Could Expansions in Directed Lending Programs Hurt Small Businesses? Evidence from a Policy Change in India

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Could Expansions in Directed Lending Programs Hurt Small Businesses? Evidence from a Policy Change in India[*]

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Abstract

I study the impact of the expansion in a national-level directed lending program aimed at increasing institutional credit access of small firms in India. In 2006, the Government of India changed the criterion determining the *small* status of firms, thereby expanding the pool of small firms eligible for directed credit. Exploiting this expansion in the pool of firms eligible for directed lending, I analyze the *crowding out* of the previously eligible firms by the recently eligible firms. I find that the recently eligible firms disproportionately grew their bank credit stock relative to previously eligible firms, without substituting other forms of credit for bank loans. The recently eligible firms also experience a jump in investment and sales growth post the policy change, while there is no evidence of a similar improvement in the real outcomes for the previously eligible small firms. The study brings to light the *unintended effects* of policy expansions, resulting in hurting the smaller, more financially vulnerable firms, by distorting the lending incentives of institutional lenders.

Keywords: Banking, Government Policy and Regulation, Credit Constraints

JEL Classification: G1, G18, G2, G28, O11, O17

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1 Introduction

Small and medium enterprises (SMEs) around the world contribute immensely to job creation as well as output growth. They provide large scale employment opportunities at a relatively low capital cost compared to larger industries, thereby improving the standard of living of a large proportion of workers. SMEs also play a significant role in the development of new products and new markets, even across the developing world. Beck, Demirguc-Kunt and Levine (2005a) assess the relationship between SME, income inequality and poverty, and find a strong and positive association between the importance of SMEs and GDP per capita growth. Despite their huge contribution to the economy and their potential to grow, SMEs are handicapped by poor productivity due to sub-optimal scale of operation, technological obsolescence and supply chain inefficiencies. They also face other obstacles such as working capital shortages, absence of adequate and timely banking finance, ineffective marketing strategy and increasing domestic and global competition, which result in constraining their expansion and modernization.

Financial impediments, specifically, have a greater impact on the operation and growth of SMEs. According to a World Bank Report in 2014, about 41% of SMEs in the least developed countries reported access to finance as a major constraint to their growth and development, 30% in middle-income countries and 15% in high-income countries. Many studies have observed that access to external finance can significantly enhance the performance of small firms. Access to adequate and timely finance is one of the key factors that determine the ability of a firm to grow. Beck, Demirgüç-Kunt and Maksimovic (2005b) find that the negative impact of credit related obstacles on firm growth is stronger for small firms than large firms and stronger in countries with underdeveloped financial systems.

Given the importance of SMEs, governments and regulators often aim at increasing access to credit for small and micro firms using targeted programs and incentives. Some commonly offered benefits are preferential procurement from the government, loan support via loan guarantees, directed credit programs, subsidies for investment in technical training, assistance with marketing strategies and export sector related incentives. In India, the Micro, Small and Medium Enterprises (MSME) sector is the second largest manpower employer after agriculture, currently employing over 80 million workers[1]. According to the Fourth Census of MSME conducted between 2006-2009, SMEs contributed about 45% to the value added in the manufacturing sector and constituted about 40% to national exports. MSMEs also play a vital role in the socio-economic uplift of the society, contributing heavily to employment generation and more balanced regional growth. Among the challenges faced by MSMEs in India, the lack of timely and adequate credit is one of the main obstacles for growth for MSMEs. Relatively high cost of credit, requirement of posting collateral and limited access to equity capital often put such firms outside the net of institutional sources of credit. The Government of India has taken a number of measures to improve the credit access of MSMEs as well as to improve productivity and competitiveness of MSMEs.

The focus of this paper is the expansion of a national level directed lending program mandating banks in India to direct 40% of their total annual credit to vulnerable sectors demarcated as *priority sectors*. The Priority Sector Lending program (PSL) was set up to ensure credit access to financially vulnerable sectors such as agriculture, micro and small businesses, low income housing, education and small scale sector exports. Under the program, banks are free to set the interest rate on priority sector loans based on the borrowers' risk assessment[2]. The Reserve Bank of India (RBI) monitors banks' PSL

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[1] That figure pertains to about 17% of the workforce of India in 2009-2010

[2] Barring few categories - for instance, for extremely small individual loans interest rates are capped.

accounts quarter-by-quarter, and checks for shortfall from the PSL target. If banks fall short of the PSL target, they are required to lend the shortfall amount to Rural Development Bonds at an interest rate decided by the Reserve Bank of India. This interest rate is usually close to the bank rate set by RBI on a quarterly basis. If a bank repeatedly falls short of meeting this target, it runs the risk of being disallowed from expanding its branch network across the country.

Table 1: Revision of the Investment Cut-off Determining *Small* Enterprise Status

Before Policy Change (Before 2007)	**After Policy Change** (After 2007)
2.5 - **10** (Always Eligible : AE)	2.5 - 10 (Always Eligible : AE)
	⇕
	10 - **50** (Recently Eligible : RE)

Note: The value of investment in plant and machinery in INR Million. Small firms loans are automatically eligible as Priority Sector Lending.

Small firm status in India is determined on the basis of the value of plant and machinery of firms and a predetermined investment ceiling serves as an upper bound that determines *small* status[3]. Any firm with investment in plant and machinery below the decided ceiling is automatically considered a small firm and its bank loans fall under the PSL category. In October 2006, with the passing of the Micro, Small and Medium Enterprise Development Act (MSMED) by the Ministry of Small Scale Industries, there was a substantial increase in the investment ceiling for small firms, among other policy changes, as summarized by Table 1. The revision of the investment ceiling led to an expansion in the pool of small firms eligible for directed lending, thus, improving credit access for the recently eligible small firms (RE firms).

The Act also directed the banking sector to achieve a 20% year-on-year growth of loans made to small and medium enterprises and ultimately double the credit available

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[3] This definition applies only to manufacturing sector firms.
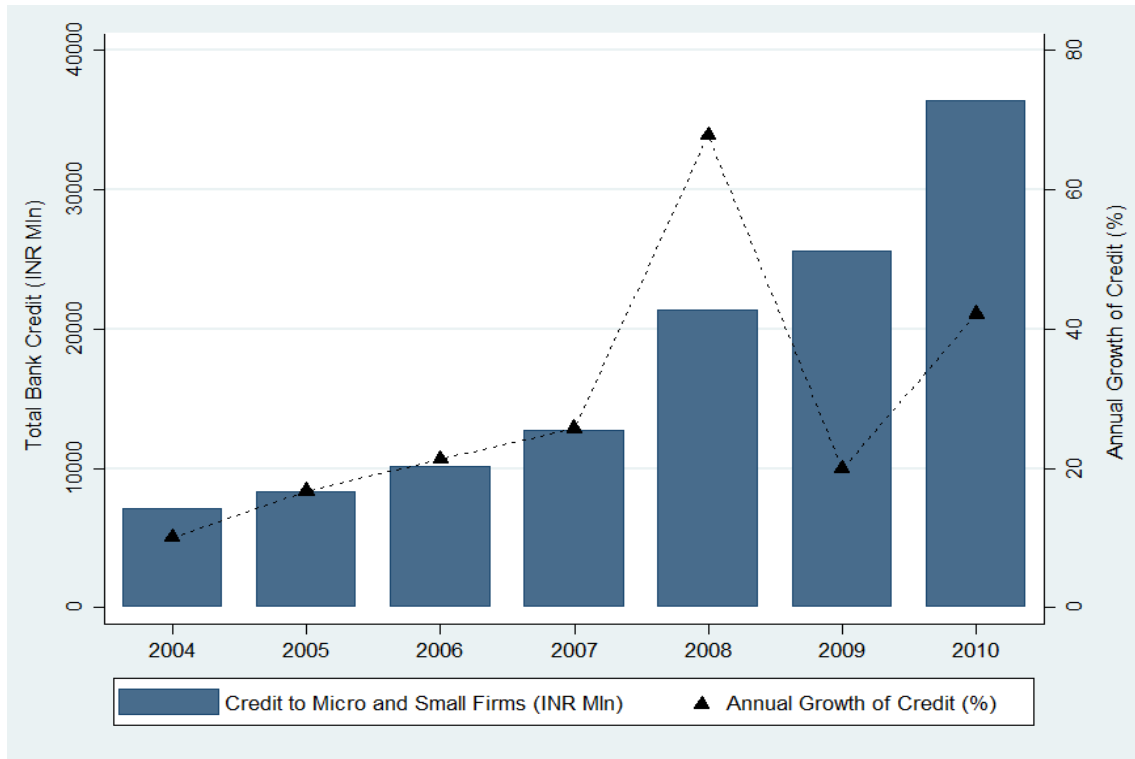
Figure 1: Growth in the Bank Credit of Micro and Small Enterprises (MSEs). The figure shows the growth in total bank credit of all MSEs across using firm level data from 2004 − 2010. *Source:* The Micro and Small Enterprises Annual Report 2010-11

to SMEs in the next five years. The year-wise growth in bank credit to the micro and small firms sector[4] is shown in Figure 1. In the absence of internal *size-based* PSL targets, this policy push was bound to increase the competition among AE and RE firms to grow their bank credit eligible as PSL from banks across the country. According to the *Micro and Small Enterprises Annual Report* of 2010-2011, bank credit to these firms did more than double between 2006-2007 and 2009-2010.

After the enactment of the MSMED Act of 2006, more firms were defined as *small firms* and bank loans made to them fell under the PSL category. I compare the differential credit growth and sales growth of firms whose eligibility was not retained

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[4] The jump is partially due to inclusion of service sector small firms in the PSL eligible category.

(AE), to the firms that gained eligibility post the policy change (RE firms). Figure 2 and Figure 3 plot the sum of total bank borrowings and sum of total sales, respectively, of the two groups. It appears the stock of bank borrowings and total sales of RE firms rose much more compared to AE firms. Most of this effect came in the year following the policy change i.e. in 2008. I find that borrowings from non-bank sources also rose for RE firms, implying that RE firms that received increased bank credit did not substitute other sources of credit with bank loans, and in fact increased overall borrowing post the policy change[5].

