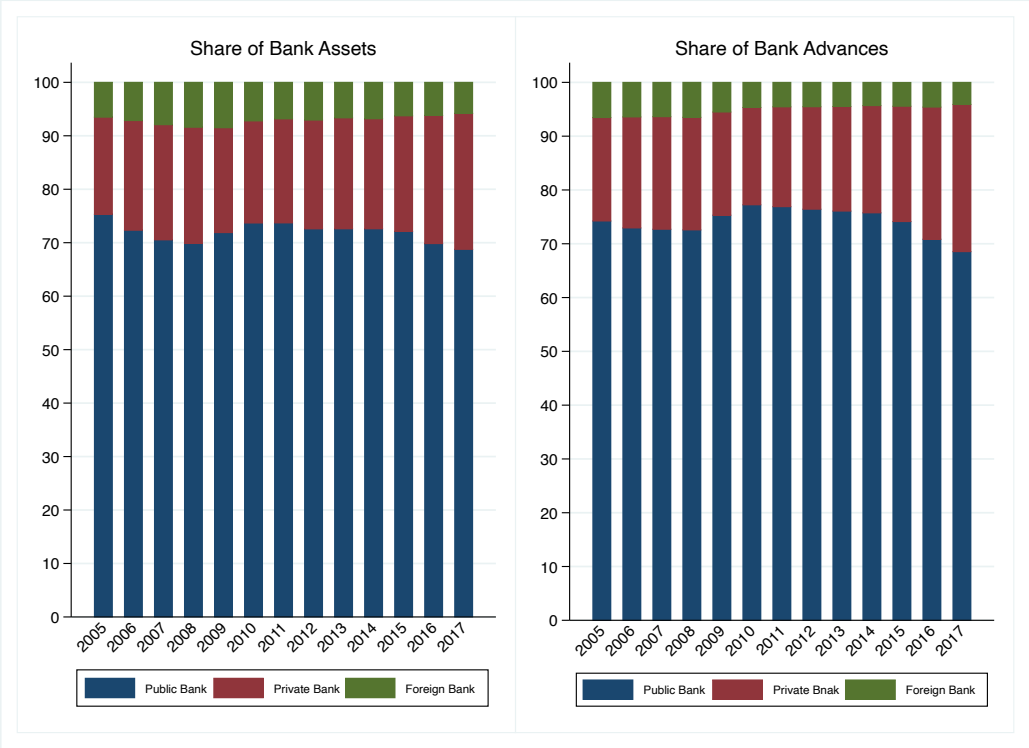
9 Tables and Figures

Figure 1: Share of Bank Assets



Source: Reserve Bank of India, 2018

Table 1

Total Number of firms and their distribution sector wise

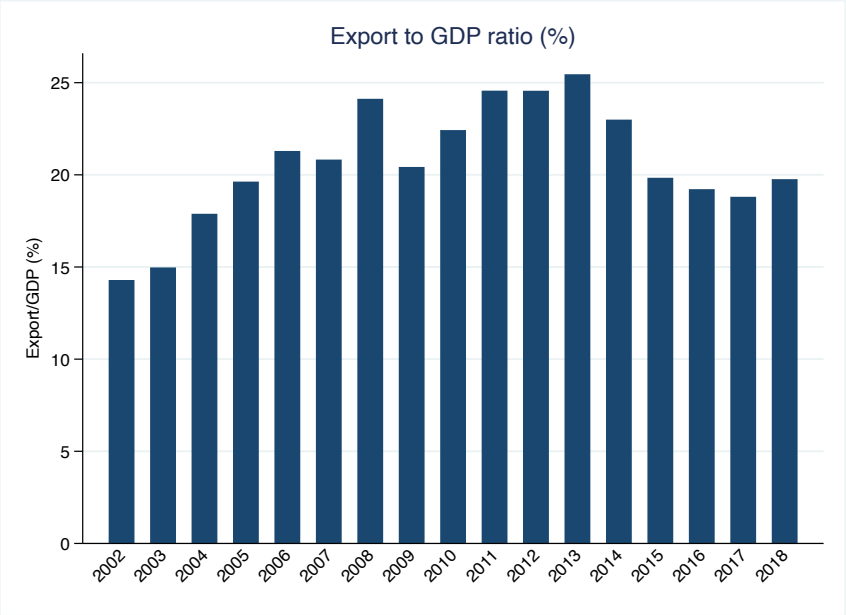
	Number	Percent
Manufactruing	5,568	50.41
Sevices	5,477	49.59
Total	11,045	100

Table 2

Firm ownership status

	Number	Percent
Private	10,652	96.44
Public	393	3.558
Total	11,045	100

Figure 2: Share of Export to GDP



Source: Directorate General of Commercial Intelligence and Statistics (DGCIS)

Table 3

Entry and Exit dynamics of exporting firms

Year	Entry Frequency	Exit Frequency	# of Exporter in t	# of Exporter in t-1	Entry Rate	Exit Rate
2002	-	-	2961	-	-	-
2003	295	232	2951	2961	9.99	8.03
2004	259	212	2998	2951	8.64	7.18
2005	279	276	3001	2998	9.29	9.21
2006	318	196	3123	3001	10.18	6.53
2007	264	220	3167	3123	8.34	7.04
2008	247	203	3211	3167	7.69	6.41
2009	249	196	3264	3211	7.63	6.10
2010	196	239	3221	3264	6.09	7.32
2011	208	303	3106	3221	6.69	9.40
2012	237	234	3109	3106	7.62	7.53
2013	187	235	3061	3109	6.11	7.56
2014	271	233	3099	3061	8.74	7.61
2015	169	209	3059	3099	5.52	6.74
2016	129	271	2917	3059	4.42	8.86
2017	92	394	2689	2917	3.42	13.51

Figure 3: Share of MSME Export to Total Export

Source: Directorate General of Commercial Intelligence and Statistics (DGCIS)

