The Impact of Credit Constraints on Exporting Firms: Empirical Evidence from India[*]

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Abstract

This paper studies the causal impact of credit constraints on exporting firms. We exploit a natural experiment provided by two policy changes in India, first in 1998 which made small-scale firms eligible for subsidized direct credit, and a subsequent reversal in policy in 2000 wherein some of these firms lost their eligibility. Using firms that were not affected by these policy changes (in each case) as our control group, we find that expansion of subsidized credit increased the rate of growth of bank borrowing by about 20 percent and export earnings by around 22 percent. Interestingly, the subsequent policy reversal in 2000 had no impact on the rate of growth of bank borrowing and on export earnings.

Keywords: finance, credit constraints, trade, export probability.

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1. Introduction and Motivation

It is now generally accepted in the extant literature that credit constraints (or more generally capital market imperfections) affect both the decision to export as well as the export intensity of exporting firms. The theoretical literature building on Melitz (2003) finds that credit constraints influence the extensive margin as well as the intensive margin of trade even within narrowly defined sectors.[1] In the applied literature, a number of studies seek to empirically establish the aforementioned trade-finance linkages. A notable early study is by Beck (2003) and more recent studies include Mirabelle (2008) for Belgian firms, Campa and Shaver (2002) for Spanish exporters, Guariglia and Mateut (2005) for U.K. firms, Paravisini, Rappoport, Schnabl and Wolfenzon (2011) for Peruvian exporters, Egger and Kesina (2010) for large Chinese exporters, and Manova (2011). These studies find evidence of financial constraints affecting export behavior both at the extensive and at the intensive margin both at the country level and at the firm level. The direction of causality in these studies thus goes from finance to exporting. A very recent literature also finds evidence of causality going the other way – from exporting to better financing (Greenaway, Guariglia and Kneller (2007), Ganesh-Kumar, Sen and Vaidya (2001) and Bridges and Guariglia (2008)). Thus, exporting acts as a costless signal to creditors to assess future profitability of loans (see Ganesh-Kumar et al. (2001)) or helps exporting firms take advantage of the benefits of international diversification of sales (Bridges and Guariglia (2008)). In light of the difference in these two sets of results, a critical analysis of the true nature of the trade credit linkage is important from a policy perspective. If causality runs from credit constraints to exporting, then financial sector reforms in emerging economies that improve the accessibility of credit to exporting firms can play a very significant role in promoting export oriented growth in the economy. With the recent growth in world trade and with the ever increasing internationalization of domestic businesses in a global economy, the study of the role that credit constraints play in mediating international trade flows is of considerable importance.

In this paper we contribute to the empirical literature on the trade-finance linkage by establishing a *causal* link from credit constraints to real and financial outcomes of exporting firms (firm sales, foreign exchange earnings, *etc*.) for a panel of Indian firms. In particular, we study the impact of credit constraints on exporting firms. We exploit two exogenous policy changes in India that affected the availability of subsidized

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[1]Using a Melitz-type setup, Chaney (2005) finds both liquidity and firm productivity influence the extensive margin of trade whereas only firm productivity influences the intensive margin of trade. Using a model of credit constrained heterogeneous firms, Manova (2011) shows that countries at a higher level of financial development export more and firms in sectors that require greater external finance or fewer collaterizable assets export more. Mulls (2008) incorporates both external and internal constraints in a Melitz type set-up and finds results similar to that of Manova (2011) wherein both the extensive as well as the intensive margins of trade are affected by credit constraints.

direct credit to small scale firms. The first policy change, which was introduced in 1998, altered the eligibility criteria for subsidized direct credit to the small scale firms. As a result of this policy change, some of the small sized firms were classified as priority sector firms and became eligible for subsidized credit from the banks. However, in 2000, this policy was reversed and some of these firms (which had newly become part of the priority sector) were removed from the priority sector and were no longer eligible for subsidized direct credit. Using firms that were not affected by these policy changes as our comparison group, we find that the expansion of subsidized credit to newly eligible firms increased the rate of growth of (short term) bank borrowing by 18 percent and the rate of growth of export earnings by approximately 21 percent. Our empirical results suggest that even exporting firms that have overcome their sunk costs of exporting are sensitive to credit constraints. Interestingly, the reversal of the policy in 2000 had little impact on bank borrowing and the export earnings of the firms that were now declassified as priority sector (and had lost their eligibility for subsidized credit). A key implication of this result is that perhaps, before the policy change in 1998, the Indian banks were reluctant to lend to small sized firms even if these firms wanted to borrow more at the current market interest rates. The policy change compelled the banks to change their behavior towards these firms. However, once it was established that expanding the credit limit did not lead to increased defaults or bad behavior on the part of the firms, there was no reason for the bank to alter this relationship even after the policy reversal. A recent paper on banking reforms in India by Bannerjee, Cole and Duflo (2004) (hereafter referred to as BCD) finds evidence of massive under-lending by banks, in particular by nationalized banks. They also find that the official lending policy of banks is very rigid and is characterized by passive lending primarily due to the vigilance activity that inhibits lending to the private sector and encourages lending to the government sector.

Our findings for the credit expansion phase of the policy change are similar to those of Bannerjee and Duflo (2008) who, using the same natural experiment but on a different and a much smaller data set, find that Indian firms (not necessarily exporters) are credit constrained and that the expansion of credit leads to higher growth in firm sales. However, in contrast to their results, we find that the policy reversal had no impact on the sales of the firm that lost their eligibility whereas they find that the policy reversal leads to the contraction in the sales of firms that lost their eligibility, for priority sector lending. Another difference is that in this paper (as mentioned earlier) we focus our attention on firms that are exporters in the manufacturing sector. Another paper which is very similar to our paper is the work by Zia (2008) who finds that small private non-networked yarn manufacturers in Pakistan experience a significant decline in exports following the removal of subsidized credit.

This paper is organized as follows. In section 2, we briefly discuss the policy

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change; in section 3, we describe the data set; in section 4, we explain the estimation methodology and discuss the results. In section 5, we present the conclusion.

