# Do Programs Mandating Small Business Lending Disincentivize Growth? Evidence From a Policy Experiment

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**Abstract**

Exploiting discontinuities in program eligibility, we show that small-firm lending mandates inhibit firm growth. Newly eligible firms near the upper threshold for treatment slow investment, sales, and a non-accounting measure, power consumption. The effects are more pronounced for more constrained firms and those borrowing from banks away from their lending targets. Establishment level data show similar program-induced distortions in firm size. Our results suggest that financial constraints matter: firms give up growth to retain credit access. However, lending mandates alter growth trajectories by pushing target firms to remain small to retain financing eligibility or so banks can meet statutory targets.

# 1 Introduction

Understanding the financial constraints faced by firms is of significant interest in corporate finance. Much of the recent work focuses on how to measure financial constraints (Fazzari et al. (1988), Kaplan and Zingales (1997), Whited and Wu (2006), Hadlock and Pierce (2010), Hoberg and Maksimovic (2015)) and the real-side effects on investments (e.g., Hennessy and Whited (2007)). The research concludes that constraints matter and have significant effects on growth. In particular, a robust finding across many methods and datasets is that small firms are more constrained.

Financial constraints also matter in international settings. Firms in emerging markets, especially small firms, face significant credit constraints that impede enterprise growth (Berger and Udell (1998), Galindo et al. (2003) Beck et al. (2005) Beck and Demirguc-Kunt (2006), Schiffer and Weder (2001)). The 2013 World Bank enterprise survey finds that 41% of small firms in the least developed countries perceive that lack of access to finance is a major impediment in achieving high growth. In middle and high income countries, a still significant 30% and 15%, respectively, report credit access as a problem.

The financing frictions faced by small firms are of broader economic and policy interest as small firms are important source of employment (Beck and Demirguc-Kunt (2006), Ayyagari et al. (2011)). Not suprisingly, government interventions to help small firms gain financial access are common. State interventions can take many forms including regulatory norms for lending to marginal borrowers (Carrell and Zinman (2014), Morse (2011)), forming entities such as KfW in Germany that engage in small firm financing with debts backstopped by the government, or programs such as the SBA loan program in the U.S. for small businesses. The benefits of state intervention are discussed in, e.g., Karlan and Zinman (2010), Burgess et al. (2005a), and Banerjee and Duflo (2014). More cautious views are expressed by Melzer (2011), who stresses economic hardships due to over-borrowing while Khwaja and Mian (2005) and Cole (2009b) emphasize the redirection of credit due to political pressures.

We examine a particular form of state intervention in credit markets, a mandate that

requires banks to lend to small firms. This mandate is part of a "priority sector" lending program in India, under which all banks operating in India must allocate loanable resources in quantities and to priority sectors as laid down in law. The program has had broad political support across the spectrum since its inception in the 1970s. Penal provisions apply if banks do not meet priority sector lending targets. Banks must deposit shortfalls in programs paying a low interest rate of several hundred basis points below sovereign paper. This provision, coupled with the adverse publicity from not meeting state mandates, exerts considerable pressure on banks to meet their priority lending targets.

We show that a potentially important distortion arises from such mandates. While mandates push credit to small firms, they can *inhibit* enterprise growth by creating incentives to retain credit access. The intuition is as follows. The financial resources supplied by the directed lending program are scarce. Indeed, this scarcity of credit is the very reason for the directed credit program to exist. If current program beneficiaries grow, they no longer qualify as priority credit. Lenders face pressures to meet program targets as they must replace firms that grow and exit programs. The larger among eligible firms, or firms at upper threshold, are particularly attractive targets as their retention is more helpful in fulfilling quantitative lending quotas. Slowing their growth allows banks more time and head room to meet program quotas, avoid the shortfall penalties, and defer the search costs of finding replacement borrowers. Thus, firms at the upper threshold wishing to retain access and their banks may both find it beneficial to slow growth trajectories to accommodate adjustment costs of exit from program eligibility.

Before turning to the research design, we briefly comment on the institutional setting in India that makes such slow down a possibility. Borrowers may acquiesce to slow growth in return for credit access when banks have more power to hold up borrowers. This can occur if credit is scarce and bank relationships are hard to form, when the threat of losing bank credit is real (Rajan (1992)). This description is apt for bank dominated emerging markets such as India (De and Singh (2011), McKenzie and Woodruff (2006)). Likewise, following Lilienfeld-Toal et al. (2012), credit distortions can arise when lender resource constraints –

financial or managerial – bind. Here, lenders face the problem of resource *reallocation* rather than the first best allocation to all profitable opportunities. These bank-level pressures may not matter if borrowers can freely switch between banks. Such an environment is unlikely to require interventions such as directed credit programs in the first place.

Our research design is centered on a discontinuity due to the changes in the treatment threshold for program eligibility. The priority sector lending or PSL program mandates all banks operating in India to allocate a significant fraction (currently 40%) of their credit to specified sectors (Cole (2009a)). Lending to small and medium enterprises (SMEs) constitutes one such category with a sub-limit of 18% of credit. The program rules specify that a firm is considered as an SME only if its total investment in plant and machinery does not exceed a threshold. This limit was revised upward from INR 10 million to INR 50 million in September 2006.[1] Firms which increase their total investments in plant and machinery beyond INR 50 million lose the priority sector tag in the year when the threshold is crossed.

We focus on the September 2006 change in eligibility limits. The change exogenously assigns firms to the priority sector program. Some firms are closer to the exclusion criterion of INR 50 million compared to others. We examine whether firms that are closer to the upper threshold slow down their investments in plant and machinery. We then test for real side consequences on output and a non-accounting measure, power consumption. To firm up interpretation, we trace out sources of heterogeneity that help pin down channels. We then conduct robustness placebo tests, and for external validity, examine a different dataset on manufacturing for distortions in size induced by the priority sector lending limits.

The treatment sample comprises firms that become newly eligible for priority sector credit after the regulation change in 2006. These are the firms with investment in plant and machinery between INR 10 million and INR 50 million in 2006. We divide the newly eligible firms into terciles based on their gross investment in plant and machinery. Firms in the upper most tercile are closer to INR 50 million mark. They form our "treatment" group. and the firms in the lower most tercile form our "control" group. Rajan and Zingales (1995)

[1]INR 50 million is about $ 0.8 million as of December 2015.

and Vig (2013) employ a similar empirical strategy classifying firms based on tangibility. Using a difference-in-difference methodology, we examine differences in outcomes between the treatment and control groups.

We find that relative growth rate in plant and machinery of treatment firms (relative to controls) is lower by between 2.9% to 5.1% in the post period relative to the pre-change period. The treatment interpretation is reasonable because the assignment of firms into control and treatment groups is based on a change in law exogenous to the assets held or the circumstances of any one specific firm. It is, however, possible that in the absence of such an intervention, the treatment group firms would have grown even slower. A closer look at the policy design alleviates the above concern. The limit of INR 50 million was applied to all firms with no regard to industry, age, technology used, group affiliation and other factors that may affect the production possibility sets of firms. Prior research such as Rajan and Zingales (1998), Bertrand et al. (2002), and Kaplan and Zingales (1997)) suggest that these factors matter for production. However, in India, the blanket limit was imposed with no attention to such issues.

We perform placebo and robustness tests. By design, our treatment group firms are larger than control group firms, albeit with a small margin. Studies such as Evans (1987), Hall (1988) show that large firms grow slower than smaller firms for several reasons including regression to the mean. We thus perform a false limit test. Here we take an arbitrary limit and range, and perform the difference and difference test using our identification strategy. For example, we consider firms in the band of INR 60 million and INR 100 million in terms of total investment in plant and machinery. When we consider this false limit and perform our difference-in-difference tests based on plant and machinery terciles, we are unable to reject the hypothesis that firms in the upper tercile as well as the lower tercile grow at similar pace both in the pre and post regulation change period. The data perhaps reflect the law of proportionate effect (Hymer and Pashigian (1962)), which argues that growth rate and size are independent.

The limit of INR 50 million is arbitrary but the differential growth rate near the INR 50

million cut off may exist even in years other than 2006. Accordingly, we perform a false year test. Here we keep the limits unchanged but assume a false treatment year. We cannot reject the hypothesis that growth rate of upper and lower tercile firms is similar in both the pre and post (false) treatment years. Third, we also vary the pre and post treatment interval, in terms of number of years. Such a variation does not impact our main result materially. Finally, we include firm level, industry level and interactive industry-year level fixed effects. These controls help filter other concerns about unobservables.

We next examine the economic activity levels of treated firms. The test serves the purpose of differentiating between accounting adjustments to plant and machinery and changes in real activities of firms. The slowdown in plant and machinery growth could be a result of an accounting reclassification by firms wishing to preserve the priority tag. Such accounting adjustments are not uncommon even in the U.S. for large firms (Feng et al. (2011), Dechow et al. (2007), Liberty and Zimmerman (1986)). If the accounting viewpoint is true, treated firms should not slow activity at the SME threshold. On the other hand, the real activity effect predicts that there should be slowdown in output. We test these two viewpoints.

We compare the relative change in capital expenditure between treatment and control group firms in the post regulation period when compared to the pre regulation period. We find that treatment group firms reduce capital expenditure by 31% in the post regulation period. We also examine the sales and profitability of the treated firms. While output growth effects should be reflected in a slowdown of sales, we argue that to the first order, profitability should *not* be affected as there is no benefit to reducing markups or margins. We find results in line with our hypothesis. We find that treatment firms experience a relative decline of 12.5% in sales in the post regulation period but the changes in margins are not significant.

We exploit the fact that the SME cutoff applies to manufacturing firms and also exploit the fact that our data records the power consumption of firms. Power is, of course, a key input into manufacturing and a slowdown in power consumption is a unique signal of real effects. We examine the differential change in power consumption between our treatment

and control group firms. We find that power consumption of the treated firms drops by 12.5% in a difference-in-difference sense.