Figure 4: Number of Firm, Entry and Exit rates respectively

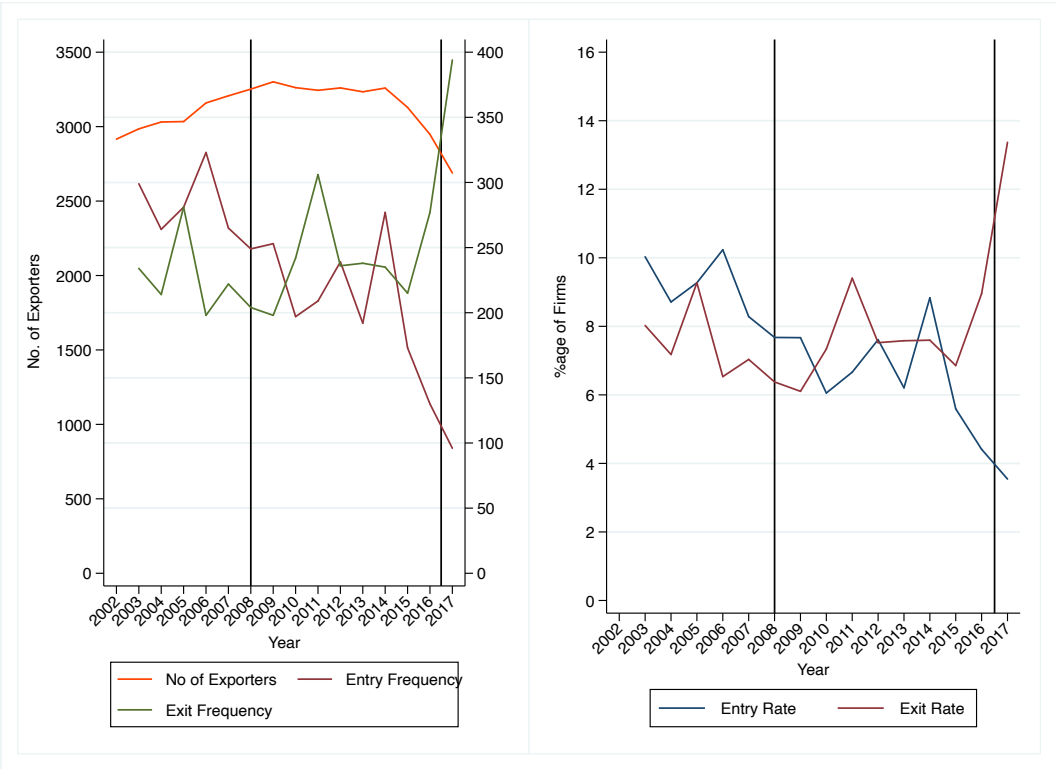


Figure 5: Exit rates for firms borrowing from atleast public bank

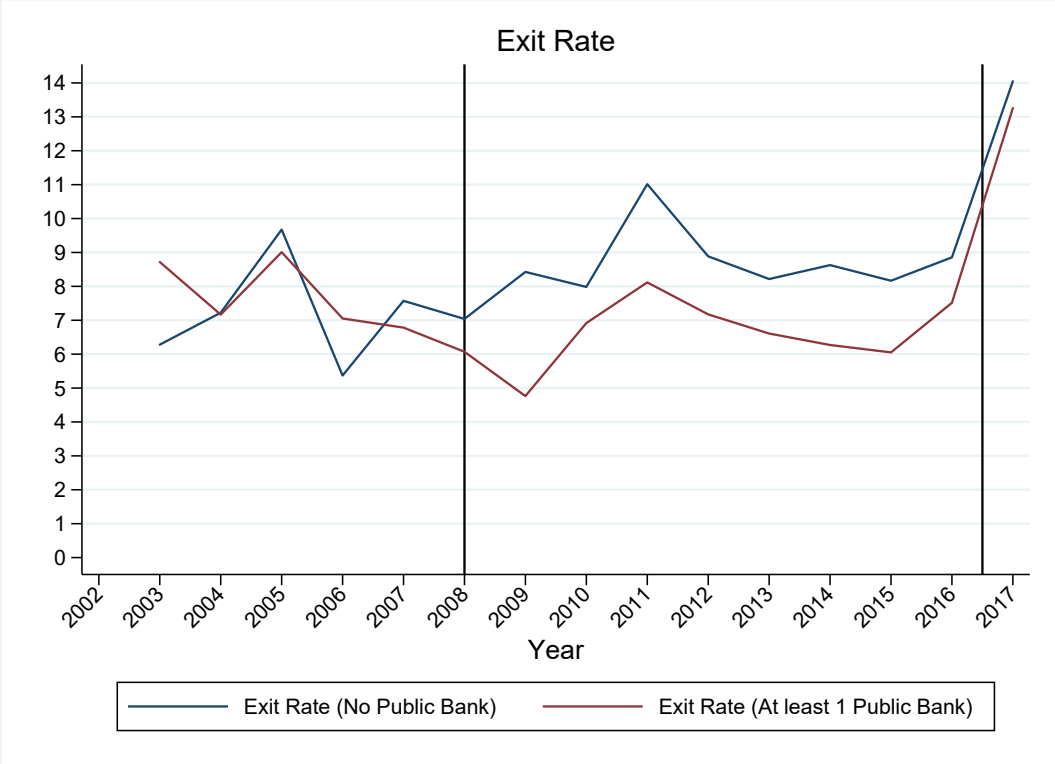


Figure 6: Bank borrowing to Total Borrowing for firms

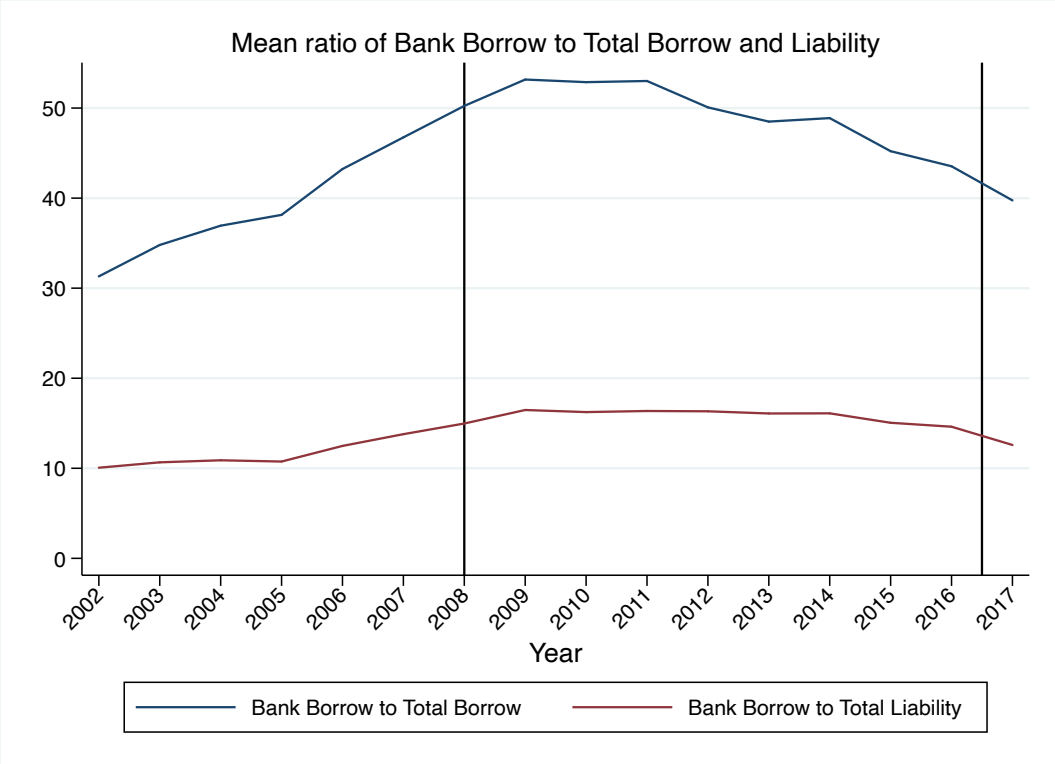


Figure 7: Share of MSME and Agriculture exporter

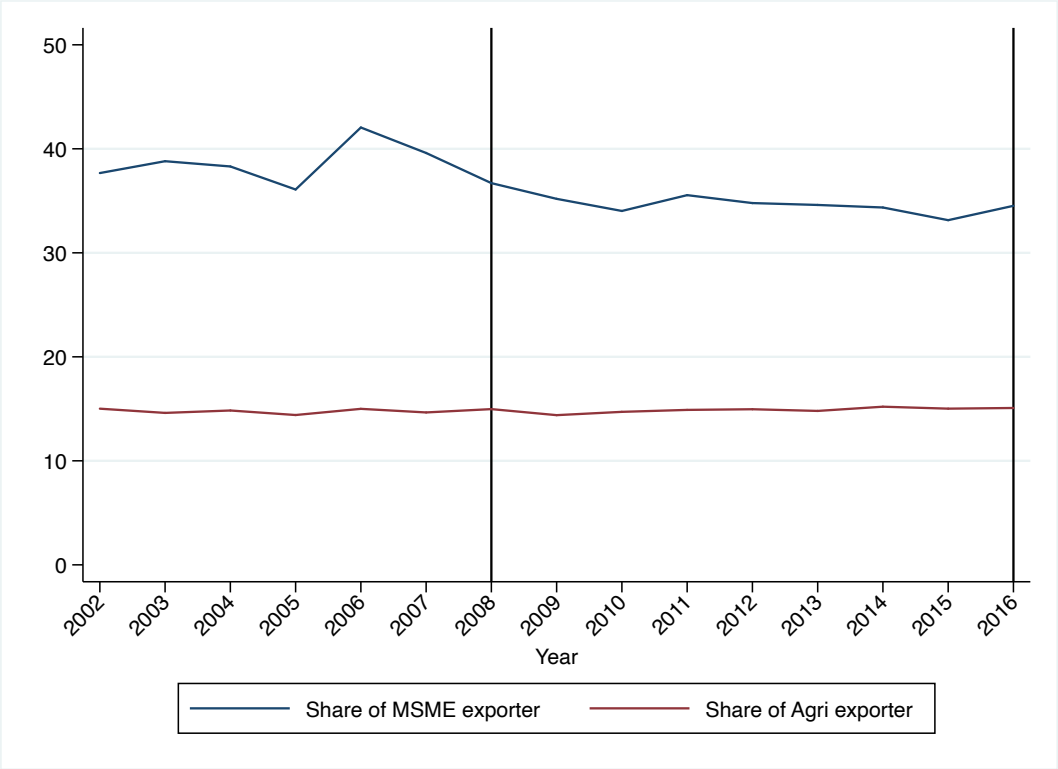


Table 4

Summary Statistics of firms in the database (taking initial, middle and final time period)

Variable[24]	Year	Mean	SD	Min	Max
Total Income	2002	1,973	20,027	0	1,163,049
	2009	5,367	54,508	0	3,348,773
	2017	12,415	98,367	-1	4,575,378
Total Sales	2002	1,913	20,569	0	1,151,824
	2009	5,544	57,814	0	3,300,034
	2017	11,167	95,758	-2	4,527,164
Export Earning	2002	370	2,362	0	99,654
	2009	1,732	17,421	0	868,275
	2017	2,056	29,767	0	1,388,560
Profit after tax	2002	58	1,346	-20,760	61,979
	2009	341	3,958	-79,352	161,263
	2017	657	8,683	-99,256	314,250
Total Debt	2002	4,346	54,865	-17,584	3,480,149