2. The Indian Banking Sector, the Priority Sector Regulation and Policy Change

2.1 The Indian Banking Sector

In recent years, the Indian banking sector has witnessed the emergence of private banks and several large foreign banks. However, the banking sector is by and large dominated by the public sector (and nationalized) banks (these are corporatized banks where government is the majority shareholder). For example, 78 percent of total deposits are collected by nationalized banks and 77 percent of total loans and advances are made by the nationalized banks. In addition to the term loans, approximately 37 percent of the total loans and advances are made in the form of cash credits and overdraft facilities which typically take care of the short-term working capital needs of the firm. Despite the dominance of the nationalized banks, it has been observed that the Indian banking system is characterized by under-lending, that is, firms are willing to absorb more credit at the market interest rates than what they are actually given (for a detailed discussion on Banking Reforms in India, see BCD). BCD have noted that public sector banks in India were until very recently intensely regulated by the Reserve Bank of India (RBI). For example, the RBI determined the "maximum permissible bank finance" for individual borrowers. For loans over rupees 20 million, the lending rule was based on the working capital gap. The rule was 0.75*[Current Assets - Current Liabilities] (excluding bank finance) and for loans below rupees 20 million, it was based on projected turnover. Here the rule was 0.20*Projected Turnover (which was determined by the loan officer after consultation with the client). After 1997, based on the Nayak committee recommendation, the banks have been given the flexibility to evolve their own lending policy as long as these policies are made explicit. Moreover, the committee's recommendation favored the turnover-based approach to calculate lending limits for all loans below rupees 40 million. However, even after 1997, the RBI played an instrumental role in determining the banks lending policy to individual borrowers.

In a study on the actual lending practices of public sector banks, BCD have also observed that despite the change in lending policies, in 78 percent of the cases, the actual limit granted was smaller than the maximum amount of loan that was permitted. In 64 percent of the cases, the limit granted did not change from the previous year in spite of the fact that according to the bank's lending rules, the limit could have gone up for 64 percent of the cases. The evidence from BCD suggests that nationalized banks in

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India are reluctant to engage in fresh lending decisions. Inertia plays a very important role in explaining the behavior of the loan officers in public sector banks.

Another important feature of the Indian banking sector that could potentially explain under-lending is the incentive structure faced by the loan officers. Given that nationalized banks are owned by the government, the loan officer is treated as a public servant. The general impression among public loan officers is that it is very easy to be charged with corruption because anti-corruption laws in India state that if any public servant takes a decision which results in a financial gain to the third party, then the public servant is guilty of corruption till proven innocent. In an empirical analysis, BCD have shown that the fear of being prosecuted reduces lending in a significant way.

2.2 *Priority Sector Regulation*

In order to promote credit to the priority sector which consists of the agricultural sector, the small scale industries (SSI hereafter) and "the weaker sections of the society" (for example microcredit, self-help groups, self-employed household, etc.), the government of India mandates that 40 percent of the net bank credit should be reserved for the priority sector. This limit is 32 percent for foreign banks. In addition, the net bank credit to the agricultural sector cannot be less than 18 percent and the net bank credit to the "weaker sections" cannot be less than 10 percent. The credit to the priority sector can be in the form of either direct finance which is given in the form of short-term, medium term or long term loans or indirect finance, for example, "...term finance/loans in the form of lines of credit made available to State Industrial Development Corporation (SIDBI)/State Financial Corporations (SFCs) for financing SSIs. Such term finance/loans to the extent granted for/to the Small Scale Industrial (SSI) units, will be treated as priority sector lending" (as outlined in the *Master Circular* (2006) of the RBI on lending to the Priority sector). The interest rates for priority sector lending is determined by the RBI and it changes from time to time. For example, during the period of this study, the interest rate was fixed at four percent above the prime lending rate.

2.3 *Policy Change*

Prior to 1998, firms with a total investment in plant and machinery of less than *Rs*. 6.5 million were classified as SSI and hence were eligible for priority sector lending. In January 1998, the government extended the domain of the priority sector by broadening the definition for SSI - all firms with investment in plant and machinery of less than *Rs*. 30 million were now classified as SSI and therefore became eligible for priority sector lending. In January 2000, this policy change was partly undone by another change in the definition of SSI - firms with investment in plant and machinery of less than *Rs*. 10 million were now eligible for priority sector lending while firms with

investment in plant and machinery greater than *Rs*. 10 million but less than *Rs*. 30 million were declassified as priority sector. These two policy changes form the basis of our "natural experiment". For the years 1999, 2000 all new firms that became eligible for priority sector lending form the treatment group while from 2001 till 2006 (the final year of our sample) all firms that lost their eligibility form the treatment group.[2]

3. Data

The data for this paper is from the Prowess database from the Centre for Monitoring the Indian Economy (CMIE), a private think-tank that provides firm level data on all companies that are traded on India's major stock exchanges and several other PSU's. The Prowess database comprises of more than 10 years of time series data and is updated on a daily basis. The coverage of Prowess is quite extensive–all the firms put together account for 75 percent of corporate taxes and 95 percent of the excise duty collected by the Indian government. For all these firms, Prowess contains detailed data (compiled from audited annual accounts, stock exchanges, company announcements, etc.) on 1500 items which include quantitative information on firms production, sales, export earnings, expenditure on capital goods, raw materials, power and fuel, labour, etc. It also contains detailed data on financial variables like the amount of bank borrowing, other financial institutional borrowing, secured and unsecured debt. The database also categorizes firms by industry according to the 4-digit 1998 NIC code (Indian equivalent of the SIC classification scheme). The list of firms spans the industrial composition of the Indian economy.[3]

In this paper we use firm level data from 1990 to 2006. In table 1, we provide descriptive statistics for exporting firms for some of the key variables that we use in our study like total sales, total export earnings, total bank borrowings etc. Our focus is on the impact of the policy change on exporting firms in particular.

[Insert Table 1]

4. Empirical Analysis

4.1 *Exporters vs Non-Exporters*

From the policy perspective mentioned earlier, our analysis of export credit linkages is a worthwhile exercise only if exporting firms (on average) have substantially higher

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[2]Assignment into treatment depends on the firm size in 1998 and 1999 for the credit expansion phase and firm size in 2000 for the credit contraction phase because of a year lag in the decision for credit revision and the actual provisioning of credit.