Figure 2: Total Bank Credit Across the Expanded Pool of PSL Eligible Firms.
Source: Author's calculations based on firm level data from the *Prowess* database

After the policy change, banks had another avenue to increase their PSL to achieve the mandated targets i.e. by lending to the set of firms that were redefined as small

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[5] Graphs plotting *total other borrowings* of the two groups of firms can be made available on request.

firms. These redefined RE firms are by virtue of their size of investment in plant and machinery, bigger than AE firms. Hence, they can post more collateral against bank borrowings. Additionally, being bigger than AE firms, they possibly have an advantage over AE firms in terms of producing detailed accounts of their business operations and proof of borrowing activity with other creditors. Bank officials, on the other hand, face the choice of achieving growth in SME loans, either by increasing lending to RE firms, or by spreading out the increased lending across both AE and RE firms. If banks preferred to achieve the overall PSL target by disproportionately stepping up credit to RE firms, perhaps because they can achieve targets by making *fewer but bigger loans* to RE firms; AE firms would suffer as a consequence of the policy expansion.
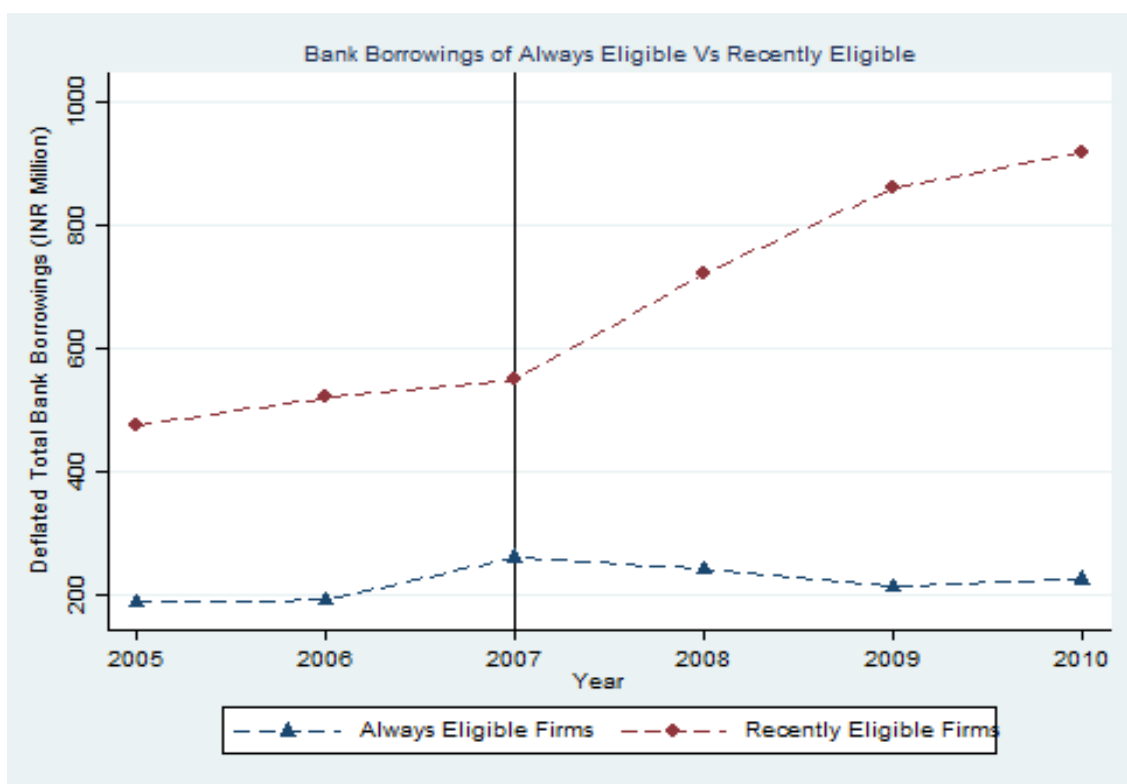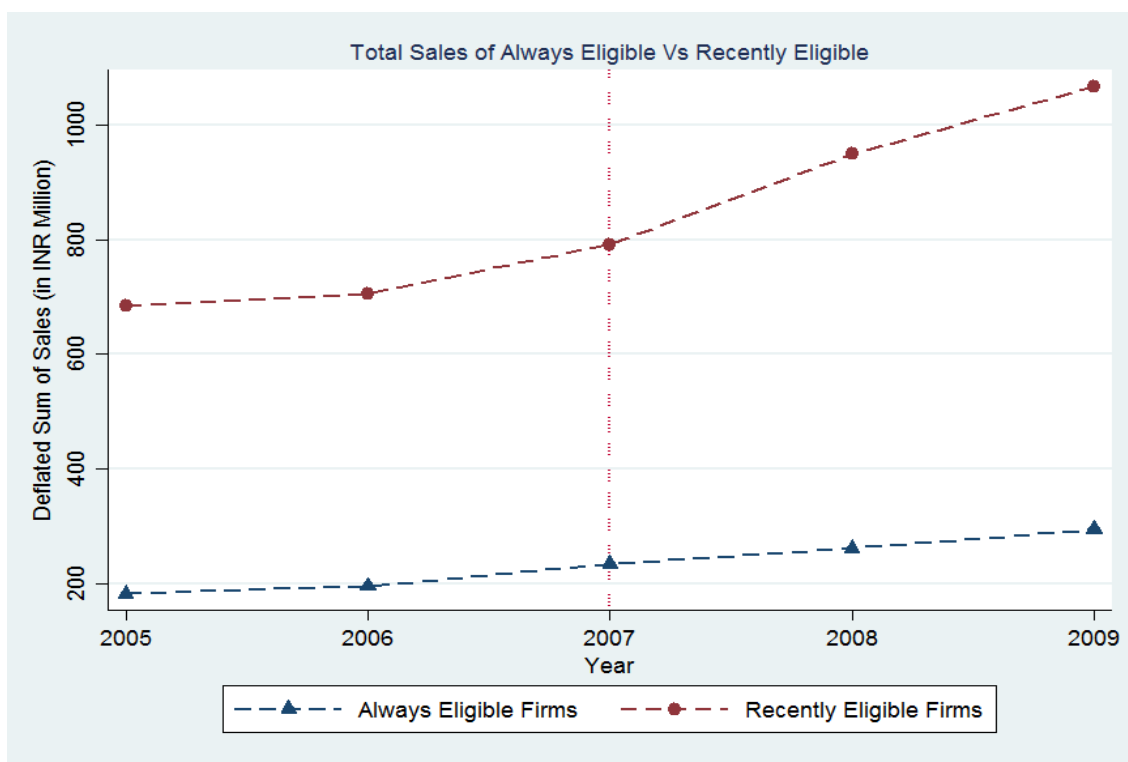

Figure 3: Total Firm Sales Across the Expanded Pool of PSL Eligible Firms.
Source: Author's calculations based on firm level data from the *Prowess* database

Next, I arrange small firms into buckets according to the level of investment in plant

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and machinery to study the change in bank borrowings across these buckets. I find that the group of firms just above the new investment ceiling benefited disproportionately relative to all the groups whose plant and machinery investment were below the new ceiling, indicative of a *crowding-out* effect at the investment ceiling. The empirical analysis presented examines the side-effects of a policy action aimed at increasing credit access to small firms, and if, it had in fact, resulted in hurting the previously eligible, smaller and hence the more vulnerable of the small businesses in the country.

The outline of the paper is as follows: In Section 2, I provide a literature review. Section 3 provides the details of the institutional setting in which banks, firms and regulators function in India. Section 4 describes the choice of the data used for the study. Section 5 describes in detail the empirical strategy. Section 6 attempts all robustness tests. Section 7 presents the results of the study. In Section 8, I conclude and discuss policy implications.

2   Literature Review

A positive relationship between increased access to finance and firm growth has been established by numerous studies (Rajan and Zingales (1998), Demirguc-Kunt and Maksimovic (1998)). Ayyagari, Demirguc-Kunt and Maksimovic (2008) show that access to finance is the most robust determinant of growth rate of firms across the world, among other important factors such as crime and political instability. Using cross-country firm-level survey data, Beck, Demirgüç-Kunt and Maksimovic (2005b) find that among small firms, those reporting lower growth rates are those that face greater financial constraints. Aghion, Fally and Scarpetta (2007) find that access to credit boosts entry among small firms and helps small firms take advantage of growth opportunities especially in growing sectors where large firms would be predominant otherwise.

The differential effect of financial constraints on firm growth across firms of different sizes is also well documented. Most studies suggest that this effect is stronger for smaller firms. Using cross-country survey data from firms of 54 countries, Beck, Demirgüç-Kunt and Maksimovic (2005b) investigate a rich set of obstacles reported by firms of all sizes. The authors find that financing constraints affect firm growth more adversely among small firms relative to large firms. In another study using data on Portuguese firms, Oliveira and Fortunato (2006) find that small firms are likely to grow much faster than large firms when their financial constraints are eased.

Given the importance of small firms in developing as well as developed economies, governments and regulators around the world assume the responsibility of helping these financially vulnerable enterprises by regulating and channeling credit via targeted programs and policies. Credit guarantees, credit subsidies, tax breaks and eased legal requirements are often targeted at specific borrowers such as small exporters, small and medium sized firms, and agricultural workers. This paper empirically analyzes the effect of a policy change aimed at stepping up credit access for small firms in India by way of expanding the pool of eligible small firms. The Government of India has a nation-wide program of directed credit facilitated via the banking system. Banks are mandated to lend at least 40% of their annual credit to the financially weaker sections referred to as the *priority sectors*. As a result of this quota, banks are always in search for relatively safe priority sector investment opportunities to reach the 40% target. When loans made to firms with bigger collateral and more financial information become eligible under priority sector lending, banks may unintentionally be incentivized to step up credit only to such bigger enterprises in order to grow their priority sector portfolio, leaving behind the previously eligible small firms.

Many studies have evaluated the effectiveness of similar directed lending programs. Lelarge, Sraer and Thesmar (2010) exploit the extension of guarantees to new sectors

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in France and find that newly eligible firms raised more external finance at lower interest rates, which subsequently led to an increase in the probability of bankruptcy. Bach (2013) studies a policy of bank loans made from subsidized funds to specific sectors in France and finds evidence of increased debt financing of targeted small firms, with no subsequent surge in default risk. Banerjee and Duflo (2014) analyze loan-level information of one of the biggest Indian banks. Using a policy reform and a subsequent reversal in policy that decided the eligibility threshold of Indian SMEs between 1998 and 2000, they find large effects of being *prioritized* on firms' bank borrowings, profit and growth. Studies in this area have also documented the adverse or unintended effects of such directed lending policies. Zia (2008) finds that small firms in Pakistan reduce their sales after a reversal of eligibility for subsidized export credit while large, listed and group firms did not suffer as a result. Cole (2009) finds evidence of political cycles in agricultural lending via such programs in India. A working paper[6] by Kumar (2014) documents the credit misallocation across agricultural and manufacturing sectors in India due to the presence of political cycles in bank lending. In another working paper, Bhue, Prabhala and Tantri (2016) discuss the strategic slowdown in growth of investment in newly eligible small firms near the investment cut-off compared to the newly eligible small firms away from the cut-off, post the policy change, thereby defeating the very purpose of such close targeting. They do not address the differential impact of the policy change across previously eligible and recently eligible small firms, which is the focus of my paper.

While a lot of research has been conducted to investigate presence of credit constraints and political capture, to my knowledge, no study has assessed the impact of expanding credit policies in terms of a *shift* in the *distribution* of beneficiary firms. I contribute to this literature by studying such undesired adverse effects of expanding

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[6] The most recent version of the paper posted online is dated March 2016

directed credit programs, by investigating the *crowding-out* of smaller firms when such policies are expanded.

In this paper, I explore the potential *spillover effects* of extending a national-level directed lending program to *bigger* small firms[7], thereby affecting the distribution of directed credit growth across RE and AE firms in India.

3 Institutional Setting

3.1 The Indian Banking Sector

India's banking system is organized into Commercial, Regional Rural and Co-operative Banking. Both public[8] and private banks (domestic and foreign) fall under the commercial banking category. Public banks are bifurcated into the State Bank Group and the Nationalized Banks Group. The Reserve Bank of India (RBI) is the central bank of India. As of 2016, the banking system consisted of 26 public sector banks (controlling 72% of banking assets), 25 private sector banks (controlling 21% of banking assets), 43 foreign banks (controlling 7% of banking assets), 56 development focused regional rural banks, 1,589 urban cooperative banks and 93,550 rural cooperative banks.