	2009	11,775	145,931	-24,470	9,644,081
	2017	38,564	459,421	-64,895	27,100,000
Total Liability	2002	4,631	55,307	0	3,485,412
	2009	12,222	146,517	-9	9,650,430
	2017	39,615	460,387	-36	27,100,000
Total Capital	2002	297	2,425	0	78,273
	2009	451	2,854	0	111,825
	2017	1,075	8,404	-153	518,570
Cash Flow from Investment activities	2002	(280)	4,189	-225,741	13,135
	2009	(1,093)	13,017	-825,789	192,219
	2017	(935)	14,164	-549,490	300,799
Cash Flow from Financial activities	2002	(96)	1,640	-43,047	32,643
	2009	530	5,851	-81,343	237,326
	2017	(216)	11,984	-303,788	419,850
Cash Flow from Operating activities	2002	376	5,747	-23,969	299,299
	6,865	746	15,916	-231,988	1,136,314
	2017	1,471	19,133	-484,058	618,473
Total Cash flow	2002	28	1,665	-34,889	91,927
	2009	204	5,630	-80,746	369,375
	2017	413	10,350	-99,840	632,255
Employees	2002	1,750	8,603	2	209,462
	2009	2,042	8,832	1	205,896
	2017	1,999	11,690	0	401,748
Age	-	31	17	0	159

[24] All variables with monetary value are measured in Million Indian National Rupee