[3]From the Prowess Database web site at CMIE.

levels and growth rates of bank borrowing and other forms of lending than non-exporting firms. To establish if this is the case, in tables 2 and 3 we compare exporters with non exporters by running the following regression :

$$ln(X)_{ijt} \quad = \quad \beta_0 + \beta_1 D_{ijt} + \sum_t \alpha_t Time_t + \tag{1}$$
$$+\beta_2 ln(S)_{ijt} + \delta_j I_j + \epsilon_{ijt}$$

where $ln(X)_{ijt}$ denotes the logarithmic value of a firm's characteristics like total bank borrowing of the firm, sales of the firm *etc.*, for firm i in industry j in year t, and D_{ijt} is the export status dummy of firm i in year t in industry j, defined as follows:

$$D_{ijt} = \begin{cases} 1 & \text{if firm } i \text{ in industry } j \text{ is an exporter in year } t \\ 0 & \text{otherwise.} \end{cases} \tag{2}$$

where $ln(S)_{ijt}$ denotes the logarithmic value of (total) firm sales for firm i in industry j in year t (this is used as a control for firm size), $Time_t$ is a time dummy that captures the general time trend that affects all firms and I_j denotes the industry dummy at the 3 digit NIC level. The coefficient on the export dummy, β_1, measures the percentage difference for various firm characteristics (shown in the table) between exporters and non-exporters. We emphasize that this regression (in contrast to the regressions involving the difference-in-differences specifications) involves both exporting firms as well as those firms that have never exported. These regressions are also referred in the extant literature as *export premia* regressions for exporting firms. This specification is adapted from the literature on export performance in the early work by Bernard and Jensen (1999) and follows the approach used in Greenaway et al. (2007).

[Insert table 2]

In the second row of table 2, we re-run the same set of regressions, using annual growth rates of the same variables. We define the annual growth rate of a variable X_{ijt} in year t as $ln(X_{ijt+1}) - ln(X_{ijt}) = \%\Delta X_{ijt}$.

The variables included in the regressions in table 2 include bank borrowing, total borrowing, secured borrowing, unsecured borrowing, total assets of the firm, current assets, cash flow, working capital, total sales of the firm and total expenses.[4] We find that both in levels and in growth rates, exporters outperform non-exporters for a number of variables. For example, exporters have 22 percent higher bank borrowing and 18 percent higher total borrowing than non-exporters. Also, bank loans increase by three percent more (annually) and total loans by about one percent more annually

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[4]See the appendix for definitions of these variables.

(although the second coefficient is not statistically significant at the conventional level of significance) for exporters compared to non-exporters. For secured borrowing, we find a significant difference in levels of this variable between exporting and non-exporting firms. Exporters have higher growth rates than non-exporters (although this is not statistically significant at the conventional levels). Exporting firms have higher sales than non-exporting firms and also have higher sales growth than non-exporting firms. Also, exporters have more assets (here by assets we mean the sum of tangible and intangible assets) than non-exporters. Exporters also have greater internal cash flow than non-exporters.

In table 3, we run the aforementioned regression for several important financial ratios. These include a measure of leverage, a measure of liquidity, return on assets (ROA), a ratio measuring profitability, a ratio measuring debt to assets (these are the variables used in the seminal work by Greenaway et al. (2007)) and also several ratios that are the standard measures of the financial health of a firm. These include two leverage ratios, *viz.*, the debt ratio and the debt to equity ratio which basically are a measure of a company's long-term ability to pay off its debt indicates and two liquidity ratios, *viz.*, the current ratio and the quick ratio.[5]

From table 3, we find (from the coefficient on leverage) that exporters have less short term debt (normalized by assets) than non-exporters. Exporters also have higher return on assets and are generally more profitable than non-exporters. Exporters also have less long term debt than non-exporters as indicated by the lower debt to asset ratio coefficient. Exporters are also more liquid than non-exporters. The two leverage ratios indicate that exporters are much less financially constrained than non-exporters. The liquidity ratios indicate that exporting firms have lower current and quick ratios compared to non-exporting firms and this is because of the fact that exporters have more liabilities than non-exporters.

[Insert table 3]

We stress that the results in table 3 cannot be given a causal interpretation but they serve to highlight the fact that exporters on average are in better financial health than non-exporters as measured by a number of firm characteristics.

The rest of this paper deals with firms that have exported at some time prior to 1998 or perpetual exporters.[6]

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[5]See appendix for definitions of these variables.

[6]We define a firm as an exporting firm if it has a foreign exchange earnings of at least Rs. 10 million (or Rs. 1 crore).

4.2 Credit Constraints and Exports

We use the difference-in-difference estimation strategy to estimate the causal impact of credit constraints on exporting firms by exploiting the natural experiment provided by two policy changes: first in 1998 which made small scale firms eligible for subsidized direct credit, and the subsequent reversal in 2000 when some firms lost their eligibility. We follow a two step procedure for studying the impact of the expansion of credit and then the subsequent reversal of the policy.

In the first step, we look at the causal impact of the credit expansion in 1998 on the rate of growth of several financial, real and foreign exchange variables of the firms that became eligible for subsidized directed credit in 1998. For this, we run a regression of the following form[7]:

$$
\begin{aligned}
ln(y)_{it} - ln(y)_{it-1} \; = \; & \alpha_0 + \sum_t \alpha_t Time_t + \beta_1 SizeDummy1_i + \qquad\qquad (3) \\
& \beta_2 YearDummy1_t + \beta_3 SizeDummy1_i \times YearDummy1_t + \\
& \mathbf{X}_{it}\gamma + \varepsilon_{it}
\end{aligned}
$$

where $ln(y)_{it}$ denotes the log of y_{it}. y_{it} in turn represents five different financial variables, *viz.*,(*i*) total bank borrowing(*ii*) long term bank borrowing (*iii*) short term bank borrowing (*iv*) total borrowing (*v*) working capital and (*vi*) interest payments ; three real variables, *viz.*, (*i*) total sales of the firm, (*ii*) foreign exchange earnings from goods and (*iii*) total foreign exchange earnings (from goods and services)and two important ratio variables, *viz.*, (*i*) the current ratio and (*ii*) the quick ratio.[8] $Time_t$ is a time dummy for year t that captures the general time trend that affects all firms, $SizeDummy1_i$ is a dummy variable that is equal to 1 if the firm is classified as a priority sector firm in 1998 or in 1999 (that is, it has investment in plant and machinery of greater than *Rs.* 6.5 million but less than *Rs.* 30 million in 1998 or 1999) and is equal to zero otherwise.[9] Firms that have $SizeDummy1_i = 1$ are therefore firms that comprise the treatment group for the initial phase of credit expansion. Firms that have $SizeDummy1_i = 0$ are firms that comprise the control group. This control group comprises of firms that that were already in the priority sector (older priority sector firms, i.e., those firms with investment in plant and machinery less than *Rs.* 6.5 million) as also firms that were never in the priority sector (all other non-priority sector firms with investment in plant and machinery greater than *Rs.* 30 million). $YearDummy1_t$ is a dummy variable which equals 1 for the year 1999 and 2000 and 0 otherwise.[10] The vector $\mathbf{X}_{it}$ denotes the set

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[7]For notational convenience we suppress the industry indicator j

[8]See appendix for definitions of these variables.