We perform two additional tests. First, we obtain priority sector lending volumes from bank financial statements. We also exploit data on bank relationships of borrowers, which are coded from annual reports, to classify borrowers based on the priority sector volumes of lenders. We hypothesize that chances of losing access to credit are higher for borrowers that borrow from banks that face pressures on meeting priority sector lending targets. For such PSL-target-challenged banks and threshold borrower combination, the pressure to slow growth is high. We find such a result. The converse viewpoint is from a firm's side. Among the threshold firms, the threat of losing access is likely severe among the more credit constrained firms. Hadlock and Pierce (2010) show that age and size are two important determinants of credit constraints. Thus, our second additional test asks if slowdown among threshold firms is concentrated within young firms. We find that this is the case.[2]

In the final part of the paper, we examine the extensive margin, or the effects of lending mandates on the size distribution of the new firms. For this purpose, we use the data from Annual Survey of Industries (ASI) maintained by the Indian Ministry of Statistics and Program Implementation. We find new establishments clustering around the INR 50 million mark around the year of the change. More interestingly, a large proportion of firms also cross the *lower* threshold INR 10 million mark and move the distribution to the right. Thus, statutorily set financing limits that are ad-hoc from an economic viewpoint coordinate the sizes of startups. Credit supply influences the nature of firm formation.

In sum, we highlight an important and unintended cost of small business lending mandates that aim to improve access to finance of small firms. While newly eligible firms at the lower thresholds are freed to expand, firms at the upper threshold barrier can slow, particularly for credit constrained firms and lending-target constrained banks. Programs intended to help one set of firms constrain others. The findings also contribute to the ag-

[2]We could, in principle, also sort on total assets, which is the definition of size in the finance literature. However, this specification is awkward given that a subset of total assets, viz., plant and machinery, is already used to assess program qualification. Nevertheless, in unreported results, we find similar results.

gregate literature on firm size and growth. Hsieh and Klenow (2012) find that in countries such as India and Mexico, many establishments are born small and remain small while U.S. establishments grow 6 to 9 times during the first forty years of their life. The study discusses several impediments to growth such as regulation or labor laws.[3] Our findings suggest that access to finance may be a contributing factor to the small size phenomenon.

The rest of the paper proceeds as follows: Section 2 provides brief institutional background relevant for our study. Section 3 describes the data while Section 4 explains our empirical strategy and main results. Section 5 presents our results by various categories. Section 6 presents results pertaining to extensive margin. Section 7 concludes.

# 2 Institutional Background

## 2.1 Indian Banking System

Since India's independence in 1947, the banking sector in India has seen three phases. Phase 1 witnessed the coexistence of both private and state-owned banks in a relatively liberal environment with relatively few controls or reserve requirements (Cole (2009a), Demetriades and Luintel (1996)). Phase 2 saw the nationalization of 14 major private banks in India in 1969 followed by the nationalization of 6 more in 1980 (Ketkar (1993)). Significant state intervention in banking started in this period (Burgess et al. (2005b)). As Cole (2009a) points out, directed lending was seen as an instrument to ensure credit flow to priorities of the state. Phase 3 began in the mid-1990s after a balance of payments crisis. Several regulatory restrictions such as branching norms, interest rate controls were eased and the banking sector opened up to private entry. State owned banks were partially privatized (Sathye (2005)) with the government still retaining majority stakes of 55% to 85%. State-owned banks coexist with a growing private sector that accounts for roughly 25% of the

[3]See, e.g., Aghion et al. (2008), Dougherty et al. (2011), Bloom et al. (2011), Hasan and Jandoc (2010), Alfaro and Chari (2014). Gopinath et al. (2015) study the role of financial frictions in resource misallocation in South European firms.

market.

## 2.2 SMEs in India

Small and medium enterprises (SMEs) are economically important sources of jobs. Ayyagari et al. (2011) study a sample spanning 104 countries between 2006 and 2010. They find that SMEs account for 48% of total employment. Small firms are also important in India. In 2015, the sector had 36 million units employing 80 million people and accounts for 45% of the manufacturing output and 40% of India's exports.[4] Given its importance in employment, the SME sector is politically sensitive and is subject to periodic interventions (Porte (2002)).

The SME sector in India has unique features. Due to labor laws and other regulatory forces, firms in India tend to remain small. Bhagwati and Panagariya (2012) show that proportion of small firms is disproportionately high in India. Hasan and Jandoc (2010) point out that nearly 84% of Indian firms employ less than 50 workers. In contrast, in China, only 24.8% of the firms employ less than 50 workers. The relevant number is 64.7% for Indonesia, 69.6% for Philippines, 46.5% for South Korea, 45.7% for Thailand and 27.5% for Malaysia. Mazumdar (2008) describes this skewed distribution as the missing middle.

## 2.3 Directed Lending Programs

India adopted a planned economic system in the first four decades after independence (Omvedt (1993)). In 1971, India's central bank, the Reserve Bank of India (RBI) constituted an informal study group to advise on policy to be followed with respect to lending to priority sector. In 1974, the RBI advised banks to direct at least one third of their lending to priority sector. In the year 1980, the limit was raised to 40% and banks given 5 years to comply. The definition of priority sector was broadened to include other type of loans such as loans to low cost housing, small ticket education loans, and loans to export oriented firms and loans to agriculture and SMEs.

[4]See http://www.smechamberofindia.com/about_msmes.aspx. See also De and Singh (2011).

Banks that do not meet priority sector requirements must invest in funds that yield between 200 basis points and 500 basis points below bank rates depending on the shortfall. The funds in which the banks are allowed to invest proceeds serve purposes similar to those targeted by priority sector lending norms. These funds include the Rural Infrastructure Development Fund established by the National Bank for Agricultural and Rural Development or other funds with similar ends such as the National Housing Bank or the Small Industries Development Bank of India as deemed appropriate by the Central Bank. The failure to fulfill priority sector requirements also affects the performance appraisal ratings of a loan officer adversely (Bhowal et al. (2013)). In addition, failures to meet priority sector lending norms make banks significant targets for political pressure.

Directed lending programs are not unique to India. They appear in various forms in both emerging and developing countries as instruments to achieve or distribute economic growth and employment. These programs are of greater size in earlier stages of country development but may change as financial systems mature or country growth paths crystallize. Countries with directed lending programs include Brazil, Germany, Japan, Mexico, South Korea, and Turkey. Accounts of such programs include Brizzi and Valdés (2001), Micco and Panizza (2006), and Schumukler (2007). Schwarz (1992) reviews the U.S. evidence and points out that 25.8% of credit in the early 20th century is Federally directed. Gale (1991) argues that directed credit flows as intended but has little discernible real effect (see also Goldsmith (1959), McKinnon (1973), Shaw (1973)).

## 2.4 The 2006 SME Redefinition

Our focus is on the portion of priority sector lending requirements directed at SMEs. The threshold limit and the changes are decided by the Ministry of Micro, Small and Medium Enterprises (MSME). The Reserve Bank of India directions for priority sector lending follows this definition.[5] On September 9, 2006, the limit for manufacturing SMEs was revised up from INR 10 million to INR 50 million. The change in eligibility norms brought in a large

[5]See https://rbi.org.in/scripts/NotificationUser.aspx?Id=9688&Mode=0

number of firms in the band of INR 10 million to INR 50 million into the priority sector lending program. We use this event to study the impact of directed lending on firm growth.

SME limits have been reset prior to 2006 but the changes were not as long-lasting. Banerjee and Duflo (2014) study a 1998 change in limits from INR 6.5 million to INR 30 million, which was quickly reversed by the Ministry downward to INR 10 million in 2000. They study the earlier change using a proprietary sample obtained from one bank and focus on newly included borrowers at the *lower* threshold. Banerjee and Duflo convincingly demonstrate that the newly included firms expand after the redefinition. We provide insights from *upper* threshold and spread focus across banks that vary volume of priority sector lending. Our study that growth is inhibited (for upper threshold firms) is complementary to their finding for lower threshold firms. The newly freed firms grow while newly constrained firms enter into a trap. The forces that relax constraints for one set of firms impose constraints for another.[6] Financial constraints matter and as we show here, important enough that firms appear to be willing to forgo growth to maintain access.

The 2006 change came after a period of relative stability and has lasted for nearly a decade, which makes the change more suitable for our study. It is unlikely that there is a precise cutoff size below which firms are constrained and above which they are not. Thus, treatments for eligibility are based on essentially arbitrary cutoffs so the responses trace out supply effects of relaxing credit constraints. If the cutoffs have bite, their changes will result in empirically observed treatment effects. On the other hand, if the size limit for program eligibility is excessively liberal, firms will be unconstrained and cutoffs will essentially cease to have meaning as measures of financial constraints. Which of these forces prevail becomes an empirical issue.

A definition of SME based on firm assets is not uniformly used across the world. Policymakers employ other criteria and even when the criteria are the same, the cutoffs can vary across countries and within the same country, by time. For instance, the 2005 OECD SME

[6]Indeed, the growth slowdown at the upper threshold that we establish can be viewed as a necessary condition for their study, which relies on such firms being constrained to identify supply side effects due to relaxation of credit constraints.

and Entrepreneurship definition includes the number of employees and sales turnover. Small enterprises are those with 10-49 employees and sales turnover less than EUR 10 million. Ayyagari et al. (2007) study small businesses in 76 countries. They note that definitions of small firms vary across countries and are based on varying criteria including number of employees, sales, and investments.[7] However, for financial constraints, academic research certainly supports the use of firm size, or total assets. Received studies inevitably find that firm size is the key predictor of financial constraints. Recent studies are Whited and Wu (2006), Hadlock and Pierce (2010) and Hoberg and Maksimovic (2015). A related literature studies the effect of constraints on macroeconomic aggregates (e.g., Gopinath et al. (2015)); ours is a detailed microeconomic evidence of such constraints that supports the literature.