Figure 8: Effect of Priority sector lending shock on different firms

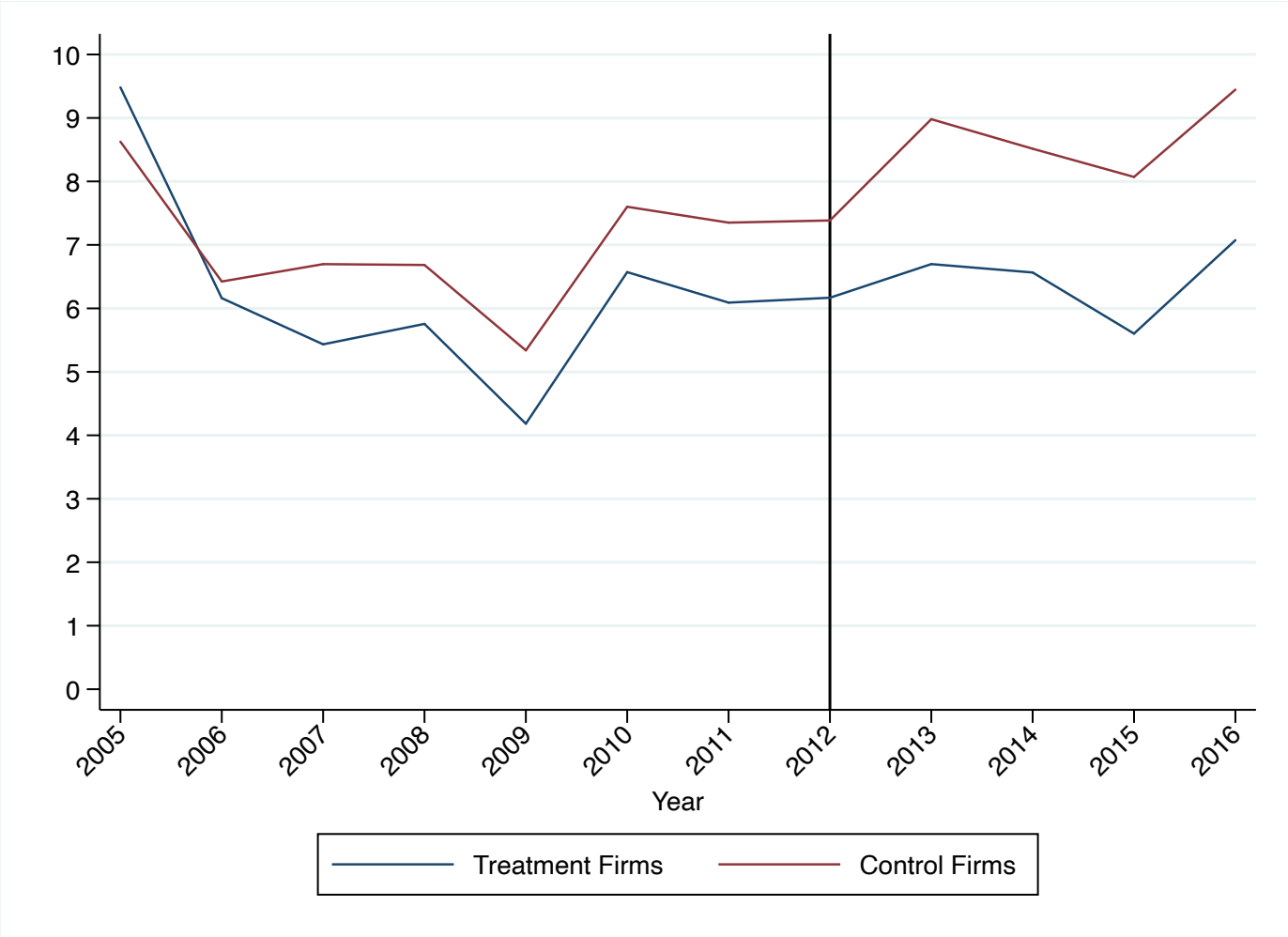


Table 5
Regression output for Exiting firm and leverage ratio

Variable	(1) Exit Exporter	(2) Exit Exporter	(3) Exit Exporter
Total Asset to Capital	0.0095**		
	(0.004)		
Debt to Capital		0.0095**	
		(0.004)	
Bank Borrowing to Total Asset			-0.0069***
			(0.002)
Firm Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Region FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	31,968	31,968	22,777
R-squared	0.039	0.039	0.042

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 6
Regression output: with leverage ratio, liquidity ratio

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Exit Dummy						
Total Asset to Capital	0.0103**			0.0101**		
	(0.005)			(0.005)		
Debt to Capital		0.0103**			0.0101**	
		(0.005)			(0.005)	
Bank Borrowing to Total Asset			-0.0053**			-0.0061**
			(0.002)			(0.003)
Cash flow in financial activity to Asset	-0.0010**	-0.0010**	-0.0012			
	(0.000)	(0.000)	(0.001)			
Total cash flow to Asset				-0.0016***	-0.0016***	-0.0003
				(0.000)	(0.000)	(0.001)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,463	30,463	21,848	30,797	30,797	21,858
R-squared	0.043	0.043	0.044	0.042	0.042	0.043

Note: Form controls consists of log of age, log of sales, profit to sales ratio, ownership status
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 8

Regression output: Leverage Ratio and Public Bank dummy and their dummy

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Exit Dummy						
Total Asset to Capital	0.0091**			0.0089**		
	(0.004)			(0.004)		
Bank Dummy*Leverage ratio	0.0114			0.0110		
	(0.018)			(0.018)		
Debt to Capital		0.0091**			0.0089**	
		(0.004)			(0.004)	
Bank Dummy*Leverage ratio		0.0114			0.0110	
		(0.018)			(0.018)	
Bank Borrowing to Total Asset			-0.0051**			-0.0056**
			(0.002)			(0.002)
Bank Dummy*Leverage ratio			-0.0207*			-0.0202*
			(0.012)			(0.012)
Cash flow in financial activity to Asset	-0.0010**	-0.0010**	-0.0014			
	(0.001)	(0.001)	(0.001)			
Total cash flow to Asset				-0.0018***	-0.0018***	-0.0007
				(0.000)	(0.000)	(0.001)
Atleast 1 Bank Dummy	-0.019***	-0.019***	-0.034***	-0.019***	-0.019***	-0.034***
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,463	30,463	21,848	30,797	30,797	21,858
R-squared	0.044	0.044	0.046	0.043	0.043	0.046

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 8

Regression output: Leverage ratio and priority sector lending and their interaction

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Exit Dummy						
Debt to Capital	0.00400***	0.00398***				
	(0.001)	(0.001)				
PSL Dummy*Leverage ratio	0.00532	0.00568				
	(0.014)	(0.014)				
Total Asset to Capital			0.01439***	0.01417***		
			(0.003)	(0.003)		
PSL Dummy*Leverage ratio			-0.00492	-0.00375		
			(0.019)	(0.019)		
Bank Borrowing to Total asset					-0.00627***	-0.00679***
					(0.002)	(0.003)
PSL Dummy*Leverage ratio					-0.54651***	-0.54417***
					(0.180)	(0.180)
PSL Dummy	-0.00406	-0.00339	-0.00603	-0.00534	-0.01232*	-0.01215*
	(0.005)	(0.005)	(0.006)	(0.006)	(0.007)	(0.007)
Cash Flow in Fin. Act. to Asset	-0.00122**		-0.00094**		-0.00124	
	(0.001)		(0.000)		(0.001)	
Total Cash Flow to Asset		-0.00216***		-0.00159***		-0.00060
		(0.000)		(0.001)		(0.001)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,494	33,898	30,484	30,484	24,121	24,138

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 9

Regression output: Leverage ratio and priority sector lending and their interaction and adding public bank dummy