[9]See appendix for definition of plant and machinery.

[10]Following Bannerjee and Duflo (2008), we assume that credit granted to firm i in period t is decided upon in period $t-1$ (see Bannerjee and Duflo (2008) pp. 15). Therefore, since the initial reform began in

of all control variables and includes the size of the firm and also includes dummy variables that control for industry effects. The coefficient of interest is the coefficient on the interaction term, β_3, which measures the differential impact of enhanced access to credit for the newly defined priority sector firms compared with all the firms that are not affected by the policy change. The time period covered in this regression is from $t = 1990$ to 2000.[11]

In the second step we run the same difference-in-differences regression as in the first step:

$$
\begin{aligned}
ln(y)_{it} - ln(y)_{it-1} &= \alpha_0 + \sum_t \alpha_t Time_t + \beta_1 SizeDummy2_i \\
&+ \beta_2 YearDummy2_t + \beta_3 SizeDummy2_i \times YearDummy2_t \\
&+ \mathbf{X}_{it}\gamma + \varepsilon_{it}
\end{aligned}
\tag{4}
$$

where y_{it} represents the same set of variables as before. Now the time period covered by the above regression is from $t = 1999$ to 2006. $SizeDummy2_i$ is a dummy variable that is equal to 1 if the firm is declassified as priority sector in 2000, that is, if it has investment in plant and machinery of greater than rupees 10 million but less than *Rs.* 30 million in 2000 and is equal to zero otherwise. $YearDummy2_t$ is a dummy variable which equal 1 for the years 2001 to 2006 and 0 otherwise. The vector $\mathbf{X}_{it}$ once again denotes the set of all control variables that includes the size of the firm and dummy variables that control for industry effects. The coefficient of interest is the coefficient on the interaction term, β_3, which measures the differential impact of the policy reversal on the declassified priority sector firms compared to all the firms that are not affected by this (latest) policy change (this group comprises of firms with an investment in plant and machinery greater than *Rs.* 30 million as well as firms with an investment in plant and machinery less than *Rs.* 10 million).

Before we present the results, it is important to discuss the behavior of credit constrained firms vis-a-vis unconstrained firms in response to the policy change. As discussed in Bannerjee and Duflo (2008), when new firms are classified as priority sector, then both constrained and unconstrained firms would be willing to absorb more credit if it is cheaper than other sources of credit. However, a constrained firm will use this credit primarily to expand output/sales whereas an unconstrained firm

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1998, it affected credit decisions during 1998 and 1999 and hence increased credit availability in 1999 and 2000 for firms that had an investment between Rs. 6.5 million and Rs. 30 million (new priority sector firms). Therefore when defining the treatment group in an y phase of the policy change we consider the size of the firm as recorded during either in 1998 or in 1999). Similarly, the credit contraction was initiated in 2000 and hence affected credit decisions post 2001, reducing the credit available for firms with an investment between Rs. 10 and Rs. 30 million (those who were left out of the priority sector after the second policy revision) in these years.

[11]Recall that the reform was reversed in January 2000, so it did not affect credit decisions and availability post 2000.

will use this credit to substitute for other expensive sources of credit. As a result, for unconstrained firms, a much larger effect will be seen on the profitability of the firm while little or no impact will be seen on the sales of the firm. In contrast, for constrained firms, one should see a substantial impact on the sales (either domestic or foreign) of the firm.

4.3 Policy Change 1998

The results of the credit expansion phase are reported in table 4.

[Insert table 4]

We find from table 4 that due to the policy change in 1998, on an average, the rate of growth of long term bank credit for newly emerging priority sector firms increased by 32 percent (not statistically significant at the conventional levels) while the rate of growth of short-term bank credit for newly emergent priority sector firms increased by approximately 18 percent. Total bank borrowing increased by around 20 percent. Moreover, total borrowing of these firms increased roughly by the same magnitude (20 percent) suggesting that these firms were able to borrow more from other sources of credit as well. Therefore, these firms were not merely substituting the more expensive credit. We also find that the policy change in 1998 had some impact on the rate of growth of sales of the firm, in particular, it increased by approximately by 5 percent, on average (not significant at the conventional levels of significance). Our key result is the impact of the policy change on the rate of growth of total export earnings. We find that it increased by approximately 21 percent for goods and 20 percent in total. So, the major impact of the enhanced access to credit for the exporting firms was on the foreign exchange earnings of these firms.

As mentioned earlier, the control group in the aforementioned regression comprises of firms that that were already in the priority sector (older priority sector firms, i.e., those firms with investment in plant and machinery less than *Rs.* 6.5 million) as also firms that were never in the priority sector (all other non-priority sector firms with investment in plant and machinery greater than *Rs.* 30 million). We now consider the aforementioned regression but only with firms that were always in the priority sector as the control group. These are small sized firms with investment in plant and machinery less than *Rs.* 6.5 million. The result of this regression is reported in table 5.

[Insert table 5]

The results in table 5 showing the effects of the credit expansion phase of the policy change with small firms as control points out to a positive differential growth rate for most of the financial variables for newly emergent priority sector firms. These results seem to suggest that the small firms that were already in the priority sector may have

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faced a reduction in total and bank borrowing. Hence, credit resources were allocated from the smallest firms to the newly emergent priority sector firms.

Next, we once again restrict the sample size and consider only those firms who were never in the priority sector as the control group. These are firms that had investment in plant and machinery of more than *Rs*. 30 million. The result of this regression is reported in table 6.

[Insert table 6]

The results in table 6 show a (similar) positive growth differential for newly emergent priority sector firms which suggest that during credit expansion, large firms never in the priority sector also suffered from a reduction in bank borrowing with funds allocated away from these firms towards the newly emergent priority sector firms. So, the improvement in performance for several variables seen for the newly emergent priority sector firms comes about as a reallocation of credit both from the smaller firms as well as the larger firms towards the newly emergent priority sector firms.