# 3 Data and Summary Statistics

Our analysis employs company financials and data on power consumption. The primary source of our data is the Prowess database maintained by CMIE (Center For Monitoring Indian Economy). Prowess provides data on financials of more than 29,000 Indian firms. Several published studies employ this database (Bertrand et al. (2002), Khanna and Palepu (2000), Gopalan et al. (2007), Allen et al. (2012), and Vig (2013)). The variables used in the analysis are available in the "Annual Financial Statements" sub-section of the "Query by Financial Statements and Ratings" section of the CMIE Powess database.

For tests on the extensive margin, we use data from Annual Survey of Industries (ASI) conducted by the Ministry of Statistics and Program Implementation, Government of India. The survey covers manufacturing firms located across the country. It reports data at the factory level and includes detailed operating, employment, and investment data. We use this data for the purpose of identifying new firms. The Ministry website states that the ASI survey includes all factories appearing in the records of the Chief Inspector of Factories (CIF)

[7]The United Kingdom, Russia, and Mexico use a cutoff of 250 employees, while other developed countries such as Germany and France use a cutoff of 500 employees; Singapore uses a 100-employee cutoff. Kushnir (2006) notes that in the Canadian Small Business Program, revenues should be less than 5 million dollars for a firm to be considered as a small business. In China, definitions vary across industries.

in each state of India. Conversations with CMIE officials reveal that the Prowess database is not a comprehensive directory of all establishments or firms and is thus unsuitable for measuring firm formation.

We comment further on our empirical choices. The ASI data are not suitable for the tests on the intensive margin, or changes *within* firms. The ASI data limitations include the fact that the data are compiled based on surveys of factory owners and do not represent audited financials. The CMIE Prowess database, on the other hand, uses audited financial statements. Moreover, analysts at CMIE spend considerable efforts on analysis and classification of financials to make them comparable across years. The ASI data also lacks details on ownership and bank loans at factory level. Finally, the field on plant and machinery data is missing for several observations while Prowess provides us with audited plant and machinery data, similar to what bankers use in credit assessments. We thus use the Prowess data for our intensive margin tests and ASI data for tests pertaining to size distribution of new firms, or the extensive margin.

### 3.1 Summary Statistics

Table 1 presents summary statistics for the sample of firms that became newly eligible for priority sector lending, that is, those firms that have their gross plant and machinery between INR 10 million and INR 50 million as of 2006. As can be seen from the table, the average value of gross plant and machinery (PMG) is about INR 50.8 million. Eligible firms are cumulatively less than 1% of the market value of the largest Indian firm, Reliance Industries Limited.

## 4 Empirical strategy and results

Our tests are based on the change in the eligibility criterion for small firm lending. ch analyses. The change in policy definitions rather than the pre-existing levels are a more firm

basis for our analysis in difference-in-difference settings. Before proceeding to the empirical tests, we briefly discuss issues regarding sample construction for detecting treatment effect.[8]

Much of the analysis would be simplified if an external agency certifies who is eligible and who is not for priority sector tags. Such a list is not available. Thus, we pay attention to the sample construction process. One possibility is that eligible firms near the CMIE Prowess-reported upper threshold of INR 50 million could form the treatment group whereas firms just above the limit could form the control group. However, these small differences could reflect measurement errors, unobserved classification and accounting choices of firms within discretion allowed by law, or strategic decisions by firms on assets once the new law takes effect. Thus, relying on just-above to just-below comparisons, the staple of discontinuity-based causal analyses, is not appropriate. Given the observational data, it is not possible for the econometrician to say that the control groups formed in this manner are unaffected by the program.

A second control group could be based on the lower threshold by comparing firms just above the lower threshold (INR 1 million) as treatment group and firms just below the threshold as control group firms. Apart from the accounting and related issues discussed above, the lower threshold is not where we expect to see growth disincentives. Firms in the treatment group at INR 10 million are very far from the threshold of INR 50 million that would trigger exit from program eligibility. Even at a 15% annual growth rate, it would take firms 11.5 years to reach a stage where upper-threshold growth disincentives kick in. Thus, we do not expect growth disincentives at the lower end. To the extent firm growth allows banks to fulfill priority sector lending targets, we expect to see normal unconstrained growth at the lower end, as for instance in Banerjee and Duflo (2014). The disincentives should kick in and be pronounced towards the upper threshold.

We also consider the possibility of treating all the newly included firms as treatment group and the firms already in priority sector (those with investment in plant and machinery

[8]We thank, without implicating, Anusha Chari for several thoughtful comments to motivate this discussion.

between INR 0 and 10 million) as the control group. However, such a comparison fails the standard pre-trend test for treatment effects. Both the treatment and control group firms differ significantly in the pre-treatment period.

A reasonable choice for treatment and control groups is thus the approach taken by Vig (2013) or Rajan and Zingales (1998). We follow them and divide our sample into size terciles. The top tercile is nearer the upper threshold and thus poses a greater threat of priority sector exit. The lower tercile is smaller and is thus far from the exit boundary. This sample fulfills the basic requirement for using program eligibility to evaluate the effects of credit access treatments. Both the treatment and control group firms were not eligible for priority sector lending in the pre policy change period. Firms in the treatment group face significantly higher risk of moving out of priority sector treatment if they grow. Thus the treatment is likely to have a significantly higher impact on such firms with respect to disincentives for growth when compared to firms in the control group.

There are 422 firms in the first tercile in the pre regulation change period and 394 firms in the post regulation change period. In our treatment group, i.e., the third tercile, there are 409 firms in the pre regulation change period and 393 firms in the post regulation change period. In the middle tercile that we omit, there are 423 firms in the pre regulation change period and 396 firms in the post regulation change period. These figures indicate that there is little exit by treatment or control firms during our sample period.

## 4.1 Visual Evidence of Clustering

The priority sector lending limit is INR 10 million in plant and machinery before the 2006 change in policy. One question is whether this treatment, i.e., the statutory directive to banks to lend to small firms, has economic bite. We present some visual evidence in the spirit of the McCrary (2008) test. Figure 1 depicts the gross investment in plant and machinery as of fiscal 2005, one year before the 2006 policy change. At this point of time, the priority sector treatment of INR 10 million is in force for several years. Thus, if it has effect, it

should be seen in an unusual mass around the treatment cutoff. Using the default values of bandwidth and bin size, we depict in Figure **??**fig1 plant and machinery in the X-axis and the proportion of firms in the Y-axis. The visual evidence in Figure 1 shows clustering around the pre-existing upper threshold of INR 10 million but as importantly, no unusual clustering around INR 50 million.

## 4.2 Specification and Results

We estimate the following equation to identify the effects of preferential access

$$\begin{aligned} Y_{\text{ij}} &= \alpha + \nu_i + \delta_j + \theta_{sj} + \beta_1 \times \text{After} \times \text{Treat} \\ &\quad + \beta_2 \times \text{Treat} + \beta_3 \times \text{After} + \beta_4 \times X_{ij} + \epsilon_{ijs} \end{aligned} \tag{1}$$

where $Y$ is an outcome variable of interest. The analysis is at the firm-year level. The independent variable *After* refers to years after 2006. We include a vector of fixed effects to control for unobservables. The term $\delta_j$ refers to year fixed effects while the term $\nu_i$ refers to firm fixed effects. We also include terms $\theta_{sj}$ that industry-year fixed effects that control for industry specific time varying factors. $X_{ijs}$ refers to vector of controls. We also control for profitability and firm size in the vector of controls $X$. To address the specification issues raised by Bertrand et al. (2004), we cluster the errors at the firm level.

Our main independent variable of interest is the interaction term, $After \times Treat$, which can be represented as

$$\begin{aligned} \beta_1 &= (\overline{Y}_{\text{Treatment firms}} - \overline{Y}_{\text{Control Firms}})\big|_{\text{After Year 2006}} \\ &\quad - (\overline{Y}_{\text{Treatment firms}} - \overline{Y}_{\text{Control firms}})\big|_{\text{Before Year 2006}} \end{aligned} \tag{2}$$

For a firm $i$, Equation (2) compares the difference in growth rate of investment in plant and machinery as a proportion of total assets in the post regulation change period with the difference in such intensity in the pre regulation change period. A negative sign for the

coefficient $\beta_1$ would indicate a decline in growth rate in a difference-in-difference sense.

We estimate regression equation (1) on a sample of newly eligible firms. The first dependent variable is plant and machinery as a fraction of assets. Table 2 reports the results. In columns 1 and 2, we consider a period 1 year before and 1 year after the policy change. The sample period is expanded to 3 years in columns 3 and 4. Columns 5 and 6 consider a period of 5 years before and 5 years after the policy change. In columns 1, 3 and 5, we employ industry and year fixed effects in order to absorb time invariant industry level characteristics and time trend. In columns 2, 4 and 6, we use industry-year interactive fixed effects to absorb factors such as technological or policy changes relating to an industry in some years.

The coefficient $\beta_1$ for the interaction between top tercile dummy and a dummy representing post policy change period is negative in all specifications. As shown in column 1, firms near the upper threshold experience a 3.1% lower growth in plant and machinery in a difference-in-difference sense. However, when we add industry-year fixed effects in columns 2, the coefficient loses statistical significance. This is not unexpected due to the short post-period of one year. Moreover, the change in policy was announced in September while Indian fiscal year-ends are typically March. Year 1 effectively has a little more than 6 months of post policy change period.

Longer time intervals of 3 and 5 years before and after the policy change show sharper results. In columns 3 and 4, where we consider 3 years, the main coefficient of interest drop by 5% and 4.7% per year, respectively. Similarly, in column 5 and 6, the drop is 5.1% and 4.9% per year, respectively. These estimates are statistically significant at the 1% level. The economic significance of the growth decline is underlined by the fact that Indian industry and the SME sector *grow* during the comparable period by 5.5% and 5.9%, respectively.