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Exit Dummy						
Debt to Capital	0.00393***	0.00390***				
	(0.001)	(0.001)				
PSL Dummy*Leverage ratio	0.00467	0.00503				
	(0.014)	(0.014)				
Total Asset to Capital			0.01400***	0.01376***		
			(0.003)	(0.003)		
PSL Dummy*Leverage ratio			-0.00950	-0.00846		
			(0.019)	(0.019)		
Bank Borrowing to Total asset					-0.00688***	-0.00727***
					(0.002)	(0.003)
PSL Dummy*Leverage ratio					-0.53301***	-0.53075***
					(0.178)	(0.177)
PSL Dummy	0.00435	0.00513	0.00337	0.00440	0.00545	0.00565
	(0.006)	(0.006)	(0.005)	(0.006)	(0.009)	(0.009)
Public Bank Dummy	-0.01675***	-0.01690***	-0.01861***	-0.01921***	-0.03354***	-0.03365***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Cash flow in Fin. Act. to Asset	-0.00131**		-0.00103**		-0.00135	
	(0.001)		(0.001)		(0.001)	
Total cash flow to Asset		-0.00235***		-0.00179***		-0.00081
		(0.000)		(0.001)		(0.001)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,494	33,898	30,484	30,823	24,121	24,138

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 10

Regression output: Leverage ratio, priority sector lending cutoffs and their interaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable: Exit Dummy								
	0-5%	0-5%	5-10%	5-10%	10-15%	10-15%	Above 15	Above 15
Debt to Capital	0.00390***		0.00412***		0.00404***		0.00405***	
	(0.001)		(0.001)		(0.001)		(0.001)	
PSL Dummy*Leverage ratio	0.07048***		-0.00923**		0.00497		-0.04700	
	(0.026)		(0.004)		(0.023)		(0.032)	
Bank Borrowing to Total Asset		-0.00671**		-0.00648**		-0.00662**		-0.00669**
		(0.003)		(0.003)		(0.003)		(0.003)
PSL Dummy*Leverage ratio		-0.43441		-0.69426***		-1.02659**		-0.54536
		(0.319)		(0.246)		(0.399)		(0.406)
PSL Dummy	-0.01613***	-0.00889	0.00096	0.00616	0.00813	0.01147	-0.00440	0.00513
	(0.006)	(0.010)	(0.006)	(0.009)	(0.008)	(0.012)	(0.010)	(0.013)
Total cash flow to Asset	-0.00216***	-0.00064	-0.00216***	-0.00067	-0.00216***	-0.00068	-0.00215***	-0.00067
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,898	24,138	33,898	24,138	33,898	24,138	33,898	24,138

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 11

Regression output: Leverage ratio, priority sector lending cutoffs, their interaction and public bank dummy

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable: Exit Dummy								
	0-5%	0-5%	5-10%	5-10%	10-15%	10-15%	Above 15	Above 15
Debt to Capital	0.00382***		0.00403***		0.00395***		0.00395***	
	(0.001)		(0.001)		(0.001)		(0.001)	
PSL Dummy*Leverage ratio	0.07004***		-0.01000**		0.00182		-0.05058	
	(0.026)		(0.005)		(0.023)		(0.032)	
Bank Borrowing to Total Asset		-0.00748***		-0.00717***		-0.00741***		-0.00753***
		(0.003)		(0.003)		(0.003)		(0.003)
PSL Dummy*Leverage ratio		-0.44612		-0.69059***		-1.00738**		-0.52424
		(0.319)		(0.244)		(0.399)		(0.405)
PSL Dummy	-0.01110*	0.00238	0.00800	0.02129**	0.01202	0.01926	-0.00137	0.01156
	(0.006)	(0.010)	(0.006)	(0.009)	(0.008)	(0.012)	(0.010)	(0.013)
Public Bank Dummy	-0.01482***	-0.03415***	-0.01706***	-0.03641***	-0.01638***	-0.03503***	-0.01562***	-0.03511***
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Total cash flow to Asset	0.00404	0.00376	-0.00235***	-0.00086	-0.00235***	-0.00083	-0.00233***	-0.00081
	(0.010)	(0.013)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	33,898	24,138	33,898	24,138	33,898	24,138	33,898	24,138

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level

Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 12

Regression Result: Leverage ratio, priority sector lending, their interaction for Micro, small and medium enterprises

	(1)	(2)	(3)	(4)
Dependent Variable: Never Exporter				
Debt to Capital	-0.00381	-0.00341		
	(0.009)	(0.009)		
PSL Dummy*Leverage ratio	-0.01858	-0.01505		
	(0.014)	(0.015)		
Bank Borrowing to Total Asset			0.51972***	0.48319***
			(0.172)	(0.178)
PSL Dummy*Leverage ratio			0.06562	0.19990
			(0.310)	(0.285)
PSL Dummy	-0.01507	-0.01625	-0.01928	-0.02258
	(0.013)	(0.012)	(0.016)	(0.015)
Cash flow in financial activity to Asset	-0.09252***		-0.05673***	
	(0.015)		(0.015)	
Total cash flow to Asset		-0.18938**		-0.15034***
		(0.085)		(0.056)
Firm Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	15,527	16,458	11,849	11,936

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 13

Regression Result: Leverage ratio, priority sector lending, their interaction for agriculture firms

	(1)	(2)	(3)	(4)
Dependent Variable: Never Exporter				
Debt to Capital	0.00167	-0.00209		
	(0.017)	(0.018)		
PSL Dummy*Leverage ratio	-0.05409***	-0.04897**		
	(0.019)	(0.020)		
Bank Borrowing to Total Asset			-0.58148**	-0.55770**
			(0.275)	(0.271)
PSL Dummy*Leverage ratio			0.66388	0.69143
			(0.607)	(0.607)
PSL Dummy	0.01092	0.00555	-0.03990	-0.03921
	(0.016)	(0.016)	(0.025)	(0.024)
Cash flow in financial activity to Asset	0.00131**		-0.04771*	
	(0.001)		(0.026)	
Total cash flow to Asset		-0.22042***		-0.14938
		(0.050)		(0.109)
Firm Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	6,978	7,095	5,775	5,788

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 14

Regression Result: Leverage ration, priority lending, their interaction and public bank dummy

	(1)	(2)	(3)	(4)
Dependent Variable: Entry Dummy				
Debt to Capital	0.00021	0.00020		
	(0.001)	(0.001)		
PSL Dummy*Leverage ratio	-0.02535*	-0.02803**		
	(0.015)	(0.014)		
Bank Borrowing to Total Asset			0.05905	-0.00571
			(0.044)	(0.004)
PSL Dummy*Leverage ratio			0.13565	0.12150
			(0.125)	(0.100)
PSL Dummy	-0.00053	-0.00197	-0.00134	-0.00170
	(0.006)	(0.005)	(0.008)	(0.008)
Public Bank Dummy	-0.00128	0.00179	0.00238	0.00365
	(0.004)	(0.004)	(0.006)	(0.006)
Cash flow in financial activity to Asset	0.00069		0.00295	
	(0.001)		(0.002)	
Total cash flow to Asset		0.00450		-0.01482
		(0.011)		(0.037)
Firm Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	18,726	21,411	13,571	13,758