4.4 Policy Change 2000

In 2000, some of the firms that were previously classified as priority sector in 1998 were removed from the priority sector. Now the banks were no longer required to provide directed lending under the priority sector regulation to the declassified firms (those with an investment in plant and machinery between *Rs*. 10 and *Rs*. 30 million). However, the bank was free to renegotiate the terms of contract (credit limit and the interest rates) with the firm. The key implication of this policy change was that banks could either reduce the credit limit to these firms or maintain the same credit limit depending on the firm's performance.

The results of the regression for the credit contraction phase are reported in table 7.[12]

[Insert table 7]

The results in table 7 suggest that this policy reversal in 2000 had little or no effect on (short or long term) bank borrowings or on the total borrowings of the affected firms. Most of the coefficients in table 7 are insignificant except for total bank borrowing and total borrowing. The coefficient on total borrowing is significant but only at the 10 percent level and is insignificant once industry effects are included in the regression specification. Also, the reduction in short term bank borrowing is insignificant in all specifications considered. Moreover, the policy change also had little impact on the

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[12]When considering the size dummy for the credit contraction phase, we always consider firm size in the year of the policy change which is 2000. This ensures that we have a consistent group of firms for treatment and control.

rate of growth of sales or on the export earnings of the firm. In fact, the coefficient on total sales in table 7 shows a growth differential of only 2 percent (and is not statistically significant) while total export earnings are reduced from 3 percent to a maximum of only 5 percent over all specifications considered (once again none of these coefficients are statistically significant). Our explanation for this result is the following. As discussed earlier, the Indian banking system is characterized by under-lending primarily due to rigid lending policy, inertia and the fear of prosecution by public loan officers. In 1998, after the change in the definition of SSI, the banks were compelled under the priority sector regulation to increase their limits to the newly classified priority sector firms. As a result of this enhanced access to credit, firms were able to grow rapidly and increase their turnover. However, in 2000, when these firms were declassified as priority sector, the banks still followed their stringent lending policy but given the performance of the firms in terms of growth in the turnover of the firms, there was no reason for the loan officers to reduce the credit limits. Thus the subsequent policy change in 2000 had no impact on the firms that were declassified as priority sector.

The control group in the aforementioned regression comprises of smaller size firms with an investment in plant and machinery less than $Rs.$ 10 million as also the larger firms with an investment in plant and machinery greater than $Rs.$ 30 million that were never in the priority sector. We now consider the aforementioned regression but only with firms (these are small sized firms) with investment in plant and machinery less than $Rs.$ 10 million (it may be noted that this control group does **not** comprise of only firms that were always part of the priority sector). The result of this regression is reported in table 8.

[Insert table 8]

The results in table 8 show a negative growth differential for firms that are removed from the priority sector compared to the control group of smaller sized firms (firms with an investment in plant and machinery below $Rs.$ 10 million). This result suggests a possible reallocation of funds from firms removed from priority towards these smaller-sized firms, i.e., firms with an investment in plant and machinery below $Rs.$ 10 million.

Next, we once again restrict the sample size and consider only large sized firms who were never in the priority sector as the control group. These are firms that had investment in plant and machinery of more than $Rs.$ 30 million. The result of this regression is reported in table 9.

[Insert table 9]

The results from table 9 also show negative differentials for firms that are removed from the priority sector (with an investment in plant and machinery greater than $Rs.$ 30

million as control) but the magnitudes of these differentials are lower than in table 8. This suggests that although there has been some reallocation of credit resources from firms that were removed from priority towards large-sized firms, the extent of this reallocation was not as much compared to the reallocation of credit resources from firms removed from priority towards firms that were smaller sized firms.

5. Conclusion

In this paper, we contribute to the empirical literature on trade-finance linkages. In particular, we study the causal impact of credit constraints on exporting firms by exploiting two policy changes in India that affected the availability of subsidized credit to some firms. The first policy change which took place in 1998 classified some firms as priority sector and made them eligible for subsidized credit lending from the banks. We find that the affected firms were severely credit constrained and the policy change which relaxed the credit constraints had a very significant increase of approximately 22 percent in the rate of growth of export earnings of the firm. However in 2000, when this policy was reversed and some of the firms were declassified as priority sector, there was no decline in the rate of growth of bank borrowing and almost no change in the rate of growth of export earnings of firms. This finding suggests that once the bank-firm relationship was developed in terms of credit limit, there was no reason for the bank to renegotiate the terms of the credit as long as the firm had not defaulted. Our results also highlight the nature of lending by the Indian banking sector that is dominated by the public sector banks. Indian banks are characterized by under-lending primarily because the loan officers are not incentivized for good lending but they are penalized very heavily if the loans go bad. Perhaps the policy change in 1998 "nudged" the Indian banks to increase their exposure to the smaller firms which allowed the firms to grow rapidly and as long as the firms did not default, there was no reason for the banks to reduce the credit even when the policy was reversed and the firms were declassified as priority sector.

Appendix

Definitions

The following are definitions of variables used in the text and are taken *verbatim* from the Data Dictionary accompanying the *Prowess* Database.

1. **Total borrowing** 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

institutions.

2. **Secured borrowings** are the outstanding loans backed by assets with collateral security. Secured borrowings are those in which the creditor has some rights over the assets of the debtor in the event of the latter being unable to repay the debts. Creditors have no such rights in unsecured borrowings.

3. **Unsecured borrowings** are the outstanding loans that are not backed by collateral assets. Unsecured borrowings are those loans against which no charge on assets of the company is created by way of pledge, hypothecation or mortgage or where the borrower is not required to put up any collateral for borrowing funds.

4. **Cash flow** indicates the cash generated through the main operations of the company.

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

6. **Domestic sales** is defined as sales above minus foreign exchange earnings.

7. **Working capital** is the difference between current assets and current liabilities.

8. **Leverage** is defined as the ratio of short-term bank borrowing (or debt) to total assets.

9. **Short-term bank borrowings** are bank loans having a maturity of less than a year. Usually, short-term bank borrowing accounts for 75-80 per cent of bank borrowings. All types of loans in the form of short-term loans, cash credits, bank overdrafts, etc. are treated at par and all are clubbed to show short-term bank borrowing.

10. **Long-term bank borrowings** reflect borrowings of the company and comprise bank loans having a maturity of more than one year.

11. **Liquidity** is measured as the ratio of the difference between current assets and current liabilities to total assets.