## 4.3 Other Specifications

Our dependent variable is the ratio of plant and machinery to total assets. One question is the extent to which the results are driven by the numerator relative to the denominator. As

a test of the above, we calculate the real growth in plant and machinery investments every year. We take the first difference of log plant and machinery deflated consumer price index to estimate the real growth in plant and machinery.

We reestimate equation (1) using the real growth in plant and machinery as calculated above. The results are presented in Table 3. In columns 1, we employ industry and year fixed effects in order to absorb time invariant industry level characteristics and time trend. In columns 2, we use industry-year interactive fixed effects. We also include other firm level controls in columns 2. The results indicate that real growth in plant and machinery is lower by between 23% to 26.2% for the treatment firms relative to control firms.

The specifications estimated thus far lump together the entire post period in the "After" dummy variable. To better understand how the impact of treatment plays out we unbundle the years using a dynamic specification that interacts year dummy variables with the top tercile dummy. The dependent variable continues to be the ratio of plant and machinery to total assets. The results are reported in Table 4. In columns 1, we employ industry and year fixed effects in order to absorb time invariant industry level characteristics and time trend. In columns 2, we use industry $\times$ year fixed effects in order to absorb time varying industry level factors.

It is useful to note that the interaction between the years 2004 and 2005 with the top tercile dummy is statistically insignificant. However, from the year 2006, the beginning of the treatment, the interaction term between the year dummy the top tercile dummy is negative and statistically significant. The relative decline is 7.4% in the year 2006, 7.1% in the year 2007, 9.8% in the year 2008 and 9.1% in the year 2010. The priority sector induced constraints persist for several years after the treatment.

## 4.4 Placebo Tests With False Treatment Limit

Larger firms are by definition closer to the upper threshold of the treated sample, although Section 4 suggests that the difference is not huge. For technological reasons, the reversion

to mean may occur or large firms may find it relatively difficult to grow (Evans (1987), Hall (1988)) and the difficulty may increase over time. While the available evidence indicates that financial constraints bind more for small firm (Beck and Demirguc-Kunt (2006)), we still perform a placebo test using false limits.

We keep the treatment year unchanged but consider treated firms as the firms with between INR 60 million and 100 million in plant and machinery. If our results are an artifact of size, then larger firms are expected to grow slowly even when we consider false limits. We divide the firms into control and treatment groups by following the methodology used in our main tests. The important difference here is that these firms did not experience any treatment effect in 2006. In other words, all firms in the 60-100 million bracket were outside the purview of priority sector lending both before and after 2006. Therefore, if our main results are driven by the treatment effect, then the difference in growth rate between our placebo treatment and placebo control firms are unlikely to be any different in the post policy change period when compared to pre policy change period. On the other hand, if the results are driven by size effect whose impact increase over time, then it is likely that larger firms grow slower than smaller firms in a difference-in-difference sense even in the INR 60-100 million size bracket.

We estimate equation (1) on a sample of firms that fall within the INR 60 million to INR 100 million. The results are reported in Table 5. We consider 1 year, 3 year and 5 year period before and after waiver respectively in columns 1-2, 3-4 and 5-6. We cannot reject the hypothesis that there is no change in difference in growth rate in total plant and machinery between the control and treatment groups in the post-2006 period when compared to the pre-2006 period.

## 4.5 Placebo Tests With False Treatment Year

We next consider a placebo test with a false treatment year. This test serves two purposes. One is purely statistical. Another is to examine a regulatory targeting hypothesis in which

rule changes are driven by concerns that the firms near INR 50 million in plant and machinery are special in some way. For instance, regulators may have private knowledge about unobservable factors that firms above INR 50 million are unconstrained in 2006. In this context, it is important to note that we perform difference-in-difference tests. Thus, the concerns arise only if there is asymmetry in the post versus pre period. Nevertheless, it is useful to perform a false year test. We do so by replacing 2009 as treatment year in place of 2006 and defining the sample period as fiscal 2007 to fiscal 2011. We estimate specification (1) by following a similar identification strategy as before. The results are reported in Table 6. It is not possible to reject the hypothesis that the difference in growth rate between treatment and control group firms remains unchanged.

## 4.6 Capital Expenditure

We respecify Equation (1) using log capital expenditure. That is, we estimate

$$\begin{aligned} LogCapex_{\text{ij}} &= \alpha + \nu_i + \delta_j + \theta_{sj} + \beta_1 \times \text{After} \times \text{Treat} \\ &\quad + \beta_2 \times \text{Treat} + \beta_3 \times \text{After} + \beta_4 \times X_{ij} + \epsilon_{ijs} \end{aligned} \tag{3}$$

We exclude investments made in plant and machinery to avoid double counting. Thus, we pick up capital expenditure complementary to plant and machinery expenditure. These assets likely become less productive when restrictions on capital expenditure bind, slowing overall capital formation. The results are reported in Table 7. The difference is growth of capital expenditure between treatment and control group firms decreases by about 31% in the post policy change period relative to the pre period.

## 4.7 Sales and Profitability

We next examine the impact of policy change on sales and profitability of treatment group firms. These tests examine the ability of Indian corporates to circumvent restrictions placed

on credit access. For instance, firms could source materials from outside that they would source from within. If so, affected firms could continue unhindered by credit access. Of course, such outsourcing may be less profitable if the resources are better in-sourced in the first best case.

We re-estimate Equation (1) with logarithm of sales as the dependent variable. The results are reported in Table 8. We find that the difference in sales growth between the treatment and control growth firms declines by 25.1% in the post policy change period when compared to pre policy change period. From the above result, we infer that decline in capital expenditure and manufacturing activity level is associated with proportionate decline in sales. We also examine if there is any differential change in profitability, defined as earnings before interest and taxes to sales. We do *not* expect to find a profitability effect if the credit constraints primarily impact growth. Entrepreneurs may slow growth to retain credit access. However, there is no benefit from sacrificing profit. The results are consistent with our hypothesis. Profitability treatment effects are insignificant, suggesting that the primary effects of credit constraints are on firm sales.

## 4.8 Power Consumption

The previous results are based on accounting outcomes in income and financial statements. It is useful to supplement them with outcome variables outside accounting statements. Our sample comprises manufacturing firms. Power is a key input into manufacturing output and CMIE Prowess reports data on electricity consumption. We examine whether there is reduction in the level of manufacturing activity among treated firms in the post policy change period relative to control firms. The outcome variable is log power consumption. We estimate specification (1) with the dependent variable as the total expenditure on power. The results are reported in columns (3) and (4) of Table 7. Our main independent variable of interest is the interaction between post policy change dummy and power consumption. The total expenditure on power decreases by 12.5% in a difference-in-difference sense. The result is further evidence of the effects of reduced eligibility access to financing.

# 5 Heterogeneity

## 5.1 By Firms

Our main point is that firms are willing to sacrifice growth to retain preferential access to credit. Tests for heterogeneity can uncover the firms for whom these effects are more binding and serve as an additional confirmation of the credit access channel.

One test is on firms that are less or more financially constrained. Firms that face less difficulty in raising finance are less likely to sacrifice growth for qualifying into preferential credit access. We rely on the finance literature to identify firms that are constrained. Firm size is inevitably the variable of choice for defining credit constraints. Overall size rather than plant and machinery is a possibility, although we are reluctant to rely on these alone as plant and machinery comprises part of firm size and is already used as the basis for classifying treatment eligibility, treated, and control firms. However, in recent work, Hadlock and Pierce (2010) show that besides firm size, age is an important determinant of credit constraints. Thus, firm age is a good additional proxy for financial constraints.

We divide our sample into two halves based on firm age and generate estimates for the two sub-samples separately. Table 9 reports the results. Our interest is in understanding heterogeneity between young and old firms. In columns 1 and 2, we cover subsample of younger firms, whereas in column 3 and 4, we cover older firms. Among younger firms, the difference in growth rate of plant and machinery is between treatment and control group firms is lower by 7.4% in the post-policy change period compared to the pre-policy change period. There is no difference between control and treatment group firms in a difference-in-difference sense in the sub sample of old firms.

The heterogeneity results indicate that the growth disincentives are concentrated among firms which are likely to credit constrained. Thus, the possibility of reduced access to credit appears to be an important component of our results. To the extent the slowdown in growth is in the subsample of younger among threshold firms, the results also allay concerns that

slower growth prospects of older, larger firms may drive the overall results. The ordering in the subsample is the reverse predicted by such concerns.

## 5.2 By Banks

The failure to meet priority sector lending targets imposes significant costs, as shortfalls must be invested in low yielding funds such as the Rural Infrastructure Development Fund that aims to achieve the same ends as the directed lending program. For the loan officer, priority sector deficits adversely impact performance ratings and thus create career concerns. The bottom line is that banks are also under pressure to meet their priority sector targets. In turn, concerns about losing credit are the most for firms that borrow from banks that are significantly short of priority sector lending targets.

We classify banks into two samples based on average surplus (shortage) faced by each bank with respect to priority sector targets in the pre regulation change period. We classify banks that are in the lower half as priority sector target constrained banks. We further obtain data on bank-borrower relationships in CMIE Prowess, we classify borrowers into two groups based on the category of banks that they deal with. We estimate of main regression equation (1) separately for both the type of borrowers.

The results are reported in Table 10. In columns 1 and 2, we consider borrowers that borrow from constrained banks and in columns 3 and 4, we consider other borrowers. We consider a period of three years before and after the regulation change. All other aspects of our specification remain unchanged. The reduction in growth of plant and machinery in difference in difference sense is both statistically and economically significant only for borrowers borrowing from constrained banks. Growth of investments in plant and machinery ranges between negative 1.9% to negative 2.3% for such firms. On the other hand, firms that borrow from non constrained banks do not show such results. The result strengthens the viewpoint that supply side constraints matter and explain the slowdown in growth by upper threshold firms.