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 15

Regression Result: Several indicator of profitability variables

	(1)	(2)	(3)	(4)
Dependent Variable: Exit Dummy				
Debt to Capital	0.01373***	0.01195**		
	(0.004)	(0.005)		
	0.001	0.015		
Leverage ratio * Public Dummy	0.02056	-0.00469		
	(0.020)	(0.029)		
	0.309	0.870		
Bank Borrowing to Total Asset			-0.00570***	-0.00647***
			(0.001)	(0.001)
			0.000	0.000
Leverage ratio * Public Dummy			-0.02021	0.01067
			(0.015)	(0.008)
			0.168	0.192
Public Dummy	-0.02248***	0.00122	-0.03643***	-0.02853***
	(0.007)	(0.004)	(0.010)	(0.005)
	0.001	0.773	0.000	0.000
Profit to Capital	-0.00686***		-0.00017	
	(0.002)		(0.003)	
	0.000		0.945	
Profit to Capital * Public Dummy	-0.00402		-0.00550	
	(0.004)		(0.005)	
	0.313		0.265	
Profit to Sales		0.00071***		-0.00311
		(0.000)		(0.003)
		0.000		0.251
Profit to Sales * Public Dummy		-0.00812***		-0.00264
		(0.002)		(0.004)
		0.000		0.511
Total cash flow to Asset	-0.00169***	-0.00413***	-0.00053	0.00182
	(0.000)	(0.001)	(0.001)	(0.003)
	0.000	0.000	0.453	0.549
Firm Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	30,794	39,040	21,852	28,307

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 16

Regression Result: Profitability variables cut-off

	(1)	(2)	(3)	(4)
Dependent Variable: Exit Dummy				
Debt to Capital	0.00258***	0.00267***		
	(0.000)	(0.000)		
Leverage ratio * Public Dummy	0.00096	0.00282		
	(0.007)	(0.007)		
Bank Borrowing to Total Asset			-0.00727***	-0.00739***
			(0.003)	(0.003)
Leverage ratio * Public Dummy			0.00749	0.01078
			(0.023)	(0.025)
Profit to Capital Cutoff Median	0.02119***		0.02728***	
	(0.004)		(0.008)	
Profit to Capital Cutoff Median * Public Dummy	-0.00277		-0.00398	
	(0.005)		(0.009)	
Profit to Sales Cutoff median		-0.04113***		-0.00218
		(0.007)		(0.010)
Profit to Sales Cutoff median * Public Dummy		0.02663***		-0.00174
		(0.006)		(0.009)
Public Dummy	-0.00020	-0.02079***	-0.02755***	-0.03072***
	(0.005)	(0.007)	(0.007)	(0.007)
Total cash flow to Asset	-0.00407***	-0.00353***	-0.00170	-0.00174
	(0.001)	(0.001)	(0.002)	(0.002)
Firm Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Observations	43,386	43,386	31,644	31,644

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 17

Regression Result: Profitability variables cut-off sampling of data

	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
	Above Profit to Capital	Below Profit to Capital	Above Profit to Sales	Below Profit to Sales	Above Profit to Capital	Below Profit to Capital	Above Profit to Sales	Below Profit to Sales
	Median Cutoff	Median Cutoff	Median Cutoff	Median Cutoff	Median Cutoff	Median Cutoff	Median Cutoff	Median Cutoff
Dependent Variable								
Debt to Capital	0.00243***	0.03497	0.00226***	0.01246***				
	(0.001)	(0.092)	(0.000)	(0.003)				
	0.000	0.703	0.000	0.000				
Public Dummy * Leverage ratio	0.00170	-0.03857	-0.00135	-0.02272***				
	(0.007)	(0.095)	(0.004)	(0.007)				
	0.808	0.684	0.764	0.002				
Bank Borrowing to Total Asset					-0.02381***	-0.00614***	-0.00750***	-0.01952***
					(0.005)	(0.002)	(0.001)	(0.005)
					0.000	0.000	0.000	0.000
Public Dummy * Leverage ratio					0.03310***	-0.24686***	0.00088	0.36986***
					(0.009)	(0.076)	(0.007)	(0.059)
					0.000	0.001	0.903	0.000
Public Dummy	0.00165	-0.00701	-0.00714*	-0.01677**	-0.03266***	-0.02142***	-0.03137***	-0.04336***
	(0.003)	(0.005)	(0.004)	(0.007)	(0.006)	(0.005)	(0.005)	(0.005)
	0.602	0.133	0.063	0.010	0.000	0.000	0.000	0.000
Total cash flow to Asset	-0.00698***	-0.00232***	-0.00263***	-0.00712***	-0.11674***	-0.00096	-0.00169	-0.14772***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.011)	(0.001)	(0.002)	(0.012)
	0.000	0.000	0.000	0.000	0.000	0.329	0.302	0.000
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	24,059	19,327	19,847	22,139	17,187	14,457	14,853	18,675

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level

Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table 18

Regression Result: Several indicators of productivity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variables	Sales Capital (log)	Sales Capital (log)	Sales Capital (log)	Sales Capital (log)	Sales to Asset	Sales to Asset	Sales to Asset	Sales to Asset
Debt to Capital	-0.02094	-0.02031			-0.00549***	-0.00392***		
	(0.027)	(0.027)			(0.002)	(0.001)		
PSL Dummy*Leverage ratio	0.30834	0.30681			-0.01990	-0.03124		
	(0.245)	(0.245)			(0.035)	(0.033)		
Bank Borrowing to Total Asset)			-0.00048	0.00011			0.88825	0.67053
			(0.010)	(0.010)			(0.818)	(0.701)
PSL Dummy*Leverage ratio			-0.33167	-0.29594			-0.90279	-0.77600
			(0.956)	(0.958)			(0.815)	(0.748)
PSL Dummy	-0.01736	-0.02892	-0.03775	-0.03727	0.04456	0.02348	0.04345	0.03154
	(0.042)	(0.042)	(0.054)	(0.054)	(0.046)	(0.035)	(0.064)	(0.059)
Public Bank Dummy	-0.13426***	-0.14609***	-0.03344	-0.03555	-0.15255***	-0.08221**	-0.07652*	-0.07159*
	(0.051)	(0.052)	(0.056)	(0.056)	(0.044)	(0.032)	(0.043)	(0.042)
Cash flow in financial activity to Asset	0.00765		0.00425		0.25189		0.13499	
	(0.008)		(0.005)		(0.158)		(0.116)	
Total cash flow to Asset		0.00613		0.00332		0.56238***		0.31154**
		(0.017)		(0.004)		(0.103)		(0.137)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	32,955	33,334	23,704	23,720	32,960	33,339	23,708	23,724