3.2 The Priority Sector Lending Program

All commercial banks in India, including private sector banks, are mandated to direct 40% of their total annual credit to sectors demarcated as *priority sectors*. The priority sectors include those sectors that impact large sections of the population, the weaker sections of the society and the sectors which are employment-intensive such as agricul-

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[7] *Bigger* by way of higher investment in plant and machinery.
[8] The government is the majority shareholder of public banks comprising about 70% of the market

ture, and micro and small enterprises. This nation-wide directed lending program is referred to as Priority Sector Lending (PSL) program. Over the years, the list of eligible categories of loans under PSL has been expanded to include low income housing, education loans, export credit and renewable energy sector. The RBI annually updates and announces the sectors which are eligible as priority sectors. It also informs banks about internal targets to be met in addition to the overall 40% target, and about limits associated with loans to priority sectors that will actually qualify as PSL. Shortfalls from announced targets are closely monitored by the RBI officials. In recent years, PSL Certificates have been issued by banks as a support mechanism for banks that are not able to fulfill the quota. These instruments incentivize PSL *surplus* banks to sell their excess PSL achievement of the 40% target to PSL *shortfall* banks.

While loans made to micro and small enterprises across all industries count as priority sector advances for all commercial banks in India, banks are not subject to an internal target in terms of the share of PSL credit that comprises loans to micro and small enterprise. The mandatory PSL advances for domestic banks is 40% of their annual net credit and for foreign banks it is 32% of their annual net credit. Any shortfall from the above limit is to be invested at very low interest rate in agencies that lend to above category. These targets are announced and updated by the Reserve Bank of India by way of circulars published annually.

To ensure fair distribution of credit to all segments, targets within the sub categories are provided. Although there is no internal target within the overall 40% PSL target for the small and micro enterprise group, there are sub-targets in place for the share of credit to micro enterprises. Table 2 lists the sub-targets of PSL during the year 2006-2007. While sub-targets for micro enterprise[9] are allotted, no such safeguard is in place for the small enterprises.

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[9] Firms with investment in plant and machinery upto INR 0.5 Million

Table 2: Priority Sector Lending Targets at Sector and Sub-Sector Level in 2006

Sector	Sub-Sector Target	Internal Target
Agriculture	–	18%
Weaker Sections	–	10%
Micro & Small Enterprises (MSEs)		–
— Micro Enterprises I	0.0 - 0.5 INR Mln	40% of total (MSE)
— Micro Enterprises II	0.5 - 2.5 INR Mln	20% of total (MSE)
— Small Enterprises	0.5 - 2.5 INR Mln	–
Total Priority Sector		**40%**

Note: Micro Enterprises Group I and II correspond to micro firms with investment in plant and machinery upto INR 0.5 Million and between INR 0.5-2.5 Million, respectively.

3.3 The MSMED Act of 2006

The regulatory change that I exploit is the MSMED Act of 2006. In October 2006, the Parliament of India enacted the Micro, Small and Medium Enterprises Development Act[10]. The Act provided a variety of facilities such as improved credit access, skill and training development, technology upgradation, market linkages and marketing support.

With the enactment of the MSMED Act, the upward revision of the investment ceiling led to an expansion in the pool of *small firms* eligible for directed lending, thus, improving credit access for the recently eligible small firms (RE firms). The always eligible firms (AE firms) continued to remain eligible as usual. Table 3 contains the details of the definitions of manufacturing sector firms before and after the revision. *Medium* firms were defined in this way for the first time after the passing of this Act.

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[10] A different set of rules were laid out for manufacturing sector and service sector. This study focuses on the manufacturing sector. Capital investment cut-offs for manufacturing sector small firms were defined based on investment in plant and machinery.

Table 3: Firm Categories by Size **before** and **after** the Policy Change in 2006-07

Enterprise Size	Before Policy Change	After Policy Change
Small Enterprises	2.5 - **10** (**A**lways **E**ligible)	2.5 - **50** (**A**lways + **R**ecently **E**ligible)
Medium & Large	> 50 (**N**ever **E**ligible)	> 50 (**N**ever **E**ligible)

Note: The cut-off value of investment in plant and machinery is in INR Million.

4 Data

4.1 Data Sources

I use firm-level data for this study from the *Prowess* database of the Centre for Monitoring Indian Economy (CMIE). The database provides the detailed firm-level data for over 18,000 manufacturing formal sector firms. The financial information available through this database is extracted from audited financial statements, and the stock and credit rating data are compiled from other published sources. The key variables for this study are those relating to the break down of borrowings of the firm into various institutional sources. *Prowess* provides time series on firm-level bank borrowing, total institutional borrowings, thus allowing me to observe the changing composition of borrowings by lender type across the period considered. Data on value of plant and machinery is used to construct the firm groups based on their investment, into *always eligible* (AE) firms, *recently eligible* (RE) firms and *never eligible* (NE) firms.

The overall coverage of the *Prowess* database is extensive. *Prowess* covers firms that account for about 75 % of corporate taxes and 95% of the excise duty collected by the Indian government. Prowess also classifies firms by industry according to the

NIC code[11], which is the Indian equivalent of the SIC[12] classification scheme. Any changes made to methodology are applied across years to keep variables in the accounts comparable. Due to its coverage and accuracy, the database has been increasingly used in research related to the Indian industrial sector.

An alternate source of data is the Annual Survey of Industries (ASI), also used by researchers extensively to study the manufacturing sector in India. The ASI data are compiled based on surveys at the factory level which do not capture audited financials of the associated firms. Moreover, the ASI does not report the 'bank borrowings' information at the factory-level or the 'plant and machinery' value across the entire sample. The ASI does not allow tracking within firm time series of most financial variables that are necessary for this study. Bank loan officers are more likely to use audited financial data to calculate the cut-offs determining firm size i.e. whether a firm is small, medium or large by definition[13], hence the choice of the *Prowess* database.

The national level industry aggregates such as output and value added series are taken from the Historical Time Series of the Annual Survey of Industries, collected by the Ministry of Statistics and Programme Implementation. These series span years 2003-2009. To deflate all nominal variables, I use the Wholesale Price Index (WPI) obtained directly from the website of the Ministry of Commerce Industry. While bank borrowings and debt data are deflated by the *All-Commodities WPI*, firms-level variables such as sales, assets, and profits, as well as the industry-level aggregates are deflated by the corresponding *industry-specific* WPI. The details of data sources and industry categorization are provided in Section B.3 in Appendix B.

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[11] I use the industry code at the 2-digit level for my study from the National Industrial Classification for India (2008).

[12] Standard Industrial Classification system for classifying industries by a four-digit code used as a standard across most countries.

[13] This fact was confirmed with officials at the RBI as well as with the managers of two Indian banks - State Bank of India and HDFC Bank.

4.2   Descriptive Statistics

In Table 4, I present the descriptive statistics of the sample of firms in this study in the financial year 2006-2007. I assign firms to one of the three groups – AE, RE or NE[14], based on the value of its investment in plant and machinery in 2006-2007.

In 2006-2007, the average sales of AE small firms is about one-half of the average sales of RE small firms. The average investment in fixed assets for AE firms is less than half of that of RE small firms. The average utilization seem almost uniform across all the groups, while average profitability is decreasing as we go from NE to AE firms. The NE firms, on the other hand are bigger by a factor of about twenty vis-a-vis the RE firms. An interesting fact to note is that on average, share of bank borrowings of the three groups are decreasing as we go from NE to AE firms. This is indicative of the higher dependence of AE firms on bank credit.

I exclude exporters with greater than 10% of their sales being exported since all SME exporters during the years after 2007 had access to subsidized credit (export loans) via an Interest Rate Subsidy Program[15]. The summary statistics for all firms, *including* exporters, is presented in Table 15 in Appendix A. I also carefully exclude firms from the 41 items covering broad groups of sectors - Hosiery, Hand Tools, Drugs & Pharmaceuticals, Stationery and Sports Goods, whose investment cut-off was enhanced to INR 10 Million in 2001-2002[16]. The details of such bank credit related policies are announced via Master Circulars issued by the Reserve Bank of India. I make the above exclusions based on careful reading of these circulars, and clarifications from the officials at the Banking Statistics Department at the Reserve Bank of India.

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[14] **A**lways **E**ligible (INR $2.5 - 10$), **R**ecently **E**ligible (INR $10 - 50$), **N**ever **E**ligible (>50)

[15] The Interest Rate Subvention Scheme announced in five phases rbi2010-export-credit-rates.

[16] Details issues in circulars issues by the Reserve Bank of India rbi-2006-psl-mastercircular.

Table 4: Descriptive Statistics: Always Eligible Vs Recently Eligible Vs Never Eligible Firms in 2006-2007

Variable	Always Eligible (AE)			Recently Eligible (RE)			Never Eligible (NE)		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Total Sales	228	104	193	460	182	282	1,386	6,149	63,779
Total Assets	249	85	148	507	210	1,368	1,449	4,212	30,366
Fixed Assets	249	**32**	42	507	**70**	152	1,449	**2,425**	16,079
Plant & Machinery	249	9	10	507	26	12	1,449	1,835	13,041
Total Liabilities	249	85	148	507	210	1,368	1,449	4,212	30,366
Total Borrowings	213	28	50	477	112	1,167	1,410	1,268	8,234
Bank Borrowings	165	21	40	400	38	98	1,316	597	3,174
Bank Share	165	**0.70**	0.31	399	**0.64**	0.3	1,316	**0.62**	0.3
Profitability	243	**0.02**	0.6	500	**0.06**	0.25	1,444	**0.11**	0.31
EBIT	243	7	26	500	13	36	1,444	465	3,278
Utilization	228	**1.27**	1.19	460	**1.28**	1.18	1,386	**1.30**	0.9
Current Ratio	247	5	23	504	4	9	1,448	3	10
Quick Ratio	247	4	15	504	3	12	1,448	2	7

Note: The groups AE, RE and NE are constructed based on the cut-offs in terms of value of investment in plant and machinery in INR Million in 2006-2007. If the value of plant and machinery of a firm is between INR 2.5-10 Million, its in the AE small firms category, if its between INR 10-50 Million then its in the RE small firms category, and if its > INR 50 Million then its in the NE firms category. Profitability and utilization are calculated by scaling by total assets, bank share is calculated by dividing bank borrowings by total borrowings, and the current ratio and quick ratio are calculated by scaling by total current liabilities. The exact definitions of the financial variables are provided in Section B.1 in Appendix B. All the financial variables correspond to the averages of financial year 2006-2007 of *non-exporting* firms. Ratios are winsorized at the 1% level.