12. **Current liability** is the amount owed by a company and due within one year. It usually represents the liabilities generated from the operations of the enterprise and thus includes sundry creditors, bills payable, etc.

13. **Return on assets (ROA)** is the ratio of the sum of profits after tax and dividends to total assets.

14. **Profitability ratio** is the difference of profits after tax and long-term bank borrowing (which are bank loans having a maturity of more than 12 months) to total assets.

15. **Debt ratio** is defined as the ratio of long-term borrowing (or debt) to total assets.

16. **Fixed assets** refer to assets held with the intention of being used for manufacturing goods or providing services. Fixed assets are not held for sale in the normal course of business. Fixed assets have long useful economic life and are mostly expected to be used in more than one accounting period. Gross fixed asset is the historical cost of the asset without any adjustments for depreciation.

17. **Net fixed assets** are fixed assets that are adjusted for depreciation.

18. **Forex earnings services** includes those export earnings which are through the sale of services outside the country.

19. **Total Foreign exchange earnings** is the total revenue earned from exports of goods and services. Income earned in foreign currency by way of interest, dividend, royalties, and consultancy fees is also included here.

20. **Forex earnings goods only** includes only those export earnings which are through export of goods.

21. **Plant and machinery** refer to the plant and machinery used in producing goods and services or for rental to others. The identification of plant and machinery is a function of the nature of activity of the company.

22. **Total expenses** defined in the paper is the sum of the following components:

    (a) **Raw material expenses** which constitute one of the important factors of production in a business. The term materials refers to the consumption of commodities by an enterprise in the process of manufacturing or rendering services or transformation into a product. Also, all the costs incidental to the purchase of raw material are included under this head. Some of the incidental expenses like transportation of raw material (which is known as freight inward), handling expenses, octroi, purchase tax, coolie and cartage form a part of the raw material cost.

    (b) **Expenses stores and spares** The term stores is often used synonymously with raw materials. The former has, however, a wider meaning and it covers not only the raw materials consumed or utilised in production but also such as other items as sundry supplies, maintenance stores, fabricated parts, components, tools, jigs, fixtures and other equipment.

    (c) **Packaging expenses** are the expenses incurred by an enterprise on packaging. In *Prowess*, packaging expenses are consistently treated as a part of input costs and as a part of total raw material consumption.

(d) **Power and fuel expenses** This data field includes essentially the cost of power and fuel. Energy costs are, to a certain extent, industry specific. Thus, coal consumption is a source of energy for cement and steel companies and is hence classified as part of their energy cost. On the other hand, coal consumption for power generation companies is treated as a raw material expense and not energy cost.

(e) **Salaries and wages** include total expenses incurred by an enterprise on all employees, including the management. Besides salaries and wages, items such as payment of bonus, contribution to an employee's provident fund and staff welfare expenses are also included under wages. Salaries and wages also include commissions given to employees.

(f) **Total repairs expenses** are those incurred by an enterprise on the repair and maintenance of fixed assets such as plant and machinery, building, furniture and fixtures. This also includes other repairs like repairs to buildings, etc. It however excludes expenditure on stores and spares. Some companies show vehicle maintenance expenses as repairs and maintenance.

These are not the only sources of expense but are the major components of expense aside from salaries, wages and other compensation to employees.

23. **Current ratio** This data field is a measure of the short-term liquidity position of a company. This ratio is calculated using the following formula: Current Assets/Current liabilities (or Short Term liabilities).

24. **Quick ratio** This data field is a measure of the short term liquidity position of a company. This ratio is calculated using the following formula : Quick Assets/Current liabilities (or Short Term liabilities).

Table 1. Summary Statistics : Variables in Levels (1990-2006)

Variable	Mean	Std. Dev.	N
Borrowings	42.348	260.548	36168
Total Bank Borrowings	15.911	105.417	36168
Secured Borrowings	27.835	127.32	36168
Unsecured Borrowings	14.256	164.529	36168
Company Sales	121.464	1123.292	36168
Total Expenses	65.698	465.831	36168
Forex Earnings Goods	10.52	102.843	36168
Total Forex earnings	10.916	103.609	36168
Total Assets	116.372	741.394	35240
Current Assets	47.844	273.49	35969
Cash Flow from Operations	13.916	120.535	23547
Working Capital	20.443	111.03	35969
Domestic Sales	110.74	1076.545	36168
Forex Earnings	10.725	103.09	36168
Leverage	0.177	0.265	30740
Liquidity	98.981	618.199	35077
Return on Assets	28.527	228.12	11266
Profitability Ratio	0.032	1.809	35231
Debt Ratio	0.1	1.024	16230
Interest Expenses	4.58	22.382	33967
Forex Earnings Goods	10.52	102.843	36168
Debt to Assets	0.601	17.858	35231
Current Assets	47.844	273.49	35969
Current Liabilities	25.157	181.419	35887
Profits After Tax	4.624	54.584	36168
Long term Bank Borrowings	10.196	62.499	16609
Short term Bank Borrowings	12.624	88.351	31426
Plant and Machinery	55.345	410.51	36168
Current Ratio	2.135	10.216	35946
Quick Ratio	1.148	8.182	35947

Table 2. Differences between exporters and non-exporters.[abc]

| | | Financial Vbls. | | | | | | | | Real Vbls. | | |
| | Bank Borrowing | Total Borrowing | Secure Borrowing | Unsecure Borrowing | Total Assets | Current Assets | Cash Flow | Working Capital | Total Sales | Total Expenses | Profit After Tax |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Variables Levels											
Export Dummy	.24**	.19*	.25**	.07	.20***	.18***	.19***	.21***	1.64***	.06*	.19**
	(3.35)	(2.51)	(2.81)	(1.17)	(4.69)	(4.50)	(3.64)	(3.84)	(19.25)	(2.07)	(3.40)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Variables Growth Rates											
Export Dummy	0.02*	0.01	0.01	0.00	0.02**	0.03***	0.04*	0.01	0.07***	0.08***	-0.00
	(2.52)	(0.66)	(0.93)	(0.06)	(3.41)	(3.94)	(2.02)	(1.18)	(6.14)	(6.71)	(-0.18)
No. of Obvs.	28053	30145	27203	23137	30181	31320	13533	27264	30656	30897	21441

[a] Dependent variable is a measure of firm performance (in levels or growth rates) for firm characteristics given in columns. Independent variable is the export dummy for the export status of firm i in year t, which is equal to 1 if firm i exported in year t and 0 otherwise.