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status. All standard errors are clustered at industry level

Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Appendix

A Institutional Detail

A1 Indian Banking Sector

The major issue that has engulfed the Indian banking system over last decade is the ever-growing number of non-performing assets (NPAs here onward). There are many factors that may contribute to the rise in NPAs, but market failure, willful defaults, poor follow-up and supervision, non-cooperation from banks, poor legal framework, lack of entrepreneurial skills, etc. are a few to point out. Dutta (2014) studied the growth of NPAs in public and private sector banks over time and analyzed the sector-wise non-performing assets of these banks. Similarly, Ibrahim et al. (2014) analyzed the concept of NPAs, and the components of loan assets in the public sector, private sector, and other foreign banks. The reason that NPAs are important for the study of firms' financial constraint is that the public sector banks are the ones with a very high proportion of NPAs and on the other hand they are the ones responsible for the majority of lending in the Indian banking system. Since, they are themselves constrained in their ability to provide loans, this will have a direct effect on the borrowing of firms in general and even more so exporting firms.

Due to the rise in NPAs among state-owned banks primarily over the past decade, the Reserve Bank of India and the Indian government are planning to do a major restructuring of the banking system. One plan is to merge several small state-owned banks into one large state-owned bank. A similar exercise was performed for the State Bank of India, which was completed in 2017. The hope is to create a more efficient system while addressing the over-staffing issues and making it easier to track all the NPAs and stressed loans as these will then be under one umbrella bank. Since, most of the stressed banks are primarily state-owned banks, privatization of these banks is also a feasible option as currently these banks are not working with the objective of profit maximization but rather they are working with an objective of welfare maximization and supporting sick industries and state-owned enterprises that are not at all profit making. Above all, indeed perhaps most important of all, is the need to look at the governance system of these state-owned banks and here, some reformation of the governance structures of these banks is critical. The Nayak Committee (1997) report on bank governance is a good starting point. Further, there should be a strategy to incentivize and penalize individuals and organizations for any worthwhile initiative as well as for wrong doing.

A2 Indian Export Market

Post 1991, the gradual liberalization of the Indian economy was characterized by policy reforms that created a favorable environment for India's export market to flourish and evolve into an engine of social and economic growth. The process gathered further momentum with India signing the Marrakesh

Treaty, which brought into existence the World Trade Organization (WTO) on January 1,1995.[25] In spite of these major changes in India's formal stance toward international integration, globalization, as in the past, is still looked upon with suspicion and apprehension. Hence, it was seen as an inevitable imposition rather than accepted as able to make a healthy contribution to the development process of the country. However, the last two decades have seen India transformed from a closed economy pre-liberalization to an important player in the global international trade.

A3 Priority Sector Lending

The description of the priority sectors was later formalized in 1972 on the basis of the report submitted by the Informal Study Group on Statistics relating to advances in the priority sectors constituted by the Reserve Bank in May 1971. At a meeting of the Union Finance Minister with the Chief Executive Officers of the state-owned banks held in March 1980, it was agreed that banks should aim to raise the proportion of their advances made to priority sectors to 40% by March 1985. Subsequently, on the basis of the recommendations of the Working Group on the Modalities of Implementation of Priority Sector Lending and the Twenty Point Economic Programme by Banks (Chairman: Dr. K. S. Krishnaswamy), all commercial banks were advised of the need to achieve a target of priority sector lending determined at 40% of aggregate bank advances by 1985. Sub-targets were also specified for lending to agriculture and the weaker sections within the priority sectors. Since then, there have been several changes in the scope of priority sector lending and the targets and sub-targets applicable to various bank groups.

On the basis of the recommendations made in September 2005 by the Internal Working Group (Chairman: Shri C. S. Murthy), set up in the Reserve Bank to examine, review, and recommend changes, if any, in the existing policy on priority sector lending, including the segments constituting the priority sector, sectors, targets, and sub-targets, etc. and the comments/suggestions received thereon from banks, financial institutions, public, and the Indian Banks' Association (IBA), it was decided to include only those sectors as part of the priority sectors that impact large sections of the population, the weaker sections, and sectors that are employment-intensive, such as agriculture, and micro and small enterprises.[26]

The outline for priority sector lending as indicated by the Reserve Bank of India for domestic and foreign banks are the following:

a. **Domestic Bank:** 40% of Adjusted Net Bank Credit (ANBC)[27] or Credit Equivalent Amount of Off-Balance Sheet Exposure, whichever is higher. Foreign banks with 20 branches and above

[25] Tendulkar, 2000)
[26] Reserve Bank of India
[27] ANBC = Net Bank credit in India + Investment in Non-SLR category

have to achieve the Total Priority Sector Target within a maximum period of five years starting from April 1, 2013 and ending on March 31, 2018 as per the action plans submitted by them and approved by Reserve Bank of India

b. **Foreign banks with less than 20 branches:** 40% of Adjusted Net Bank Credit or Credit Equivalent Amount of Off-Balance Sheet Exposure, whichever is higher; to be achieved in a phased manner by 2020

B Regression Results for type of banks

B0.1 Firms borrowing from only state-owned bank

I further refined the bank borrowing dummy to firms borrowing only from state-owned banks, in order to show what happens to a leveraged firm when they borrow from only state-owned banks and not other banks. In Table 8, I included a dummy variable for borrowing from only state-owned banks and also its interaction with other measures of the leverage ratio (both capital and borrowing definitions). The interaction term shows the effect of borrowing from only state-owned banks on a leveraged firm on its decision to exit or continue in the export market. The results showed that firms borrowing from only state-owned banks had significant leverage ratios related to capital (columns 1, 2, 4, and 5) and a lower probability of exiting the export market compared to other firms (probability is around 0.8% and 0.75% respectively) . These results were not significant for the leverage ratio when defined in terms of bank borrowing, but the sign indicates it still makes economic sense. Looking at the results for the leverage ratio and their respective interaction with the dummy variables, none of the interaction terms with any of the leverage term was significant, but here also the sign makes economic sense (leveraged firms borrowing from only state-owned banks have a lower probability of exiting the export market). Whereas, the leverage ratio for both sets of definition were significant, implying that leveraged firms (in terms of capital) have a higher probability of exiting by approximately 2.5% [28](similar to what I got in table 6) and leveraged firms (in terms of borrowing) have a lower probability of exiting the export by approximately 1.5%. [29]

B0.2 Firms borrowing from more than bank

I look in this subsection at the effect of firms borrowing from more than one bank in two ways. Firstly, I see the effect of the dummy variable for firms borrowing from more than one bank and simultaneously its interaction with the leverage ratio (defined in both senses). Second, I use the number of banks a firm is borrowing from as a variable and look at the results from that.