5 Empirical Strategy

5.1 Selection of Firm Groups, Policy Timing and the Data

Selection of Groups based on Firm Size

Regulatory policies focused on increasing SME credit access often target specific regions or specific production activities. Depending on their success, these are extended or withdrawn over a period of time. The particular regulatory change I exploit is an upwards revision in the investment cut-off determining *'small'* status of firms, thereby giving more firms access to loans under the directed lending program in India, the Priority Sector Lending program (PSL). This policy revision brought a huge number of small firms across all industries, regions and ownership types, under the PSL category. I will use this variation in status of firms for the estimation of exposure to the program, by comparing firms across sectors in the AE, RE and NE groups. Unlike most countries where firm size is determined by number of full-time employees on the firms' payroll, in India firm size is determined by the nominal investment in plant and machinery[17], excluding land and buildings.

To study the effect this policy change had on firm growth and firm institutional borrowing, I analyze the differential effect across AE, RE and NE firms, before and after the policy change[18] There is not enough coverage on micro enterprises for the empirical analysis to be meaningful[19]. Due to the difference in size, AE and RE firms may be too small to follow the same trends as NE firms. I control for time trends in all categories separately to account for such differences.

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[17] This method of size characterization limits the use of accounting tricks to subvert the intent of the categorization, and bankers can access this information through audited reports.

[18] This methodology only allows for an *intent-to-treat* estimate.

[19] I will study the effect on micro-enterprises using confidential district-industry-level data on bank credit of micro, small and medium firms, made accessible by the Reserve Bank of India.

Selection of Timing of Policy Change

Since the MSMED Act of 2006 was passed midway through the financial year[20] in September, 2006, I use the following financial year (2007-2008) as the first year after the policy change. I use data on firm variables and firm financials starting 2004 and up until 2009. I do not go beyond the year 2009 due to a change in the *interest rate setting* regime, and the introduction of a *credit guarantee scheme*, designed for improving small enterprise credit access. These changes were targeted at easing credit terms for small enterprises all across the country, and applied special benefits towards *smaller* loans even among the pool of small business loans. Such policy changes are likely to distort the true picture of the *crowding-out* of AE firms.

Selection of the Data

I focus on analyzing the credit and investment growth of small firms before and after the implementation of the MSMED Act of 2006. The main financial variables of interest are therefore, bank borrowings, investment in capital and total borrowings. Ideally, I would like to compare bank borrowings of AE firms, RE firms *vis-a-vis* NE firms for the universe of firms borrowing from the banking sector, however, such data bank-firm-loan matched data is not available even with the central bank of India, the Reserve Bank of India[21] In the absence of such data, the second best option is to use firm-level audited financial data, in order to control for firm -specific effects as well as industry-time trends corresponding to these firms.

I select the panel of firms based on the following criteria over the years: I keep

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[20] The financial year in India runs from April 1 - March 31

[21] Due to a change in firm size definition, the bank loan accounts information submitted by all commercial banks to the RBI, is not comparable before and after the policy change year. After the definition update, banks also re-cassified RE firms loans to 'small' in addition to the AE firms loans, without any way to identify AE borrowers from RE borrowers.

firms whose financials were available for all the years in the chosen period, with values between the 1st and the 99th percentile based on total sales, total assets and total invested capital. I exclude all firms that reported exports greater than 10% of total sales. Exporting firms are excluded because a different set of credit rate policies and guarantees apply to exporters. Moreover, starting 2007, SME exporters were eligible for a 2% interest rate subsidy which was later increased to 3%. Such differences could distorting the true analysis here.

Effect of the Policy Change

Smaller firms are less likely to get access to institutional data. They are also less likely to maintain proper financial accounts, which hinders loan officers' ability to assess the credit-worthiness of the borrowing enterprises. After the policy push, banks can potentially achieve faster growth in PSL loans to small businesses either by making fewer, big sized loans to RE firms or by growing credit extended to both groups of firms. The smaller collateral posted reduces the incentive of banks to extend many loans of a small size, once RE firms, now also qualifying under the priority sector lending, are available as credit seekers. In other words, after the policy change, banks have another avenue to increase their PSL loans portfolio and achieve mandatory targets. Since the RE firms are *bigger* small firms compared to AE firms, they can post more collateral per loan.

The interesting effect to explore post such a policy action is the presence of a bias in the lending incentive of banks, away from AE firms and towards RE firms. Bound by the annual PSL targets, banks have to find a way to increase small business loans, else they face penalties[22]. Under the assumption of a fixed cost of monitoring or a

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[22] Any shortfall in PSL lending targets must be lent by commercial banks to Rural Development Bonds at very low rate decided by the Reserve Bank of India

fixed cost of establishing firm-bank relationship, I expect the banks to favor stepping up loans made to the RE firms. AE firms are smaller compared to RE firms by virtue of size-based definition. A lot more small ticket loans would have to be made in order to cover the directed lending quota as well as achieve the growth in small business lending, compared to bigger loans that can be now made to RE firms. Bigger collateral and more detailed financial records of RE firms could bias banks' loan decisions in terms of which firms' credit they want to step up. I seek out evidence of such *crowding out* controlling for firm and industry level demand side trends.

In essence, I am using a difference-in-difference strategy to estimate the impact of increased lending to small firms by exploiting the quasi-natural experiment provided by the regulatory change that revised the investment cut-off, thereby expanding the eligible pool of firms for PSL.

5.2 Survivor Bias and Sample Selection Issues

The final sample of firms only comprises of those firms whose financial variables are available from 2004-2010, or only those firms that survived the entire period. From an econometric point of view, the results of this study are applicable for the firms that survived this entire time period. Since I choose the AE as well as the RE group of firms using the same criterion, it seems fair that I interpret the results as the effect of the policy change on the most stable firms. Moreover, the sample of small firms available in this data are not representative of the universe of small firms in India. This selection disproportionately includes firms that report their audited accounts, but to the extend that firms following strict book keeping rules are less likely to be hurt compared to firms that do not, the results should easily hold in the extended set of all small firms[23].

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[23] It is mandatory for all medium and large sized firms to register and maintain official accounts.

5.3 Econometric Specification

The main variables of interest in this study are bank borrowings of firms as well as borrowings from other lending sources.

5.3.1 Effect of the Policy Change on Bank Borrowings

$$\Delta y_{ist} = \beta_0 + \beta_1 \times (RE_i \times After_t) + \beta_2 \times (AE_i \times After_t) + \beta_3 \times (After_t)$$
$$+ \beta_4 \times AE_i + \beta_5 \times RE_i + \beta_6 \times NE_i + \beta_7 \times (RE_i \times t) + \beta_8 \times (AE_i \times t) \quad (1)$$
$$+ \boldsymbol{\beta}' X_{it} + \gamma_i + \lambda_t + \boldsymbol{\delta}' IO_{st} + \epsilon_{ist}$$

where y_{ist} is the log of deflated bank borrowings of firm i, industry s, time t. The indicator variables AE_i, RE_i and NE_i equal 1 if the firm belonged to the AE, RE or NE category in the year 2006-2007, respectively. The indicator $After_t$ is equal to 1 if the year is after the financial year 2006-2007, the year of passing the Act. The firms-level variables X_{it} that I control for include firm size (firm's total sales), total fixed assets, profitability ratio and the default ratio. Detailed description of these firm controls is available in Section B.2 in Appendix B. I also include firm fixed effects and year effects in my regression. To control for industry-specific time trends that may affect firm borrowing, I include industry aggregates, i.e. output and industry output growth[24]. All borrowings are deflated using the wholesale price index (WPI). All other firm-level variables are deflated using *industry-specific* deflators[25].

Following the literature, I focus on the first difference in logs of deflated bank borrowings, since bank borrowing is a stock variable and is known to be persistent with

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[24] Two-digit NIC industry codes are used to categorize the industry corresponding to each firm. Industry output and industry output growth at the two digit industry level are obtained from the Annual Survey of Industries.

[25] All-India wholesale industry-specific deflators, published by the Ministry of Industry, are used to deflate firm-level variables.

fat-tailed distributions. For similar reasons, I use the same transformation in the other outcomes as well. I follow Bertrand, Duflo and Mullainathan (2004) in their treatment of clustering at the level of treatment for difference-in-difference type estimation, and cluster standard errors at the level of the treatment status i.e. at the firm-level. As a check, I also estimate the following standard errors: conventional, heteroskedasticity-robust, clustered at two-digit industry-level, and find that the firm-level clustering produces the most conservative standard errors.

The coefficients of interest are β_1 and β_2, which capture the relative differential effect in terms of growth of bank borrowings, due to the change in eligibility of firms into PSL across the Always Eligible and Recently Eligible firms, vis-a-vis the reference category NE. Since year fixed effects and industry time trend controls have been included in the specification, the estimation of the impact of the policy change accounts for common trends in the demand and supply of debt and for time varying structural differences among industries in the demand and supply of debt.

Within-group comparisons

Next, I divide the RE group (INR Million 10 - 50) into terciles based on their value of plant and machinery in 2006-2007, to analyze within group differences in impact of the policy change. Thus, effectively, there are four comparison groups now, and one reference group. I winsorize at the 1% level.

   (i) Group AE : INR Million (2.5 - 10)
  (ii) Group RE_1 : INR Million (10.3 - 19.9)
 (iii) Group RE_2 : INR Million (19.9 - 35.4)
 (iv) Group RE_3 : INR Million (35.4 - 49.9)
  (v) Group NE : INR Million (> 50)

I use the following specification to study the differential impact of the policy change across these groups constructed by slabs of plant and machinery investment of firms.

$$
\begin{aligned}
\Delta y_{ist} = \beta_0 + \sum_{g=1}^{g=3} \boldsymbol{\beta_{RE_g}} \times \mathbb{1}[RE_g] \times After_t + \beta_2 \times (AE_i \times After_t) + \beta_3 \times (After_t) \\
+ \beta_4 \times AE_i + \beta_5 \times RE_i + \beta_6 \times NE_i + \beta_7 \times (RE_i \times t) + \beta_8 \times (AE_i \times t) \\
+ \boldsymbol{\beta}' X_{it} + \gamma_i + \lambda_t + \boldsymbol{\delta}' IO_{st} + \epsilon_{ist}
\end{aligned}
\tag{2}
$$

where the coefficients of interest are $\boldsymbol{\beta_{RE_g}}$ (for $g = 1, 2, 3$), and β_2, capturing the differential effect across the sub-groups withing RE. As in the earlier specifications, I include firm and year fixed effects, and industry-year trend controls.

5.3.2 Effect of the Policy Change on Other Borrowings

In order to check if the RE firms simply used bank borrowings to substitute for other financing, I use the same specification given by Equation 1 with growth of *other borrowings* as the dependent variable. These borrowings include all other debt of a firm obtained from sources other than banks. If the coefficients β_1 and β_2 obtained from this regression are negative and statistically significant, it is evidence in favor of firms substituting the increased bank loans for other sources of credit.

An interesting feature of this quasi-natural experiment that I exploit in this study is the occurrence of the *post-Act* period which coincides with the onset of an important recession. While most commercial banks in India were not directly exposed to the recession, the simultaneous liquidity crunch and growth slow down eroded net worth of banks and firms. Had the banks' and firms' net worth been higher for macroeconomic reasons, it would be difficult to control for dampening credit constraints in the economy. This period of slow-down in bank lending activity as well as industrial growth, lends these estimates stronger external validity.

5.3.3   Effect of the Policy Change on Real Outcomes

I analyze changes in real outcomes of the firms in AE, RE and NE groups, following the policy change. Specifically, I study their *pre* and *post* growth in investment and total sales. The coefficients of interest still are β_1 and β_2, which capture the differential effect of the change in PSL eligibility of firms, on investment and sales growth. I also repeat the following estimations with the RE group split in terciles.