[b] All regressions include industry and time dummies and control for firm size using log (total) sales as a control except column (9) for variable levels which does not use any control for firm size. Standard errors are clustered at the (3-digit) industry level.

[c] **Note** : t-statistics reported under each coefficient in parenthesis. Significance levels :[+] $p < 0.10$ [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$.

Table 3. **Differences between exporters and non-exporters: Ratios.**[abcdefghij]

	(1) Leverage	(2) Liquidity	(3) ROA	(4) Profitability Ratio	(5) Debt Ratio	(6) Debt-to-Asset Ratio	(7) Current Ratio	(8) Quick Ratio
Ratios of Variables								
Export Dummy	-.05***	39.13***	5.65+	.08*	-.05*	.28	-1.23***	-.80**
	(-5.68)	(4.20)	(1.72)	(2.46)	(-2.27)	(.75)	(-4.40)	(-3.38)
No. of Obvs.	30451	34705	11109	34859	16061	34859	35565	35566

[a] Dependent variable is a measure of firm performance (ratios) for firm characteristics given in columns. Independent variable is the export dummy for export status of firm i in year t which is equal to 1 if firm i exported in year t and 0 otherwise and had foreign exchange earnings greater than Rs. 10 million.

[b] All regressions include industry and time dummies and control for firm size using log (total) sales as a control.

[c] Leverage is defined as the ratio of short-term debt to total assets.

[d] Liquidity is defined as the ratio of the difference in current assets and liabilities to total assets.

[e] Return on assets is defined as the sum of after-tax profits and dividends to total assets.

[f] Profitability ratio is defined as the ratio of the difference of after tax profits and long term bank debt to total assets.

[g] Debt ratio is the ratio of long term debt to total assets.

[h] Current ratio is a measure of the short-term liquidity position of a company and is calculated as the ratio of Current Assets to Current liabilities (or Short Term liabilities).

[i] Quick ratio is a measure of the short term liquidity position of a company and is calculated as the ratio of Quick Assets to Current liabilities (or Short Term liabilities).

[j] **Note :** t-statistics reported under each coefficient in parenthesis. Significance levels :[+] $p < 0.10$ [*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$. Standard errors are clustered at the (3 -digit) industry level.

Table 4. Credit Expansion(1990-2000):Effect on firms newly made part of priority sector. Both large and small firms as control.[a][b][c][d]

	Financial Vbls.					Real Vbls.			Ratio Vbls.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	TotalBankBorrowing	Long-TermBankBorrowing	Short-TermBankBorrowing	TotalBorrowing	InterestPayment	Sales	Forex Earnings Goods	Forex Earnings Total	Current Ratio	Quick Ratio
OLS										
SizeDummy1*YearDummy1	.20***	.28*	.18**	.17**	.03	.05	.21**	.19**	.11	.14
	(3.67)	(2.31)	(2.80)	(3.08)	(.64)	(1.24)	(3.01)	(2.80)	(.56)	(.69)
SizeDummy1	−.05	−.11*	−.06	−.06	−.05	−.04	−.16***	−.14**	.05	−.02
	(−1.55)	(−2.06)	(−1.34)	(−1.63)	(−1.42)	(−1.66)	(−4.32)	(−3.18)	(.24)	(−.12)
YearDummy1	−.09**	−.02	−.09**	−.13***	−.16***	−.05**	−.15***	−.17***	.09*	.08
	(−3.43)	(−.33)	(−2.84)	(−6.18)	(−8.75)	(−2.68)	(−5.18)	(−5.49)	(2.16)	(1.56)
OLS w/ IndustryDummies										
SizeDummy1*YearDummy1	0.19**	0.26*	0.17*	0.17**	0.03	0.05	0.21**	0.19**	0.11	0.14
	(3.59)	(2.09)	(2.60)	(3.01)	(0.67)	(1.18)	(2.99)	(2.82)	(0.59)	(0.71)
SizeDummy1	-0.04	-0.05	-0.05	-0.04	-0.05	-0.06**	-0.13***	-0.11**	-0.01	-0.09
	(-1.39)	(-1.04)	(-1.24)	(-1.22)	(-1.56)	(-2.81)	(-3.66)	(-2.68)	(-0.05)	(-0.47)
YearDummy1	-0.09**	-0.02	-0.09**	-0.13***	-0.17***	-0.05**	-0.16***	-0.17***	0.09*	0.07
	(-3.48)	(-0.30)	(-2.89)	(-6.29)	(-8.94)	(-2.82)	(-5.47)	(-5.81)	(2.10)	(1.51)
No. of Obvs.	9259	3533	8886	9609	9509	9705	8970	9140	9692	9692

[a] Each row is a separate regression with the regression specification given in bold above. Each column represents the dependent variable in a regression on SizeDummy1, YearDummy1 and SizeDummy1*YearDummy1. Independent variable reported is the coefficient of the difference-in-differences estimator SizeDummy1*YearDummy1. All regressions include time dummies and control for firm size using log (total) sales as a control.

[b] The dummy SizeDummy1 is equal to 1 for firms with investment in plant and machinery between Rs 6.5 million and Rs 30 million in 1998 or in 1999 and 0 otherwise. The dummy YearDummy1 is equal to 1 for the years 1999 and 2000 and 0 otherwise.

[c] The treatment group are firms with an investment in plant and machinery between Rs 6.5 million and Rs 30 million in 1998 or in 1999 which newly became part of priority sector and the control group comprises of firms with an investment in plant and machinery below Rs 6.5 million which were always part of priority sector as also firms with an investment in plant and machinery greater than Rs.