# 6 Extensive Margin

The results reported so far deal with the *intensive* margin, i.e., the impact of the regulation on the growth of existing firms. We now proceed to tests on the nature of new firm formation. In keeping with the spirit of prior tests, we examine whether there is an unusual change in the proportion of firms cluster to the immediate left of INR 50 million threshold after the new threshold limits in 2006. Additionally, because the INR 10 million threshold does not bind after the regulation change, a number of firms which would have located themselves just below the old threshold, may now decide to be above the old threshold of 10 million, resulting in declustering around this lower threshold. We provide visual evidence first and then turn to regressions.

## 6.1 INR 50 million Threshold

Figure 2 depicts the firm size distribution around the INR 50 million threshold before and after the 2006 change in regulation. The horizontal axis represents assets (1=10 million) and the vertical axis denotes percentage of firms in each category. The left panel pertains to years before regulation change and the right panel pertains to year after the change. The data covers the period between 2004 and 2008.

As shown in the left panel (denoted as zero), near-equal proportions of firms lie between the two bins before the regulation change. There does not seem to be any clustering at the INR 50 million mark. However, the distribution changes significantly after 2006. As shown in the right panel (denoted as 1), 56% of the firms lie between 4.5 and 5 million range after the regulation change. Prima facie, this appears to be clustering near 5 million mark in response to the regulation.

## 6.2 INR 10 million Threshold

As discussed above, it is also possible that proportion of new firms above INR 10 million threshold increases after the regulation change. This is because under the 2006 rule change, crossing the INR 10 million threshold no longer disqualifies a firm from the eligibility. Therefore, a number of firms that would have located themselves just to the left of 10 million mark in the old regime may not do so in the new regime. How are they go beyond INR 10 million depends on the intensity of financial constraints formerly faced by the firm as well as the new growth prospects. Therefore we examine four ranges near 10 million both before and after the regulation change.

The results concerning the INR 10 million threshold are depicted in Figures **??** to 3. The arrangement of the figures mimics that of Figure **??**. The left panel reports the results for pre regulation period and the right panel reports the results for post regulation period. In Figure **??**, the proportion of firms to the right of 10 million mark increases by about 0.7%. However, when we consider wider ranges in figures **??** to 3, the increase in proportion of firms to the right of 10 million mark ranges between 2% (in figure **??**) to 5.4% (figure **??**). In other words, nearly 5% of the new firms which would have located themselves to the left of 10 million mark move to the right after the regulation change.

## 6.3 Regression

Using a difference-in-difference strategy, we test if the change in regulation leads to clustering of new firms near the upper limit of INR 50 million. This is, of course, the cutoff at which there is discontinuity in program eligibility. We divide all factories into terciles based on the value of total assets. Factories belonging to the first tercile form the control group and those belonging to the third tercile form the treatment group. We omit the second tercile factories

from the analysis. We estimate the following specification

$$\begin{aligned} Y_{\text{ij}} &= \alpha + \nu_i + \delta_j + \theta_{sj} + \beta_1 \times \text{After} \times \text{Treat} \\ &\quad + \beta_2 \times \text{Treat} + \beta_3 \times \text{After} + \beta_4 \times X_{ij} + \epsilon_{ijs} \end{aligned} \tag{4}$$

The analysis is at the factory-year level. Our goal is to assess whether the likelihood of new firm establishment increases around program eligibility. The dependent variable of interest $Y_{ijs}$ refers to a dummy variable that takes the value of 1 if the firm i starts operations during year j and zero otherwise. The independent variable *After* refers to years after 2006. The independent variable treat takes the value of 1 for factories belonging to the third tercile. Our main independent variable of interest is the interaction between After $\times$ Treat. $\delta_j$ refers to year fixed effects, $\nu_i$ refers to factory fixed effects and $\theta_{sj}$ refers to year fixed effects. $\text{X}_{ijs}$ refers to a vector of several controls available in the Annual Survey of Industries dataset. We use organization type, ownership type, location (rural or urban), mandays worked in a year, total number of workers, gross value added and total factory profits as independent variables. To address concerns pertaining to autocorrelation, we cluster the errors at the state level (Bertrand et al. (2004)).

The results are reported in Table 11. In column 1, we do not include any control variables. In column 2, we include fixed effects for time, industry and state. In column 3, we include several firm characteristics as controls along with fixed effects. In column 4, we drop all government firms. Our main independent variable of interest is the interaction between top tercile dummy and a dummy representing post policy change period. Its coefficient is positive and statistically significant in all specifications. The inter-tercile difference in the proportion of new factories is between 3.8% to 5.2%. The results suggest that there is clustering of new firms near the treatment eligibility mark of INR 50 million.[9]

[9]In unreported results, we conduct placebo tests using false treatment years of 2003 and 2004. The interaction terms remain insignificant.

## 6.4 Interpretation of Extensive Margin Results

Our results pertaining to size distribution of new firms clearly indicate that the size distribution of new factories is influenced by the priority sector lending threshold. The upper threshold acts like a ceiling for large number of new firms. We thus see many factories at the INR 50 million mark only after 2006 and also see firms crossing the INR 10 million mark around the same time period.

One question that often comes up is why entrepreneurs do not split units in a legal sense while maintaining functionally larger entities. While this is possible, and probably does occur in practice, the empirical evidence suggests that many firms do not adopt such tactics. Moreover, we add two other points. First, the fact that firms must do this and operate with suboptimal organizational structures away from their first best is evidence of the effects of credit supply. Running two firms, with two sets of books, accountants, separation of physical premises, and having to deal with a myriad of inspections and taxes makes this cost non-trivial.

Our second point is that the Indian institutional context makes the business-splitting circumvention tactics difficult. Indian ranks 142 in terms of ease of doing business. During our sample period, it takes more than 1400 days, on an average, to set up a firm. The delay is mainly caused by slow approval process. Therefore, it is not possible to seamlessly split a firm or a factory. Nevertheless to address circumvention by splitting, we perform a diagnostic test. Splitting is likely to increase the total number of factories in the post regulation change period. We plot the number of factories year wise in figure 10. The figure plots the number of factories by year. The horizontal axis represents years and the vertical axis represents the number of factories. We do not observe any noticeable increase in the number of factories in the post regulation change period.[10]

[10] As an additional test, we examine whether the increase in number of firms post the regulation change is higher in states which have higher number of firms close to the threshold of INR 50 million. In unreported difference-in-difference estimates, the treatment effects are not significant.

# 7 Conclusion

Credit is a key constraint in business growth, especially for small firms. However, lending to small firm poses challenges because asymmetric information and moral hazard issues are greater in small firms. Hard information is less available for these firms, so effective lending practices require the generation and use of soft information (Petersen and Rajan (2002), Petersen (2004)). Additionally, small firm lending may be less profitable because ticket sizes are small and less able to cover fixed costs and information generated in lending has less reusability as small firm risks are unique. Not surprisingly, banks prefer to supply credit to larger firms and firm size emerges as the most robust predictor of financial constraints in a variety of settings and methods.

Alleviating the credit constraints of small firms is important not only because these firms are constrained but also because they are important engines of economic growth and employment. Government interventions in credit markets are a common response to channel resources to small firms. We study one such intervention, India's "priority sector" lending program, which requires banks to devote large fractions of their credit to small firms. Program eligibility is defined in terms of firm size. The focus on size precedes the modern research showing that small firms are constrained but is consistent with it and represents a simple, direct expression of its bottom line.

Our main point is that programs that target small firms pick a reasonable focus, viz., small firms, but paradoxically incentivize targets to remain small in order to preserve credit access. We establish empirical evidence of this effect by studying discontinuities induced by changes in program eligibility. Firms that near the threshold for qualification slow down their investments in plant and machinery, other capital expenditure, and experience slower growth in manufacturing activity and output. The results survive placebo falsification tests, vary cross-sectionally across banks and firms in economically sensible ways, and are also seen in threshold tests in a different dataset on Indian manufacturing plants. The results reflect a market with high frictions in establishing borrower-lender relationships. Constraints matter

enough that firms are willing to give up growth to retain credit access.

Our results also bring up other challenges in policy design. Credit programs are needed the most when credit market frictions are high. However, in conditions with high frictions, replacement borrowers are the hardest to find. Thus, when frictions have real bite, the need for policy interventions is high but so are their perverse growth effects. Another question concerns penalties for banks failing to meet lending targets. High penalties incentivize compliance. However, the greater the penalty, the more the pressure on banks to meet their targets, and paradoxically, the greater the pressure on banks to restrain firms from growth. The general point is that criteria for treatment, viz. firms facing growth constraints from credit access, conflict with the objectives of the treatment, viz. growth.

Contracting solutions to improve policy include defining program eligibility in terms of other characteristics such as firm age or the number of employees or the sales of firms. These pose difficulties of their own. Program eligibilities based on size cutoffs have the virtues of being transparent, simple to implement, and they directly target small firms. Moreover, finance research suggests that firm size is the most robust proxy for constraints (e.g., Whited and Wu (2006), Hadlock and Pierce (2010)). A program that does not directly condition on firm size but purports to help small firms is a challenge to design and as hard to market.[11] Other solutions include retaining priority status for firms growing out of the program. Such a program opens the converse issue of including firms that are not constrained into the constrained set and thus cut supply to the truly constrained. The basic point is that mandates do not necessarily eliminate the costs that lead banks away from unconstrained allocations in a world of zero costs.

Finally, we add to a literature on the political economy of credit. Existing work shows that the directed lending programs are susceptible to political capture and inefficient implementation (Khwaja and Mian (2005), Cole (2009b)). Our results show that even when there is not political capture, directed lending poses growth challenges.

[11]EU norms that define small firms on multiple criteria – size, employees, turnover, and autonomy – still include size. Moreover, contracting on non-size factors such as the number of employees can can slow usage of these other factors, and potentially, the inefficient usage of capital, and slow growth.