Impact on Firm Investment:

$$
\begin{aligned}
\frac{I_{i,s,t}}{K_{i,s,t-1}} &= \beta_0 + \beta_1 \times (RE_i \times After_t) + \beta_2 \times (AE_i \times After_t) + \beta_3 \times (After_t) \\
&\quad + \beta_4 \times AE_i + \beta_5 \times RE_i + \beta_6 \times NE_i + \boldsymbol{\beta}' X_{it} + \gamma_i + \lambda_t + \boldsymbol{\delta}' IO_{st} + \epsilon_{ist}
\end{aligned}
\tag{3}
$$

For the **investment-growth** regression in Equation 3, the dependent variable is $I_{i,s,t}/K_{i,s,t-1}$, which is the investment to capital ratio. I control for firm-level variables - $\frac{CashFlow_{ist}}{K_{i,s,t-1}}$, the cash flow to capital ratio and $\Delta sales_{i,s,t,t-1}$, the lagged growth in firm sales.

Impact on Firm Sales Growth:

$$
\begin{aligned}
\Delta sales_{i,s,t} &= \beta_0 + \beta_1 \times (RE_i \times After_t) + \boldsymbol{\beta_2} \times (AE_i \times After_t) + \beta_3 \times (After_t) \\
&\quad + \beta_4 \times AE_i + \beta_5 \times RE_i + \beta_6 \times NE_i + \boldsymbol{\beta}' X_{it} + \gamma_i + \lambda_t + \boldsymbol{\delta}' IO_{st} + \epsilon_{ist}
\end{aligned}
\tag{4}
$$

For the **sales-growth** regression in Equation 4, the dependent variable is $\Delta sales_{i,s,t}$, which is the change in *log(Sales)*. I control for one period lagged cash flow to capital ratio $\frac{CashFlow_{i,s,t-1}}{K_{i,s,t-2}}$.

6   Results

6.3.1   Effect of the Policy Change on Bank Borrowings

Table 5 presents the results of the estimation of Equation 1 in the sample of firms. After controlling for firm-specific factors and for time trends, RE firms' bank loans grew about 19.2 percentage points faster after the policy change relative to the reference category of never eligible NE firms. In contrast, the growth in bank loans of AE firms decreased by 25.2 percentage points, in relative terms. It is interesting to note the magnitude of these coefficients, despite a negative trend in the data for RE firms and a positive trend for AE firms. These results also confirm the evidence from the rapidly growing sum of bank borrowings of RE firms in the sample compared to the stagnating AE firms as presented in Figure 2.

In the absence of *bank-firm-loan* matched data to study the impact of the policy change, these are the best available estimates of the *crowding-out* of previously eligible, smaller firms, after expanding the PSL eligibility to a new set of firms.

Within-group Comparisons

Table 6 presents the results of estimating Equation 2. The RE group is categorized into terciles (RE_1, RE_2 and RE_3), to analyze which whether size variation, even within the RE group, made a significant difference in growth of bank loans[26]. I find that the 3rd tercile RE_3, i.e. experience the biggest jump in growth of bank loans of about 23 percentage points, followed by the second to largest group, the second tercile (RE_2) by 25.4 percentage points, in relative terms. The bank loan growth of AE firms decreased by 25.1 percentage points, statistically significant at the 5% level.

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[26] These coefficients are estimated relative to the reference group, i.e. the NE firms that did not enjoy the PSL priviledge before or after the policy change

Table 5: Impact of Policy Change on Growth Rate of Bank Borrowings

This table reports the estimates of the impact of the policy change from 2004 to 2009 on the growth of bank borrowings across the firm groups, corresponding to Equation 1. The dependent variable is change in log of bank borrowings. The indicators RE_i and AE_i equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size, fixed assets and profitability are log(sales), growth(fixed assets) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($\Delta y_{t,t-1}$)	(1)	(2)	(3)
$RE_i \times After_t$	0.066*	0.176**	0.192**
	(0.039)	(0.069)	(0.086)
$AE_i \times After_t$	-0.036	-0.141	-0.252**
	(0.061)	(.094)	(0.119)
$RE_i \times t$		-0.038*	-0.056*
		(0.019)	(0.029)
$AE_i \times t$		0.037	0.078*
		(0.030)	(0.045)
Number Of Observations	10,453	10,453	8,484
Industry-Year Controls	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

These results point to the disparity even within the RE group in terms of loan growth due to changing lending incentives towards the *bigger* of the RE firms. Due to data restrictions, I can only estimate the differential impact of a policy push on the *intensive* margin. Given that $< 10\%$ of small firms have access to institutional finance in India, this poses a huge concern for complete rationing of AE firms, especially for those not using formal credit[27].

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[27] The RBI maintains aggregate loan accounts in the banking system, but doesn't record firm-level characteristics, making it impossible to track the AE and RE loans growth separately.

This table reports the estimates of the impact of the policy change from 2004 to 2009 on the growth of bank borrowings across the firm groups and sub-groups of RE_i firms, corresponding to Equation 2. The dependent variable is change in log of bank borrowings. The RE_i is split into terciles - RE_1, RE_2 and RE_3. RE_i and AE_i are indicators which equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size, fixed assets and profitability are log(sales), growth(fixed assets) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($\Delta y_{t,t-1}$)	(1)	(2)	(3)
$AE_i \times After_t$	-0.036	-0.141	-0.251**
	(0.061)	(0.098)	(0.119)
$RE_1 \times After_t$	0.168**	0.281**	0.080
	(0.066)	(0.111)	(0.149)
$RE_2 \times After_t$	0.009	0.185*	0.254*
	(0.058)	(0.106)	(0.133)
$RE_3 \times After_t$	0.038	0.079	0.227**
	(0.063)	(0.109)	(0.110)
Number Of Observations	10,453	10,453	8,484
Group-level Time Trends	No	Yes	Yes
Industry-Year Controls	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

6.3.2 Effect of the Policy Change on Other Borrowings

In Table 7, I present the results of estimates from the regression in Equation 1, replacing the dependent variable with growth in *other* borrowings comprising all other debt obtained from sources other than banks, both long term and short term borrowings.

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Impact of Policy Change on Growth Rate of Other Borrowings

This table reports the estimates of the impact of the policy change from 2004 to 2009 on the growth of borrowings *other* than bank loans, across the firm groups, corresponding to Equation 1. The dependent variable is change in log of *other* borrowings. The indicators RE_i and AE_i equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size, fixed assets and profitability are log(sales), growth(fixed assets) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($y_t/Assets_{t-1}$)	(1)	(2)	(3)
$RE_i \times After_t$	0.009	0.071**	0.041*
	(0.048)	(0.033)	(0.024)
$AE_i \times After_t$	0.007	0.045*	0.033
	(0.034)	(0.027)	(0.021)
$RE_i \times t$		-0.024	-0.004
		(0.024)	(0.014)
$AE_i \times t$		-0.015	0.001
		(0.020)	(0.001)
Number Of Observations	9,192	9,192	8,820
Industry-Year Controls	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

The coefficient on post-policy period variable for RE firms is statistically significant and indicates an increase in *other* borrowings by about 4.1 percentage points. This is in some sense a test of the presence of credit constraints, i.e. whether the newly privileged RE firms simply used the increased bank credit to substitute for other sources of financing, or they do not substitute these bank loans with other forms of credit. There is no evidence to support such a substitution. In fact the positive coefficient on the RE post-policy variable indicates these firms grew there *other* borrowings as well. The coefficient on the AE post-policy variable is positive but not significant.

6.3.3 Effect of the Policy Change on Real Outcomes

In Table 8, I report the coefficients from estimating Equation 3 and 4, i.e. the real effects of the policy change until 2009 controlling for cash flow and sales growth . The RE firms experience an increase in both investment and sales growth, in a difference-in-difference sense, by about 3.1 and 5.1 percentage points, respectively. The sign of β_2 for AE firms is negative, although statistically insignificant.

Table 8: Impact of Policy Change on Investment and Sales Growth

This table reports the estimates of the impact of the policy change from 2004 to 2009 on real outcomes - investment and sales growth, corresponding to Equation 3 and 4. The dependent variables are the investment-to-capital ratio and total sales growth. The indicators RE_i and AE_i equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Firm-level controls include the cash-flow ratio and one-period lagged sales growth. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. Firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Dependent Variable	I_t/K_{t-1}	$\Delta sales_{t,t-1}$
$AE_i \times After_t$	0.011	-0.039
	(0.017)	(.094)
$RE_i \times After_t$	0.031***	0.051*
	(0.012)	(0.026)
$\frac{CF_{i,s,t}}{K_{i,s,t-1}}$	0.093***	
	(0.023)	
$\Delta sales_{t-1,t-2}$	-0.007	
	(0.008)	
$\frac{CF_{i,s,t-1}}{K_{i,s,t-2}}$		0.034
		(0.026)
Number Of Observations	9,423	9,423
Industry-Year Controls	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes
Firm Controls	Yes	Yes

Impact of Policy Change on Investment and Sales Growth

This table reports the estimates of the impact of the policy change from 2004 to 2009 on real outcomes - investment and sales growth, across the firm groups and sub-groups of RE_i firms, corresponding to Equation 3 and 4. The dependent variables are the investment-to-capital ratio and total sales growth. The RE_i is split into terciles or by the median. RE_i and AE_i are indicators which equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Firm-level controls include the cash-flow ratio and one-period lagged sales growth. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. Firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Dependent Variable	I_t/K_{t-1}		$\Delta sales_t$	
(groups)	(terciles)	(median)	(terciles)	(median)
$AE_i \times After_t$	0.011	0.011	-0.039	-0.039
	(0.017)	(0.017)	(0.042)	(0.042)
$RE_1 \times After_t$	0.056***		0.053	
	(0.019)		(0.042)	
$RE_2 \times After_t$	0.00003		0.047	
	(0.018)		(0.041)	
$RE_3 \times After_t$	0.034**		0.051	
	(0.017)		(0.046)	
Below Median RE		0.039**		0.054
		(0.015)		(0.034)
Above Median RE		0.021		0.045
		(0.015)		(0.037)
Number Of Observations	9,423	9,423	9,423	9,423
Firm, Industry-Year Controls	Yes	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes

Table 9 also reports coefficients from estimating Equation 3 and 4, i.e. the real effects of the policy change, but across the AE and the RE terciles (RE_1, RE_2 and RE_3) or groups demarcated by the median RE firm (above the median / below the

median firm)[28]. This specification helps compare these results to the analysis presented in Bhue, Prabhala and Tantri (2016). The authors compare the bottom and top tercile of RE firms (RE_1 and RE_3) using only those RE firm groups in the regression, and find a slowdown in growth of investment of about 5 percentage points, in a relative sense. They do not report the coefficient on the dummy for the middle tercile. Using all small firms as well as a reference category of never eligible firms, I find this *difference-in-difference* estimate to be larger for the top tercile as in their analysis, but the difference I observe is around 2.2 percentage points. On the middle tercile, I find a coefficient of close to zero, albeit statistically insignificant. This result is not explained by the strategic slowdown intuition suggested in their paper.[29] I then split the RE group into two groups (below and above the median RE firm) and find no evidence indicative of a strategic investment slowdown in the upper group. In Table 19 in Appendix A, I repeat these regressions using industry-time fixed effects and find very similar results.