[28]Difference of 75th and 25th percentile value of leverage ratio multiplied with the coefficient of leverage ratio gives, $2.438 * 0.0105 = 0.025$

[29]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.057 = -0.015$

Table 9 includes a dummy variable for firm borrowing from more than one bank and its interaction with the leverage ratio (both definitions). Clearly, the bank dummy is strongly significant and negative, implying firms borrowing from more than one bank have a lower probability of exiting the market because they can sustain their credit constraint by borrowing from multiple banks. The result shows that the firms' probability of exiting the market is approximately 2% lower than those firms borrowing from one bank or no bank (this is the result when I use leverage in terms of capital and it is approximately 3% when I use leverage in terms of borrowing). Looking at the result for the leverage ratios and their respective interaction with the dummy variables, none of the interaction terms with any of the leverage terms was significant, other than the one with bank borrowing. This means that if a firm is leveraged with respect to bank borrowing and borrowing from more than one bank then, it will further reduce the firms probability of exiting the market by approximately 4.3% [30](in addition to 1.2%[31] when not borrowing). Whereas, in the case of the leverage ratio using capital for its definition, the interaction term was not significant but the leverage ratio was significant, implying that there is no difference between leveraged firms that are borrowing from one bank or no bank and more than one bank, whereby the baseline case shows a higher probability of exiting the export market by approximately 2.3% (similar to what I got in Table 5).

Table 10 shows the results when I used the number of banks a firm borrows from as a variable instead of a dummy, hence there was no interaction to investigate. Clearly, when I look at the number of bank variables, it showed a strongly significant result, and the coefficient was negative in nature. This implies that if a firm's borrowing from banks increases by a unit, then the probability of the firm exiting from the export market declines by 1.6%[32] (in all cases of leverage ratio). Similarly, the results for the leverage ratio were also significant and consistent with the other results, showing economic significance too. The leverage ratio (in terms of capital) implies that a change in the leverage ratio (defined in terms of capital) will increase the probability of exiting the export market by approximately 2.4% [33]and in case of leverage ratio (defined in terms of bank borrowing), it will decrease the probability by approximately 1.4%[34]. It is to be kept in kind that for all the result listed above, I am also using different definitions of liquidity as control and firm-level controls along with the region, time, and industry fixed effects.

[30]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.0175 = -0.043$

[31]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.052 = -0.012$

[32]Difference of 75th and 25th percentile value of number of banks multiplied with the coefficient of number of banks gives, $4 * -0.004 = -0.016$

[33]Difference of 75th and 25th percentile value of leverage ratio multiplied with the coefficient of leverage ratio gives, $2.438 * 0.0098 = 0.024$

[34]Difference of 75th and 25th percentile value of bank borrowing multiplied with the coefficient of bank borrowing gives, $2.46 * -0.055 = -0.014$

C Tables and Figures

Table A1

Regression output: Leverage Ratio and only Public Bank dummy and their interaction

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Exit Dummy						
Total Asset to Capital	0.0105**			0.0104**		
	(0.005)			(0.005)		
Bank Dummy*Leverage ratio	-0.069			-0.0742		
	(0.045)			(0.046)		
Debt to Capital		0.0105**			0.0104**	
		(0.005)			(0.005)	
Bank Dummy*Leverage ratio		-0.0689			-0.0742	
		(0.045)			(0.046)	
Bank Borrowing to Total Asset			-0.052**			-0.06**
			(0.002)			(0.003)
Bank Dummy*Leverage ratio			-0.0977			-0.097
			(0.135)			(0.135)
Cash flow in financial activity to Asset	-0.0009**	-0.0009**	-0.0012			
	(0.000)	(0.000)	(0.001)			
Total cash flow to Asset				-0.0016***	-0.0016***	-0.0003
				(0.000)	(0.000)	(0.001)
Only Public Bank	-0.0079**	-0.0079**	-0.002	-0.0074**	-0.0073**	-0.002
	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.005)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,463	30,463	21,848	30,797	30,797	21,858
R-squared	0.043	0.043	0.044	0.042	0.042	0.043

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table A2

Regression output: Leverage Ratio and more bank dummy and their interaction

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Exit Dummy						
Total Asset to Capital	0.0095**			0.0094**		
	(0.004)			(0.004)		
Bank Dummy*Leverage ratio	0.0039			0.0035		
	(0.018)			(0.018)		
Debt to Capital		0.0095**			0.0094**	
		(0.004)			(0.004)	
Bank Dummy*Leverage ratio		0.0039			0.0035	
		(0.018)			(0.018)	
Bank Borrowing to Total Asset			-0.0046**			-0.0052**
			(0.002)			(0.002)
Bank Dummy*Leverage ratio			-0.0175*			-0.0170*
			(0.010)			(0.010)
Cash flow in financial activity to Asset	-0.001**	-0.001**	-0.0013			
	(0.000)	(0.000)	(0.001)			
Total cash flow to Asset				-0.002***	-0.002***	-0.001
				(0.000)	(0.000)	(0.001)
More Bank Dummy	-0.021***	-0.021***	-0.027***	-0.021***	-0.0210***	-0.027***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,463	30,463	21,848	30,797	30,797	21,858
R-squared	0.044	0.044	0.046	0.044	0.044	0.046

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1

Table A3

Regression output: Leverage ratio and borrowing from more than one bank

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable: Exit Dummy						
Total Asset to Capital	0.0098**			0.0097**		
	(0.005)			(0.005)		
Debt to Capital		0.0098**			0.0097**	
		(0.005)			(0.005)	
Bank Borrowing to Total Asset			-0.0052**			-0.0058**
			(0.002)			(0.003)
Cash flow in financial activity to Asset	-0.0009**	-0.0009**	-0.0010			
	(0.000)	(0.000)	(0.001)			
Total cash flow to Asset				-0.0016***	-0.0016***	-0.0003
				(0.000)	(0.000)	(0.001)
				0.000	0.000	0.096
Number of Bank	-0.004***	-0.004***	-0.0034***	-0.004***	-0.004***	-0.0034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30,463	30,463	21,848	30,797	30,797	21,858
R-squared	0.046	0.046	0.046	0.045	0.045	0.046

Note: Firm controls consists of log of age, log of sales, profit to sales ratio, ownership status
Note: Robust standard errors in parentheses: *** p <0.01, ** p <0.05, * p <0.1