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## TABLE 1: Summary Statistics

The table reports summary statistics for the key variables. The sample comprises firms newly eligible for priority sector status during the period of study, 2004-2009. All variables other than ratios are stated in millions of rupees.

| Variable | # Observations | Mean | Median | Standard Deviation |
|---|---|---|---|---|
| Gross plant and machinery | 6,847 | 51 | 28 | 555 |
| Gross plant and machinery to Assets | 6,639 | 0.41 | 0.26 | 0.57 |
| Sales | 6,143 | 364 | 117 | 1,310 |
| Total Assets | 6,767 | 369 | 103 | 1,865 |
| Gross Fixed Assets | 6,736 | 114 | 55 | 854 |
| Net Fixed Assets | 6,737 | 77 | 27 | 690 |
| Current Assets | 6,663 | 160 | 43 | 510 |
| Debt | 6,241 | 152 | 36 | 1191 |
| Debt to Assets | 6,237 | 0.66 | 0.34 | 1.80 |

TABLE 2: Effect of priority sector limit change on the growth of newly eligible firms

We report the estimates of a regression. The dependent variable is plant and machinery investments as a proportion of total assets. Independent variables include firm characteristics. The sample comprises firms with gross plant and machinery between INR 10 million and INR 50 million for the year 2006. AFTER equals 1 if the observation year is greater than 2006. The top tercile based on plant and machinery is the treatment group while the bottom tercile is the control group. Profitability is earnings before interest and taxes to total assets. Log (sales) is the natural logarithm of sales. We include firm, year and Industry × year fixed effects. Standard errors robust to heteroskedasticity clustered by firm are reported in parentheses. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| VARIABLES | PMG/Assets | | | | | |
| | 1 year | | 3 year | | 5 year | |
| TOP × AFTER | -0.031$^{c}$ | -0.030 | -0.050$^{a}$ | -0.048$^{b}$ | -0.051$^{a}$ | -0.049$^{a}$ |
| | (0.018) | (0.018) | (0.018) | (0.019) | (0.018) | (0.019) |
| AFTER | 0.014 | 0.012 | 0.073$^{a}$ | 0.078b | 0.073$^{a}$ | 0.063 |
| | (0.014) | (0.030) | (0.026) | (0.033) | (0.025) | (0.044) |
| Log (Sales) | -0.04$^{b}$ | -0.040$^{b}$ | -0.066$^{a}$ | -0.066$^{a}$ | -0.059$^{a}$ | -0.060$^{a}$ |
| | (0.020) | (0.020) | (0.018) | (0.019) | (0.015) | (0.015) |
| EBIT/Assets | 0.035 | 0.036 | -0.145 | -0.145 | -0.133 | -0.133 |
| | (0.090) | (0.090) | (0.143) | (0.143) | (0.114) | (0.114) |
| | | | | | | 0.007 |
| Observations | 2,206 | 2,206 | 4,059 | 4,059 | 4,741 | 4,741 |
| Adj $R^2$ | 0.900 | 0.899 | 0.834 | 0.833 | 0.826 | 0.825 |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes | No | Yes | No | Yes |

TABLE 3: Effect of priority sector limit change on the real growth of newly eligible firms

We report estimates of the regression of growth in real value plant and machinery investments on firm characteristics for a sample of firms newly eligible for priority credit. The sample comprises firms with gross plant and machinery between INR 10 million and INR 50 million for the year 2006. AFTER is one if the year is greater than 2006. Firms are divided into three bins based on average pre-treatment (before 2006) values of gross plant and machinery investments. The top tercile is the treatment group while the bottom tercile is the control group. Profitability is Earnings before interest and taxes to total assets. Log (sales) denotes the the natural logarithm of sales. We include firm, year and Industry × year fixed effects. Heteroskedasticity consistent standard errors are reported in parentheses and are clustered by firms. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| VARIABLES | (1) | (2) |
|---|---|---|
| TOP × AFTER | -0.262$^{a}$ | -0.230$^{a}$ |
| | (0.030) | (0.032) |
| AFTER | -0.732$^{a}$ | -0.741$^{a}$ |
| | (0.119) | (0.131) |
| Log (Sales) | | 0.090$^{a}$ |
| | | (0.023) |
| EBIT/Assets | | -0.044 |
| | | (0.077) |
| Observations | 5,045 | 4,531 |
| Adj $R^2$ | 0.091 | 0.106 |
| Firm Fixed Effects | Yes | Yes |
| Year Fixed Effects | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes |

## TABLE 4: Year by Year Results

We report estimates of the regression of plant and machinery as a proportion of total assets on firm characteristics for a sample of firms newly eligible for priority sector with gross plant and machinery investments between INR 10 million to INR 50 million for the year 2006. The top tercile is the treatment group while the bottom tercile is the control group. $Y_t$ denotes a dummy variable for year $t$. Tobin's Q is defined as the market value to the book value of the firm's equity. Profitability is earnings before interest and taxes to total assets. Log (sales) is the natural logarithm of sales. We include firm, year and Industry × year fixed effects. Heteroskedasticity consistent standard errors reported in the parentheses are clustered by firms. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| VARIABLES | PMG | PMG |
|---|---|---|
| Log (Sales) | | -0.062$^{a}$ |
| | | (0.016) |
| EBIT/Assets | | -0.115 |
| | | (0.124) |
| $Y_{2004}$ × Top Tercile | 0.015 | -0.006 |
| | (0.018) | (0.014) |
| $Y_{2005}$ × Top Tercile | 0.008 | -0.017 |
| | (0.019) | (0.019) |
| $Y_{2006}$ × Top Tercile | -0.032 | -0.074$^{a}$ |
| | (0.028) | (0.023) |
| $Y_{2007}$ × Top Tercile | -0.010 | -0.071$^{a}$ |
| | (0.033) | (0.027) |
| $Y_{2008}$ × Top Tercile | 0.005 | -0.098$^{a}$ |
| | (0.041) | (0.029) |
| $Y_{2009}$ × Top Tercile | -0.009 | -0.094$^{a}$ |
| | (0.051) | (0.036) |
| Observations | 5,082 | 4,612 |
| Adj $R^2$ | 0.828 | 0.824 |
| Firm Fixed Effects | Yes | Yes |
| Year Fixed Effects | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes |

TABLE 5: Placebo Test: False Limit

We report estimates of the regression of plant and machinery investments to total assets on firm characteristics in placebo tests. The falsification treatment firms have gross plant and machinery investments between INR 60 million to INR 100 million for the year 2006. AFTER is one if the year is after 2006. Firms are divided into three bins based on average pre-false treatment (before 2006) values of gross plant and machinery investments. The top tercile is the treatment group while the bottom tercile is the control group. Tobin's Q is the market to book value of the firm's equity Profitability is earnings before interest and taxes to total assets/ Log (sales) is the natural logarithm of sales. The specification includes firm, year and Industry × year fixed effects. Heteroskedasticity consistent standard errors reported in the parentheses are clustered by firms. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | 1 year | | 3 year | | 5 year | |
| VARIABLES | PMG/Total Assets | | | | | |
| TOP × AFTER | 0.013 | 0.003 | -0.005 | -0.032 | -0.011 | -0.032 |
| | (0.039) | (0.042) | (0.023) | (0.022) | (0.024) | (0.024) |
| AFTER | -0.018 | -0.001 | 0.013 | 0.035 | -0.025 | 0.002 |
| | (0.031) | (0.032) | (0.034) | (0.032) | (0.043) | (0.043) |
| Log( Sales) | | -0.043$^{b}$ | | -0.038$^{a}$ | | -0.027$^{b}$ |
| | | (0.018) | | (0.015) | | (0.012) |
| EBIT/Assets | | 0.091 | | -0.125 | | -0.107 |
| | | (0.112) | | (0.190) | | (0.157) |
| Observations | 1,101 | 1,041 | 2,045 | 1,961 | 2,418 | 2,324 |
| Adj $R^2$ | 0.905 | 0.906 | 0.726 | 0.706 | 0.737 | 0.718 |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes | No | Yes | No | Yes |

TABLE 6: Placebo Tests: False Treatment Year

We reports estimates of the regression of plant and machinery investments as a proportion of total assets on firm characteristics in placebo tests that employ a false treatment year. The sample comprises firms with gross plant and machinery investments between INR 10 million to INR 50 million in the false treatment year. AFTER is one if the year is after treatment. Firms are divided into three bins based on average pre-treatment values of gross plant and machinery investments. The top tercile is the treatment group while the bottom tercile is the control group. Profitability is earnings before interest and taxes to total assets and log (sales) is the natural logarithm of sales. The specification includes firm, year and Industry × year fixed effects. Heteroskedasticity consistent standard errors reported in the parentheses and are clustered by firms. [a] [b] and [c] represent statistical significance at the 1%, 5% and 10% levels, respectively.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | 2009 treatment year | | 2011 treatment year | |
| VARIABLES | PMG/Total Assets | | | |
| TOP × AFTER | -0.010 | -0.030 | -0.037 | 0.008 |
| | (0.126) | (0.024) | (0.075) | (0.029) |
| AFTER | 0.382 | -0.005 | -0.100[b] | -0.053 |
| | (0.414) | (0.052) | (0.052) | (0.035) |
| Log (Sales) | | -0.032 | | -0.018 |
| | | (0.023) | | (0.016) |
| EBIT/Assets | | -0.240[b] | | -0.088 |
| | | (0.145) | | (0.098) |
| Observations | 2,445 | 2,227 | 1,723 | 1,575 |
| Adj $R^2$ | 0.493 | 0.846 | 0.279 | 0.845 |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes | No | Yes |