7 Robustness Tests

7.1 Using Alternative Dependent Variables

In addition to growth in bank loan stocks, I measure the impact on bank loans and other borrowings using different measures and repeat all the regressions. The re-estimate the main specification given in Equation 1 with the following alternate dependent variables:

 (i) $\Delta Y/Assets$ i.e the change in bank loans scaled by one period lagged assets

 (ii) $Y/Assets$ i.e. the level of bank borrowings scaled by lagged assets

 (iii) *Bank Loans/Total Loan* i.e. the share of bank borrowings in total borrowings

---

[28] The median and tercile groups are based on investment in plant and machinery in 2006-07

[29] There is no explanation provided for absence of *at least* some investment growth post the policy change for the middle tercile, even if the slower growth of the top tercile is strategic.

Table 10: Robustness Test 7.1: Impact of Policy Change on Scaled Change in Bank Borrowings

This table reports the estimates of the impact of the policy change from 2004 to 2009 on the change in bank borrowings scaled by assets across the firm groups, corresponding to Equation 1. The dependent variable is change in bank borrowings scaled by one period lagged assets. The other details are same as those in Table 5. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Variable ($\Delta Y_t / Assets_{t-1}$)	(1)	(2)	(3)
$RE_i \times After_t$	0.112*	0.022	0.146**
	(0.057)	(0.103)	(0.074)
$AE_i \times After_t$	0.0002	-0.339**	-0.272*
	(0.082)	(0.161)	(0.140)
$RE_i \times t$		0.036	-0.048*
		(0.058)	(0.027)
$AE_i \times t$		0.139**	0.088**
		(0.066)	(0.043)
Number Of Observations	8,874	8,874	8,504
Industry-Year Controls	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

In Tables 10 and 11, I present the estimates from the specifications with the scaled change in bank loans and the scaled level of bank loans, respectively, as the dependent variables. The difference-in-difference estimates are statistically significant, and in the direction of all the estimates presented in Section 6 (see Column 3 of Table 10)[30]. The estimates in Table 11 correspond to the stock of bank loans, normalized by one-period lagged assets. The RE firms increased their stock of loans by 4.1 percentage points, while there is no evidence of any positive effect on AE firms[31]

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[30] The coefficient on the RE group is bit dampened, and on the AE group is much more negative

[31] The coefficient on post-policy AE is negative but statistically insignificant.

Table 11: **Robustness Test 7.1: Impact of Policy Change on Level of Bank Loans Scaled by Assets**

This table reports the estimates of the impact of the policy change from 2004 to 2009 on the level of bank borrowings scaled by assets, corresponding to Equation 1. The dependent variable is the ratio of bank borrowings to one period lagged assets. The other details are same as those in Table 5. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($Y_t/Assets_{t-1}$)	(1)	(2)	(3)
$RE_i \times After_t$	0.108	0.101**	0.041**
	(0.091)	(0.044)	(0.019)
$AE_i \times After_t$	0.077	0.0004	-0.017
	(0.099)	(0.060)	(0.021)
$RE_i \times t$		0.003	-0.011
		(0.023)	(0.009)
$AE_i \times t$		0.031	0.006
		(0.022)	(0.007)
Number Of Observations	9,192	9,192	8,820
Industry-Year Fixed Effects	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

7.2 Using Industry-Year Fixed Effects

I use industry-level output and growth series as controls for industry trends across time. The results could be partially driven by measurement error in these industry-level aggregates. So, I proxy for industry-time controls using industry-year fixed effects, and re-estimate all specifications. Table 12 presents the results from estimating the main regression Equation 1, estimating the impact of the policy change on the growth of bank loans. I find results similar in magnitude and sign, with a positive coefficient for RE, and a negative coefficient for AE firms. I repeat this check across terciles of RE. The results are presented in Table 18 in Appendix A.

Table 12: **Robustness Test 7.2: Impact of Policy Change on Growth of Bank Borrowings using Industry-Year Fixed Effects**

This table reports the estimates of the impact of the policy change from 2004 to 2009 on the growth of bank borrowings, corresponding to Equation 1, using industry-year fixed effects. The dependent variable is the change in log of bank borrowings.The dependent variable is change in bank borrowings scaled by one period lagged assets. The other details are same as those in Table 5. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($\Delta y_{t,t-1}$)	(1)	(2)	(3)
$RE_i \times After_t$	0.084**	0.190***	0.207**
	(0.042)	(0.072)	(0.088)
$AE_i \times After_t$	-0.041	-0.182*	-0.262**
	(0.067)	(0.109)	(0.133)
$RE_i \times t$		-0.036*	-0.058
		(0.020)	(0.030)
$AE_i \times t$		0.051	0.071
		(0.031)	(0.046)
Number Of Observations	10,453	10,453	8,484
Industry-Year Fixed Effects	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

In Table 13 above, I present the estimates from a robustness check using industry-year fixed effects of the impact on real outcomes. The coefficients suggest a positive effect post-policy change on RE firms of the magnitude of about 3 and 5 percentage points on investment and sales growth. I repeat this estimation using terciles of the RE group and find that RE_1 grows faster than RE_1, in a relative sense. However, unlike Bhue, Prabhala and Tantri (2016), the magnitude of the difference-in-difference estimate is only 1 percentage point.

Table 13: Robustness Test 7.2: Impact of Policy Change on Growth of Firm Investment and Sales using Industry-Year Fixed Effects

This table reports the estimates of the impact of the policy change from 2004 to 2009 on real outcomes - investment and sales growth, corresponding to Equation 3 and 4, using industry-year fixed effects. The dependent variables are the investment-to-capital ratio and total sales growth. The other details are same as those in Table 8. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Dependent Variable	I_t/K_{t-1}	$\Delta sales_{t,t-1}$
$RE_i \times After_t$	0.027**	0.048*
	(0.012)	(0.027)
$AE_i \times After_t$	0.009	-0.059
	(0.017)	(0.048)
$\frac{CF_{i,s,t}}{K_{i,s,t-1}}$	0.094***	
	(0.023)	
$\Delta sales_{t-1,t-2}$	-0.007	
	(0.008)	
$\frac{CF_{i,s,t-1}}{K_{i,s,t-2}}$		0.034
		(0.028)
Number Of Observations	9,423	9,423
Industry-Year Fixed Effects	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes
Firm Controls	Yes	Yes

7.3 False Cut-Off Test

Since RE firms are bigger than AE firms in size by definition, the captured effect may simply be driven by *firm-size*, i.e. bigger firms grow their bank credit faster during this sample period. To check for such a possibility, I construct alternate control and treated groups based on size. In Table 14, I present a case where I use medium and large firms as the control and treated groups, respectively, and conduct the same differential

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impact analysis[32]. I do not find evidence of crowding-out of medium firms relative to large firms. I estimate similar checks using an alternate dependent variable and using industry-year fixed effects, discussed in Tables 20 and 21 in Appendix A.

Table 14: Robustness Test 7.3: Impact of Policy Change on on Growth of Bank Borrowings using a False Cut-off

This table reports the estimates of the impact of the policy change from 2004 to 2009 on the growth of bank borrowings, medium and large firms as *control* and *treated* groups, respectively. The dependent variable is the change in log of bank borrowings. The indicator LA_i equals 1 if the firm is characterized as large (> 100 INR Mln in plant and machinery) in 2006-2007. The other details are same as those in Table 5. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Variable ($\Delta y_{t,t-1}$)	(1)	(2)	(3)
$LA_i \times After_t$	-0.127**	-0.170*	-0.119
	(0.053)	(0.095)	(0.122)
$LA_i \times t$		0.014	-0.058
		(0.025)	(0.030)
Number Of Observations	7,405	7,405	6,033
Industry-Year Controls	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

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[32] This exercise is which is akin to running a 'placebo' experiment. Other constructions of arbitrary control and treatment groups available upon request.

8   Conclusion

I exploit a change in the eligibility criterion of small firms to a nation-wide directed lending program in India to analyze the crowding out of previously eligible firms by the recently eligible firms. After an increase in the investment cut-off determining small size status of firms, I find that the firms that were included in the pool of program eligible borrowers, experienced an increase in the rate of growth of institutional credit. This increased lending did not substitute for other forms of lending, which also systematically rose during the years studied. On the other hand, the *smaller* of these small firms that were previously eligible were crowded out as a result of competition from their bigger counterparts in the loan market. The recently eligible firms also experience increased investment and sales growth post policy change, while there is no evidence of a any improvement in the real outcomes for the previously eligible small firms. The expansion of this targeted lending program resulted in hurting the smaller, more financially vulnerable firms, by distorting the lending incentives of institutional lenders.

This study points to an important *spillover effect* of a regulatory change aimed at the increasing credit access of small firms. Since banks are mandated to increase *priority sector* credit as they grow their loan portfolios, they react by targeting the bigger firms with bigger collateral. Policymakers must keep in mind such side-effects of policy expansion which leaves *smaller* of the small firms worse off. One way to offset such lending incentives is to implement strict sub-group targets along with overall credit quotas for banks, so they are not incentivized to grow their loans by lending disproportionately more to firms with bigger collateral, even at the cost of the *smaller* of the small firms.

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Appendix A   Additional Tables

A.1   More Descriptive Statistics

Differences in Time Trends

To check for differences in trends across the three groups of firms AE, RE and NE, I run a regression of bank borrowings and firm sales, separately, and plot the sum of residuals corresponding to each group.

$$y_{ist} = \beta_0 + \beta_1 \times IO_{st} + \beta_2 \times \Delta IO_{st} + \epsilon_{ist}$$

In the regressions, I control for industry-specific business cycles using the aggregate industry output IO_{st} and growth rate of industry output ΔIO_{st}. I find evidence of time trend differences in both borrowings across the groups as well as in sales growth. These differences are evident from the time plot of the group-wise residuals, as can be seen in Figure 4 and 5. Hence, I control for a group-wise trend in all the estimations.

Summary Statistics − All Firms

As discussed earlier in the Data section, exporters are excluded from the analysis, due to their special access to *export credit* programs in the time period of this study. For the sake of the reader, I have provided a full summary statistics on firms in this period, including the exporting firms, in Table 15.
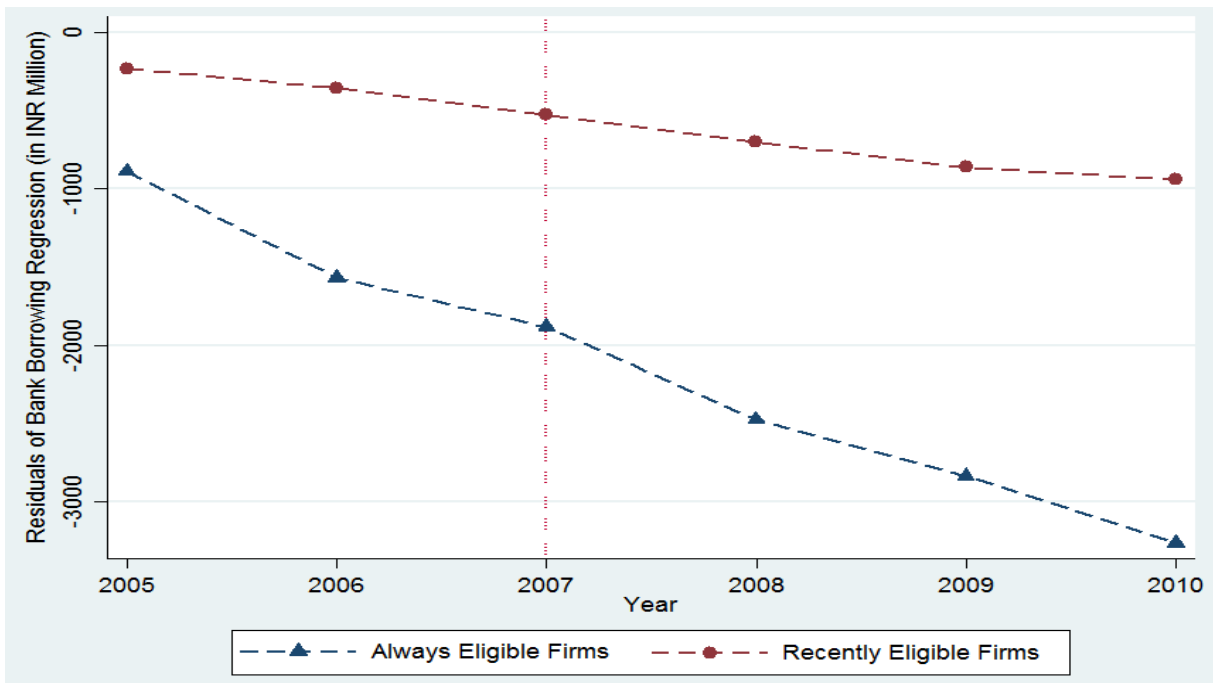
Figure 4: Plotting sum of group-wise residuals from the Bank Borrowings regression.
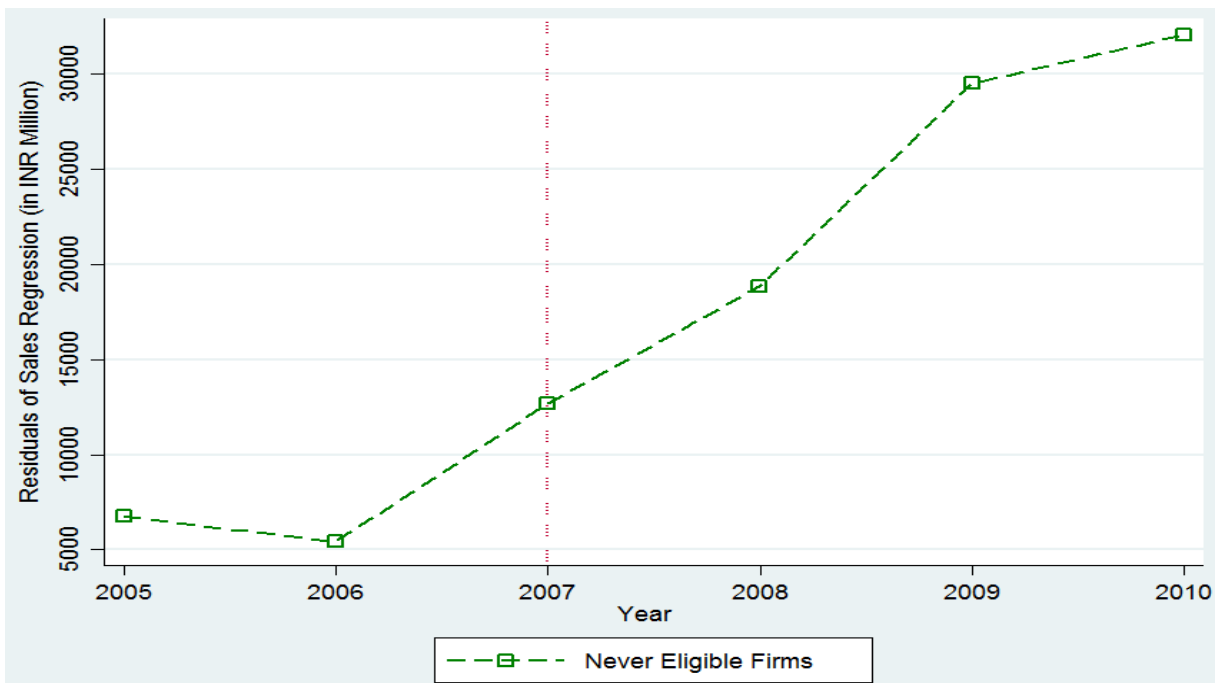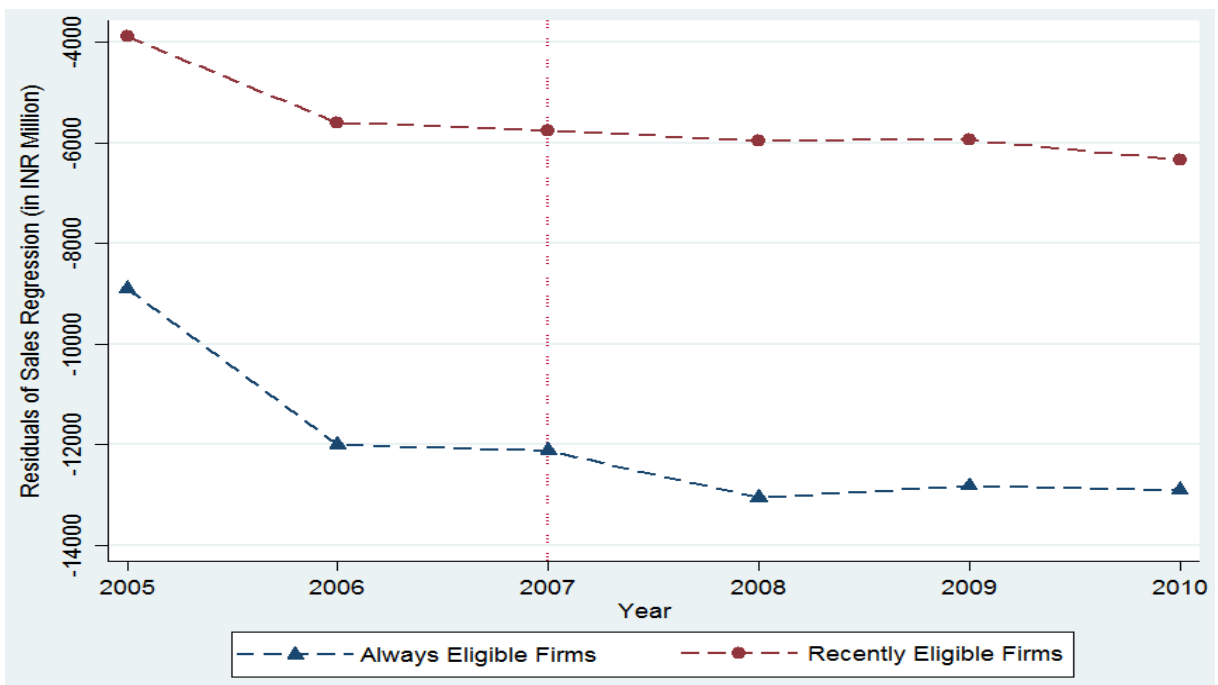*Source:* Author's calculations based on firm level data from the *Prowess* database

Figure 5: Plotting sum of group-wise residuals from the the Total Sales regression.
Source: Author's calculations based on firm level data from the *Prowess* database

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Table 15: Descriptive Statistics: Always Eligible Vs Recently Eligible Vs Never Eligible Firms in 2006-2007

Variable	Always Eligible (AE)			Recently Eligible (RE)			Never Eligible (NE)		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Total Sales	236	175	680	593	232	670	2,203	5,836	54,743
Total Assets	257	131	459	640	230	1,238	2,268	4,779	32,396
Fixed Assets	257	**31**	54	640	**70**	138	2,268	**2,912**	22,856
Plant & Machinery	257	9	10	640	26	13	2,268	2,279	19,376
Total Liabilities	257	131	459	640	230	1,238	2,268	4,779	32,396
Total Borrowings	216	47	206	600	104	1,042	2,199	1,527	8,733
Bank Borrowings	167	42	183	510	42	96	2,085	792	4,121
Bank Share	167	**0.70**	0.32	509	**0.65**	0.30	2,084	**0.65**	0.29
Profitability	251	**0.04**	0.62	633	**0.07**	0.23	2,084	**0.11**	0.26
EBIT	251	12	37	633	16	40	2,263	556	3,928
Utilization	236	1.32	1.24	593	1.24	11.09	2,203	1.22	0.80
Current Ratio	255	**5**	22	637	**4**	21	2,267	**3**	9
Quick Ratio	255	4	15	637	3	12	2,267	2	6

Note: The groups AE, RE and NE are constructed based on the cut-offs in terms of value of investment in plant and machinery in INR Million in 2006-2007. If the value of plant and machinery of a firm is between INR 2.5-10 Million, its in the AE small firms category, if its between INR 10-50 Million then its in the RE small firms category, and if its > INR 50 Million then its in the NE firms category. Profitability and utilization are calculated by scaling by total assets, bank share is calculated by dividing bank borrowings by total borrowings, and the current ratio and quick ratio are calculated by scaling by total current liabilities. The exact definitions of the financial variables is provided in the **??** section in the **??**. All the financial variables correspond to the averages of financial year 2006-2007 of *exporting* and *non-exporting* firms. Ratios are winsorized at the 1% level.