## TABLE 7: Other Capital Expenditure and Power Consumption

We report estimates of the regression of capital expenditure and power consumption on firm characteristics for a sample of firms newly eligible for priority sector status. The sample includes firms with gross plant and machinery between INR 10 million and INR 50 million for the year 2006. AFTER is one if the year of the observation is greater than 2006. Firms are divided into three bins based on average pre-treatment values of gross plant and machinery. The top tercile is the treatment group while the bottom tercile is the control group. Tobin's Q is defined as the market to book value of the firm's equity. Profitability is earnings before interest and taxes to total assets and log (sales) is the natural logarithm of sales. The specification includes firm, year and Industry × year fixed effects. Heteroskedasticity consistent standard errors are reported in the parentheses and are clustered by firms. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| VARIABLES | Log Capex | | Log Power | |
| TOP × AFTER | -0.320$^{a}$ | -0.311$^{a}$ | -0.203$^{a}$ | -0.125$^{a}$ |
| | (0.098) | (0.105) | (0.064) | (0.048) |
| AFTER | 1.013$^{a}$ | 1.008$^{a}$ | 0.488$^{a}$ | 0.210$^{b}$ |
| | (0.181) | (0.185) | (0.120) | (0.086) |
| Log(Sales) | | 0.152$^{a}$ | | 0.532$^{a}$ |
| | | (0.045) | | (0.036) |
| EBIT/Assets | | 0.058 | | -0.057 |
| | | (0.220) | | (0.063) |
| Observations | 1,872 | 1,721 | 3,782 | 3,696 |
| Adj $R^2$ | 0.891 | 0.883 | 0.847 | 0.904 |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes | No | Yes |

TABLE 8: Effect of priority sector limit change on the real effects of newly eligible firms: Sales and profitability

We report estimates of the regression of log sales and profitability on firm characteristics for a sample of firms newly eligible for priority sector status. This sample includes firms with gross plant and machinery investments between INR 10 million and INR 50 million for the year 2006. AFTER is one if the observation is after 2006. Firms are divided into three bins based on average pre-treatment values of gross plant and machinery. The top tercile is the treatment group while the bottom tercile is the control group. Tobin's Q is defined as the market to book value of the firm's equity. Profitability is earnings before interest and taxes to total assets and log (sales) is the natural logarithm of sales. The specification includes firm, year and industry * year fixed effects. Heteroskedasticity consistent standard errors reported in the parentheses are clustered by firm. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| VARIABLES | Log Sales | | EBIT/Sales | |
| TOP × AFTER | -0.249$^{a}$ | -0.250$^{a}$ | 0.198 | -0.013 |
| | (0.080) | (0.080) | (0.423) | (0.530) |
| AFTER | 0.550$^{a}$ | 0.551$^{a}$ | 0.773 | 1.239 |
| | (0.148) | (0.148) | (2.459) | (2.660) |
| EBIT/Assets | | -0.028 | | |
| | | (0.197) | | |
| Log(Sales) | | | | -0.846 |
| | | | | (1.046) |
| Observations | 4,669 | 4,669 | 4,669 | 4,669 |
| Adj R-squared | 0.817 | 0.817 | 0.204 | 0.204 |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes | No | Yes |

## TABLE 9: Young Versus Old firms

We report estimates of the regression of plant and machinery as a proportion of total assets on firm characteristics for firms newly eligible for priority sector status separated into young and old firms. Young firms refers to the firms that are below median in terms of their age. AFTER is one if an observation is after the year 2006. Firms are divided into three bins based on average pre-treatment values of gross plant and machinery investments. The top tercile is the treatment group while the bottom tercile is the control group. Profitability is earnings before interest and taxes to total assets and log of sales equals the natural logarithm of sales. The specification includes firm, year and Industry × year fixed effects. Heteroskedasticity consistent standard errors reported in the parentheses are are clustered by firms. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| | Young firms | | Old firms | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| VARIABLES | PMG/ Total Assets | | | |
| TOP × AFTER | -0.003 | -0.075$^{a}$ | 0.001 | -0.041 |
| | (0.042) | (0.025) | (0.041) | (0.035) |
| AFTER | 0.025 | 0.101$^{b}$ | 0.014 | 0.064 |
| | (0.042) | (0.042) | (0.063) | (0.068) |
| Log(Sales) | | -0.051$^{a}$ | | -0.076$^{a}$ |
| | | (0.018) | | (0.024) |
| EBIT/Assets | | -0.273 | | 0.043 |
| | | (0.221) | | (0.053) |
| Observations | 3,042 | 2,741 | 2,040 | 1,871 |
| Adj $R^2$ | 0.785 | 0.813 | 0.875 | 0.848 |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes | No | Yes |

## TABLE 10: By Bank

We report estimates of the regression of plant and machinery investments as a proportion of total assets on firm characteristics classified into two bins based on the priority sector lending volumes of lender banks. We classify banks in to two halves based on average priority sector lending to total lending in the pre change period. We classify banks that are in the lower half as priority sector target constrained banks. Using banking relationship data in the CMIE Prowess database, we classify borrowers into two groups. In columns 1 and 2, we consider borrowers that borrow from constrained banks and in columns 3 and 4, we consider other borrowers over three years before and after the regulation change. AFTER is one if the observation year is greater than 2006. Firms are divided into three bins based on average pre-treatment (before 2006) values of gross plant and machinery investments. The top tercile is the treatment group while the bottom tercile is the control group. Profitability is earnings before interest and taxes to total assets and log of sales equals the natural logarithm of sales. Columns 2 and 4 include Industry × year fixed effects. Heterskedasticity consistent standard errors reported in the parentheses are clustered by firm. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| Variables | PMG | | | |
|---|---|---|---|---|
| | High PS banks | | Low PS banks | |
| TOP × AFTER | 0.014 | 0.012 | -0.019$^{b}$ | -0.023$^{b}$ |
| | (0.014) | (0.014) | (0.010) | (0.009) |
| AFTER | 0.049$^{a}$ | 0.086$^{a}$ | 0.027$^{b}$ | 0.065$^{a}$ |
| | (0.014) | (0.031) | (0.011) | (0.016) |
| Log(Sales) | -0.061$^{a}$ | -0.060$^{a}$ | -0.046$^{a}$ | -0.044$^{a}$ |
| | (0.014) | (0.013) | (0.009) | (0.009) |
| EBIT/Assets | 0.009 | 0.008 | -0.029 | -0.027 |
| | (0.014) | (0.014) | (0.037) | (0.037) |
| Observations | 7,595 | 7,595 | 7,875 | 7,875 |
| $R^2$ | 0.897 | 0.898 | 0.928 | 0.929 |
| Adj $R^2$ | 0.870 | 0.871 | 0.910 | 0.911 |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Firm Fixed Effects | Yes | Yes | Yes | Yes |
| Industry × Year Fixed Effects | No | Yes | No | Yes |

## TABLE 11: Extensive Margin

We report estimates of a regression of establishment of a new firm on measures of the size distribution around priority sector program eligibility limits. Establishments are from the Annual Survey of Industries data. Factories are divided into three bins based on average values of gross assets between rupees 10 and 50 million. The top tercile is the treatment group while the bottom tercile is the control group. AFTER is one for observations after 2006. In column 1, we do not include any control variables. In column 2, we include fixed effects for time, industry and state. In column 3, we include several firm characteristics as controls along with fixed effects. RURAL takes the value of 1 if the factory is located in a rural area and zero otherwise. MANDAYS is the # man days worked in a factory in a year. # Workers refers to number of workers employed in the factory. GVA refers to gross values added in rupees by a factory in a year. Profit refers to profit before tax in rupees at the factory level. Organizational codes represent a set of fixed effects for organization type (proprietorship, partnership, private limited, public limited, others). Ownership codes represent similar fixed effects for ownership (private, local or federal government, joint). In column 4, we maintain the specification used in column 3 after dropping government owned firms. Heteroskedasticity consistent standard errors reported in the parentheses are clustered by state. $^{a}$ $^{b}$ and $^{c}$ represent statistical significance at the 1%, 5% and 10% levels, respectively.

| VARIABLES | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| TOP × AFTER | 0.037$^{a}$ | 0.043$^{a}$ | 0.043$^{a}$ | 0.040$^{a}$ |
| | (0.013) | (0.015) | (0.012) | (0.013) |
| TOP | -0.096$^{a}$ | -0.102$^{a}$ | -0.049$^{a}$ | -0.048$^{a}$ |
| | (-0.014) | (-0.011) | (-0.016) | (-0.012) |
| AFTER | -0.099$^{a}$ | | | |
| | (-0.0001) | | | |
| RURAL | | | -0.039$^{a}$ | -0.039$^{a}$ |
| | | | (-0.001) | (0.0001) |
| MANDAYS | | | 0.000$^{a}$ | 0.000$^{a}$ |
| | | | (0.000) | (0.000) |
| # Workers | | | -0.000 | -0.000 |
| | | | (-1.003) | (-0.949) |
| GVA | | | -0.000$^{b}$ | -0.000$^{b}$ |
| | | | (-0.000) | (0.000) |
| Profit | | | 0.000$^{a}$ | 0.000$^{b}$ |
| | | | (0.000) | (0.000) |
| Observations | 31,997 | 31,997 | 30,703 | 29,413 |
| Adj $R^2$ | 0.016 | 0.074 | 0.117 | 0.111 |
| Organizational Code | No | No | Yes | Yes |
| Ownership Code | No | No | Yes | Yes |
| Industry Fixed Effect | No | Yes | Yes | Yes |
| Year Fixed Effect | No | Yes | Yes | Yes |
| State Fixed Effect | No | Yes | Yes | Yes |

Figure 1: Clustering of Firms at 10 million PMG Cut-off in 2005

We depict the density of plant, property, and equipment around the priority sector cut-off of INR 10 million investments in plant and machinery as at the end of year 2005. The gross investment in plant and machinery is the horizontal axis and proportion of firms is the Y-axis.