A.2 Additional Robustness Tests

Table 16: **Robustness Test 7.1: Impact of Policy Change on Scaled Change in Bank Borrowings (2004-2009)**

This table reports the estimates of the impact of the policy change on the change in bank borrowings scaled by assets, across firm groups and sub-groups of RE_i firms, corresponding to Equation 2. The dependent variable is change in bank borrowings scaled by one period lagged assets. The RE_i is split into terciles - RE_1, RE_2 and RE_3. RE_i and AE_i are indicators which equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size and profitability are log(sales) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Variable ($\Delta Y_t / Assets_{t-1}$)	(1)	(2)	(3)
$AE_i \times After_t$	0.0001	-0.227**	-0.272**
	(0.082)	(0.110)	(0.114)
$RE_1 \times After_t$	0.181***	0.218	0.225
	(0.063)	(0.187)	(0.189)
$RE_2 \times After_t$	0.029	0.083	0.082
	(0.072)	(0.077)	(0.084)
$RE_3 \times After_t$	0.136**	0.121*	0.178**
	(0.066)	(0.074)	(0.076)
Number Of Observations	8,874	8,874	8,504
Industry-Year Controls	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

Table 17: Robustness Test 7.1: Impact of Policy Change on Share of Bank Borrowings in Total Borrowings (2004-2009)

This table reports the estimates of the impact of the policy change on the share of bank borrowings across firm groups, corresponding to Equation 1. The dependent variable is ratio of bank borrowings and total borrowings. RE_i and AE_i are indicators which equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size and profitability are log(sales) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Bank Borrowings/Total Borrowings	(1)	(2)	(3)
$RE_i \times After_t$	-0.035***	-0.043***	0.032**
	(0.012)	(0.014)	(0.016)
$AE_i \times After_t$	-0.059***	-0.009	-0.025
	(0.018)	(0.022)	(0.019)
$RE_i \times t$		-0.026***	-0.023***
		(0.004)	(0.006)
$AE_i \times t$		-0.017**	-0.009
		(0.007)	(0.008)
Number Of Observations	11,086	11,086	8,816
Industry-Year Fixed Effects	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

Table 18: **Robustness Test 7.2: Impact of Policy Change on Growth of Bank Borrowings using Industry-Year Fixed Effects (2004-2009)**

This table reports the estimates of the impact of the policy change on the growth rate of bank borrowings, across firm groups and sub-groups of RE_i firms, corresponding to Equation 2. The dependent variable is change in log of bank borrowings. The RE_i is split into terciles - RE_1, RE_2 and RE_3. RE_i and AE_i are indicators which equal 1 if the firm belongs to that group in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size, fixed assets and profitability are log(sales), growth(fixed assets) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($\Delta y_{t,t-1}$)	(1)	(2)	(3)
$AE_i \times After_t$	-0.041	-0.181**	-0.263**
	(0.067)	(0.108)	(0.133)
$RE_1 \times After_t$	0.176**	0.287**	0.106
	(0.069)	(0.116)	(0.152)
$RE_2 \times After_t$	0.040	0.203*	0.273**
	(0.060)	(0.108)	(0.132)
$RE_3 \times After_t$	0.051	0.098	0.229**
	(0.064)	(0.109)	(0.114)
Number Of Observations	10,453	10,453	8,484
Group-level Time Trends	No	Yes	Yes
Industry-Year Fixed Effects	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

Table 19: **Robustness Test 7.2: Impact of Policy Change on Investment and Sales Growth using Industry-Year Fixed Effects (2004-2009)**

This table reports the estimates of the impact of the policy change on real outcomes - investment and sales growth, across the firm groups and sub-groups of RE_i firms, using industry-year fixed effects, corresponding to Equation 3 and 4. The dependent variables are the investment-to-capital ratio and total sales growth. The RE_i is split into terciles or by the median. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Firm-level controls include the cash-flow ratio and one-period lagged sales growth. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. Firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Dependent Variable	I_t/K_{t-1}		$\Delta sales_t$	
(groups)	(terciles)	(median)	(terciles)	(median)
$AE_i \times After_t$	0.009	0.009	-0.059	-0.059
	(0.018)	(0.017)	(0.048)	(0.048)
$RE_1 \times After_t$	0.044**		0.036	
	(0.020)		(0.042)	
$RE_2 \times After_t$	0.0008		0.042	
	(0.019)		(0.042)	
$RE_3 \times After_t$	0.034*		0.063	
	(0.018)		(0.046)	
Below Median RE		0.031*		0.045
		(0.016)		(0.036)
Above Median RE		0.022		0.049
		(0.016)		(0.037)
Number Of Observations	9,423	9,423	9,423	9,423
Industry-Year Fixed Effects	Yes	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Controls	Yes	Yes	Yes	Yes

Table 20: **Robustness Test 7.3: Impact of Policy Change on Growth of Bank Borrowings using a False Cut-off, using Industry-Year Fixed Effects (2004-2009)**

This table reports the estimates of the impact of the policy change on on the growth of bank borrowings, medium and large firms as *control* and *treated* groups, respectively, and using industry-year fixed effects. The dependent variable is the change in log of bank borrowings. The indicator LA_i equals 1 if the firm is characterized as large (> 100 INR Mln in plant and machinery) in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size, fixed assets and profitability are log(sales), growth(fixed assets) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($\Delta y_{t,t-1}$)	(1)	(2)	(3)
$LA_i \times After_t$	-0.133**	-0.137	-0.111
	(0.055)	(0.097)	(0.124)
$LA_i \times t$		0.001	0.008
		(0.025)	(0.041)
Number Of Observations	7,405	7,405	6,033
Industry-Year Fixed Effects	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

Table 21: **Robustness Test 7.3: Impact of Policy Change on Scaled Change in Bank Borrowings using a False Cut-off (2004-2009)**

This table reports the estimates of the impact of the policy change on on the growth of bank borrowings, medium and large firms as *control* and *treated* groups, respectively, and using industry-year fixed effects. The dependent variable is the change in log of bank borrowings. The indicator LA_i equals 1 if the firm is characterized as large (> 100 INR Mln in plant and machinery) in 2006-2007. The indicator $After_t$ equals 1 for years after 2006-2007, the year of passing of the Act. Controls for firm size and profitability are log(sales) and the EBIT ratio, respectively. Firm and year fixed effects, as well as industry-year fixed effects are included as indicated. All borrowings are deflated using the WPI, and firm sales and assets are deflated using industry-specific deflators. Standard errors are clustered at the firm level, and reported in parenthesis. Significance levels are *** p<0.01, ** p<0.05, * p<0.1

Variable ($\Delta Y_{t,t-1}$)	(1)	(2)	(3)
$LA_i \times After_t$	-0.107	0.036	-0.077
	(0.094)	(0.125)	(0.088)
$LA_i \times t$		-0.058	0.023
		(0.068)	(0.030)
Number Of Observations	6,259	6,259	6,038
Industry-Year Controls	Yes	Yes	Yes
Firm and Year Fixed Effects	Yes	Yes	Yes
Firm Controls	No	No	Yes

Appendix B   Definitions

B.1   Variables Definition

These definitions have been taken from the *Prowess* Database Dictionary:

1. **Total Sales** is the sum of industrial sales and income from non-financial services.

2. **Total Assets** refer to sum of all current and non-current assets held by a company as on the last day of an accounting period.

3. **Gross Fixed Assets** refer to the aggregate un-depreciated value of all of a company's gross fixed assets as on the last day of an accounting period. It is essentially the sum of the costs of construction/acquisition. It also takes into account capitalized expenses. If a fixed asset is sold at any point in time, the historical cost thereof is deducted from the value of the gross fixed assets.

4. **Gross Plant and Machinery** is the total un-depreciated value of the installed plant and machinery as at the end of the accounting period. These are essentially production facilities for manufacturing goods.

5. **EBITDA** refers to earnings or profits before depreciation, interest, tax and amortization. These are called PBDITA in the database.

6. **Current Ratio** is a liquidity ratio that measures a company's ability to meet its short term obligations, i.e. to pay off its short term liabilities, typically within one year. A ratio below one implies inadequacy and a ratio just above one would indicate a "just-about" adequate ability to meet current liabilities. But, a ratio that is much above one would indicate too much of short term asset on hand that could possibly be deployed for better long-term use.

7. **Quick Ratio** is the ratio of quick assets to quick liabilities. It measures the ability of a company to pay its immediate or short term liabilities by using its

cash and near cash current assets. It is a more stringent measure of short term liquidity as compared to the current ratio. Quick assets comprise a subset of current assets - receivables and cash & bank balance.

8. **Total Liabilities** are the sum of all the resources deployed. They include all sums owed to the shareholders in the form of share capital and reserves & surpluses, all sums owed to lenders in the form of secured and unsecured loans and all current liabilities and provisions. It also includes deferred tax liability.

9. **Total borrowings** includes all forms of debt; interest bearing or otherwise. All secured and unsecured debt is included under total borrowings (so total borrowings include debt from banks (short-term and long-term) and other financial debt issued by financial institutions, government, RBI, syndicated loans, etc.

10. **Total Bank Borrowings** are the aggregate borrowings from banking institutions, whether obtained from a single bank or a syndicate. All types of loans in the form of short-term loans, long term loans, cash credits, bank overdrafts, etc. are treated at par and all are clubbed under this category bank borrowing.

11. **Total Forex Earnings** is the sum total of the earnings of a company in terms of foreign exchange, including earnings from - Export of Goods, Export of Services, Forex earning Dividend, Forex earning Interest, and Deemed Export Sales.

12. **Export Earnings** is the total Free-On-Board (F.O.B.) the value of the goods exported by a company, as disclosed in the notes to accounts in the balance sheet. These include – Export of goods calculated on F.O.B basis, royalty, know-how, professional and consultation fees, interest and dividends, and other income.

13. **Export–Sales Ratio** measures the export earnings through exports of goods and services as a percentage of sales. This ratio provides a measure of the degree of exposure of a company to exports markets, i.e. how much business does a company generate by catering to export markets.

B.2 Firm and Industry Controls

All level variables are scaled by lagged investment in fixed assets. Industry-level price deflators are used wherever required.

1. **Firm Size:** Log(sales), where *sales* are deflated total sales.

2. **Sales Growth:** The change in *log(sales)*, where *sales* are deflated Gross Sales.

3. **Firm Utilization:** The ratio of deflated total sales and lagged deflated assets.

4. **Firm Profitability:** The ratio of (EBIT - Depreciation - Amortization) scaled by lagged deflated assets.

5. **Default Risk Proxy:** The current ratio or quick ratio.

6. **Cash Flow Ratio:** The deflated EBIT with depreciation added back, scaled by deflated lagged assets.

7. **Fixed Assets Growth:** The change in deflated Gross Fixed Assets.

8. **Industry Output:** The deflated national-level industry-specific output.

9. **Industry Output Growth:** The change in deflated log(industry output).

B.3 Industry Aggregates and Deflators

Industry Specific Deflators

The Wholesale Price Index (WPI) is used to deflate the level variables. The data are obtained from the Ministry of Commerce Industry website, which is responsible for compilation of price data and release of All-Commodities WPI series and Industry-wise WPI series. The borrowings variables are deflated by the all-commodities WPI, and the firms' level variables such as sales, assets, and profits, as well as the national level industry-wise output are deflated by the industry-specific WPI series. I map the firm two-digit industry code to the industry codes for which the WPI series are available.

Industry Output Series

The national-level industry output and growth series are taken from the Annual Survey of Industries' Historical Time Series collected by the Ministry of Statistics and Programme Implementation. These series span years 2003-2009. Since the National Industrial Classification (NIC) were changed twice in the span of those years[33], I map the code books across the years to obtain a common series that corresponds to the NIC 2008 series. Each firm in the sample is mapped to one of the following industries:

1. Crop, Animal Production, Hunting
2. Mining and Quarrying
3. Food Products and Beverages
4. Tobacco Products
5. Textiles
6. Wearing Apparel
7. Leather and Related Products
8. Wood and Products of Wood
9. Paper and Paper Products
10. Printing and Reproduction of Recorded Media
11. Coke and Refined Petroleum Products
12. Chemicals and Chemical Products
13. Basic Pharmaceutical Products and Preparations
14. Rubber and Plastics Products
15. Other Non-Metallic Mineral Products
16. Basic Metals

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[33] NIC 1998 was updated to NIC 2004, and NIC 2004 was updated to NIC 2008

17. Fabricated Metal Products[34]

18. Computer, Electronic and Optical Products

19. Electrical Equipment

20. Machinery and Equipment n.e.c.

21. Motor Vehicles, Trailers and Semi-Trailers

22. Other Transport Equipment

23. Furniture

24. Waste collection, treatment, disposal activities

25. Publishing and related

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[34] Except Machinery and Equipment