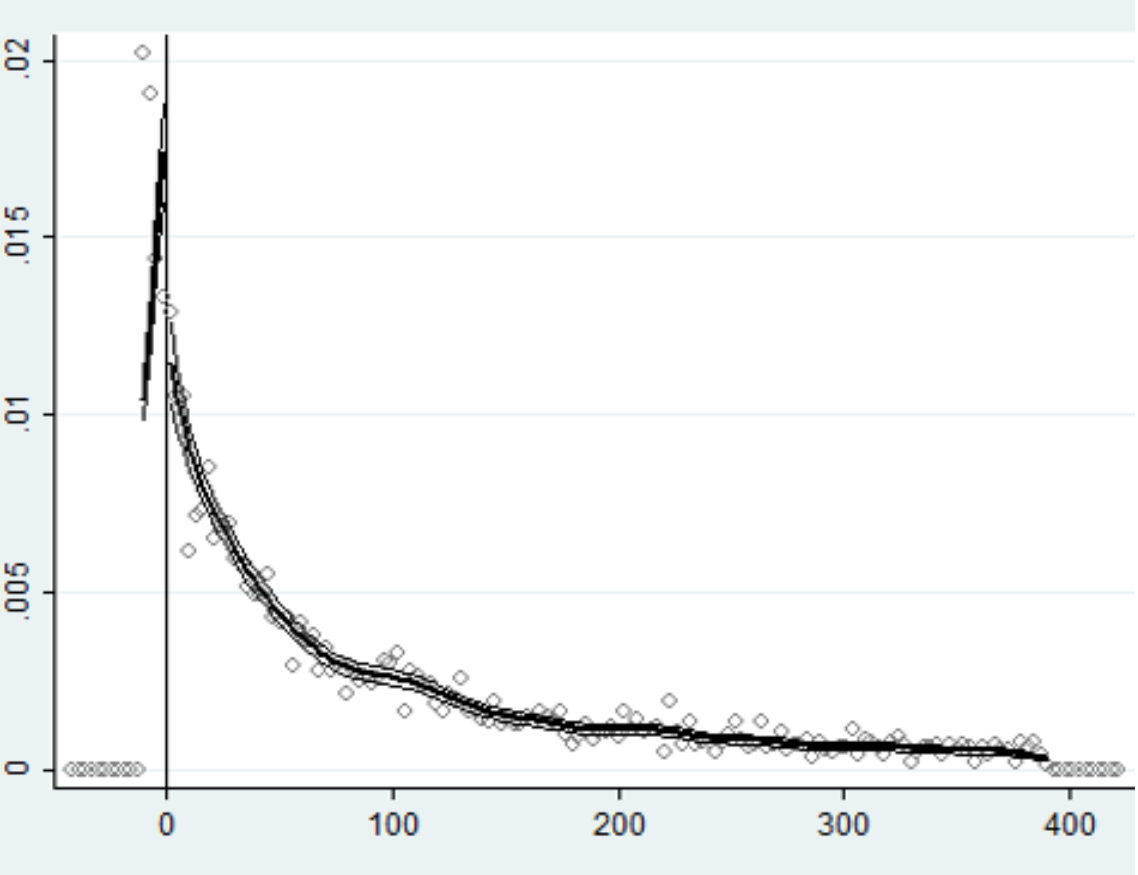

Figure 2: Extensive Margin: New Establishments Clustering Around 50 million post-2005

We depict the proportion of new firms around the 50 million rupee assets value using new establishment data are from the Annual Survey of Industries. The horizontal axis represents assets (1 unit =10 million) and the vertical axis denotes percentage of firms in each category. The left panel is from the years before program eligibility change in 2006 and the right panel is from the years after. "Assetclose" denotes the closing value of assets.

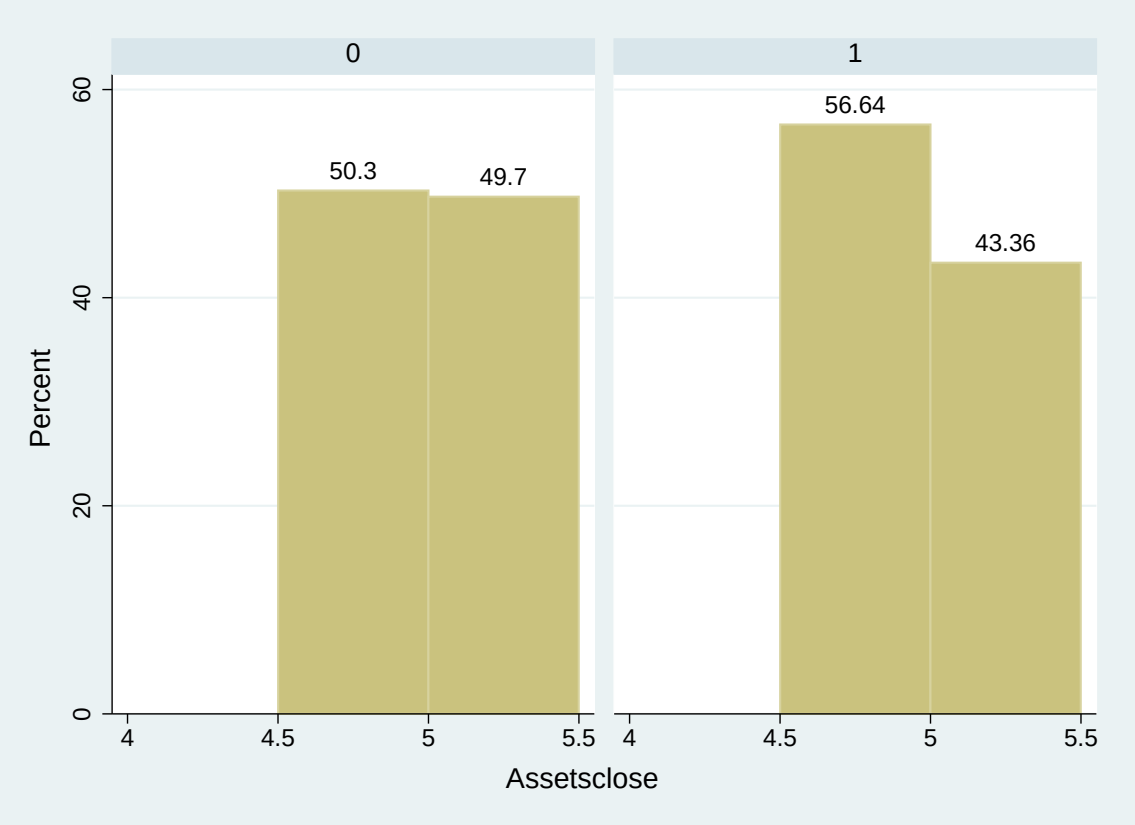

Figure 3: Extensive Margin: New Establishments Clustering Around 10 million post-2005

We depict the proportion of new firms around the 10 million rupee assets value. New firms are from the Annual Survey of Industries. The horizontal axis represents assets (1 unit = 1 million) and the vertical axis denotes percentage of firms in each category. The left panel is from the years before regulation change and the right panel pertains to year after the program eligibility change in 2006. The data covers the period between 2004 and 2008. "Assetclose" denotes the closing value of assets.

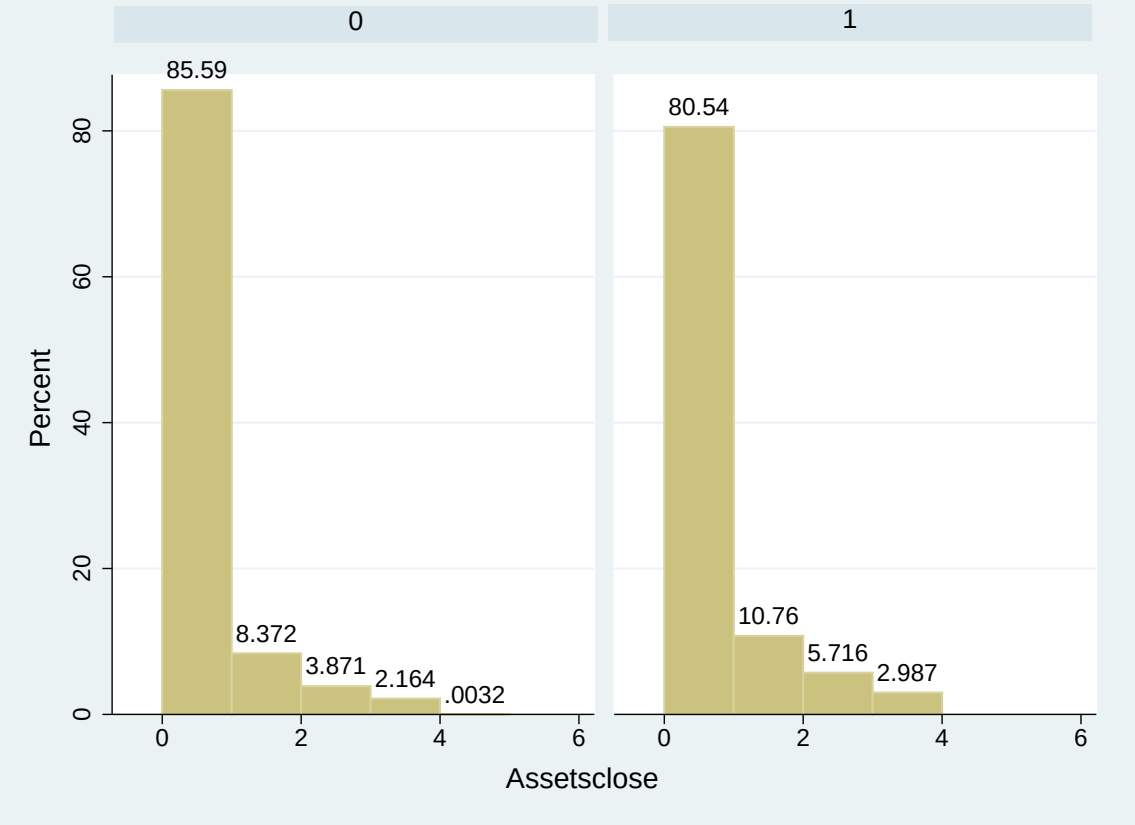

Figure 4: Year Wise Number of Factories

We plot the number of factories in the Annual Survey of Industries dataset by year. The horizontal axis represents years and the vertical axis represents the number of factories. A best fit line is depicted for illustrative purposes.