Table 5. Credit Expansion (1990-2000): Effect on firms newly made part of the priority sector. Only small firms always part of priority sector as control.[a][b][c][d]

	Financial Vbls.					Real Vbls.			Ratio Vbls.	
	(1) TotalBankBorrowing	(2) Long-TermBankBorrowing	(3) Short-TermBankBorrowing	(4) TotalBorrowing	(5) InterestPayment	(6) Sales	(7) Forex Earnings Goods	(8) Forex Earnings Total	(9) Current Ratio	(10) Quick Ratio
OLS										
SizeDummy1*YearDummy1	.40	1.06***	.21	.44+	.04	.19	.32**	.36***	−.72	−.75
	(1.51)	(6.06)	(.86)	(1.91)	(.30)	(1.60)	(3.02)	(3.78)	(−1.13)	(−1.12)
SizeDummy1	−.10+	−.13	−.08	−.12+	−.04	−.14***	−.17*	−.17*	−.11	−.23
	(−1.81)	(−1.65)	(−1.33)	(−2.01)	(−.75)	(−5.28)	(−3.04)	(−2.59)	(−.44)	(−1.40)
YearDummy1	−.31	−.85**	−.15	−.40	−.12	−.17	−.31**	−.41***	1.26	1.42
	(−1.05)	(−3.46)	(−.61)	(−1.62)	(−.96)	(−1.23)	(−2.84)	(−4.65)	(1.60)	(1.54)
OLS w/IndustryDummies										
SizeDummy1*YearDummy1	0.39	1.06**	0.16	0.44	0.08	0.23	0.25*	0.28**	−0.70	−0.64
	(1.46)	(6.20)	(0.66)	(1.94)	(0.54)	(1.81)	(2.34)	(3.01)	(−1.02)	(−0.97)
SizeDummy1	−0.09	−0.08	−0.07	−0.10	−0.05	−0.17***	−0.18*	−0.18*	−0.15	−0.30
	(−1.58)	(−1.17)	(−1.08)	(−1.75)	(−1.18)	(−7.30)	(−2.60)	(−2.22)	(−0.51)	(−1.58)
YearDummy1	−0.30	−0.95**	−0.11	−0.39	−0.16	−0.23	−0.31**	−0.37***	1.18	1.26
	(−0.97)	(−3.34)	(−0.45)	(−1.58)	(−1.20)	(−1.56)	(−2.97)	(−4.42)	(1.38)	(1.37)
No. of Obvs.	902	208	856	981	960	1035	908	941	1036	1036

[a] Each row is a separate regression with the regression specification given in bold above. Each column represents the dependent variable in a regression on SizeDummy1, YearDummy1 and SizeDummy1*YearDummy1. Independent variable reported is the coefficient of the difference-in-differences estimator SizeDummy1*YearDummy1. All regressions include time dummies and control for firm size using log (total) sales as a control.

[b] The dummy SizeDummy1 is equal to 1 for firms with investment in plant and machinery between Rs 6.5 million and Rs 30 million in 1998 or in 1999 and 0 otherwise. The dummy YearDummy1 is equal to 1 for the years 1999 and 2000 and 0 otherwise.

[c] The sample of firms is restricted only to those firms that have investment in plant and machinery below Rs 30 million in 1998 or in 1999. Therefore, the treatment group is firms with an investment in plant and machinery between Rs 6.5 million and Rs 30 million which newly became part of priority sector and the control group is firms which had investment in plant and machinery below Rs 6.5

Table 6. Credit Expansion (1990-2000): Effect on firms newly made part of the priority sector. Only large firms never part of priority sector as control. [a][b][c][d][e]

| | Financial Vbls. | | | | | Real Vbls. | | | Ratio Vbls. | |
| | TotalBankBorrowing | Long-TermBankBorrowing | Short-TermBankBorrowing | TotalBorrowing | InterestPayment | Sales | Forex Earnings Goods | Forex Earnings Total | Current Ratio | Quick Ratio |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
OLS										
SizeDummy1*YearDummy1	.22***	.31*	.20**	.20***	.05	.07+	.25***	.22**	.29	.33
	(3.67)	(2.67)	(2.90)	(3.92)	(1.02)	(1.68)	(3.78)	(3.45)	(1.07)	(1.11)
SizeDummy1	-.08+	-.14*	-.08+	-.09**	-.08*	-.07**	-.21***	-.18***	-.10	-.18
	(-1.96)	(-2.48)	(-1.69)	(-3.00)	(-2.24)	(-2.93)	(-6.81)	(-4.59)	(-.34)	(-.56)
YearDummy1	-.09**	-.02	-.09**	-.12***	-.16***	-.05*	-.15***	-.17***	.05	.03
	(-3.09)	(-.30)	(-2.80)	(-6.21)	(-8.80)	(-2.58)	(-5.12)	(-5.39)	(1.57)	(1.26)
OLS w/IndustryDummies										
SizeDummy1*YearDummy1	0.21***	0.28*	0.19**	0.20***	0.05	0.07	0.25***	0.22**	0.29	0.33
	(3.59)	(2.28)	(2.74)	(3.84)	(1.05)	(1.58)	(3.74)	(3.49)	(1.07)	(1.13)
SizeDummy1	-0.07	-0.08	-0.07	-0.07	-0.07*	-0.08***	-0.18***	-0.15***	-0.20	-0.25
	(-1.93)	(-1.43)	(-1.71)	(-2.55)	(-2.31)	(-3.56)	(-5.57)	(-3.95)	(-0.64)	(-0.77)
YearDummy1	-0.09**	-0.01	-0.09**	-0.12***	-0.17***	-0.05**	-0.16***	-0.17***	0.05	0.03
	(-3.16)	(-0.28)	(-2.86)	(-6.34)	(-8.98)	(-2.70)	(-5.45)	(-5.76)	(1.56)	(1.23)
No. of Obvs.	9100	3501	8735	9425	9335	9499	8792	8954	9490	9490

[a] Each row is a separate regression with the regression specification given in bold above. Each column represents the dependent variable in a regression on SizeDummy1, YearDummy1 and SizeDummy1*YearDummy1. Independent variable reported is the coefficient of the difference-in-differences estimator SizeDummy1*YearDummy1. All regressions include time dummies and control for firm size using log (total) sales as a control.

[b] The dummy SizeDummy1 is equal to 1 for firms with investment in plant and machinery between Rs 6.5 million and Rs 30 million in 1998 or in 1999 and 0 otherwise. The dummy YearDummy1 is equal to 1 for the years 1999 and 2000 and 0 otherwise.

[c] The sample of firms is restricted only to those firms that have investment in plant and machinery above Rs 6.5 million. Therefore, the treatment group is firms with investment in plant and machinery between Rs 6.5 million and Rs 30 million in 1998 or in 1999 which newly became part of priority sector and the control group is firms which had investment in plant and machinery above Rs 30 million

Table 7. Credit Contraction (1999-2006): Effect on firms removed from the priority sector. Both large and small firms as control.[a][b][c][d]

	Financial Vbls.					Real Vbls.			Ratio Vbls.	
	(1) TotalBankBorrowing	(2) Long-TermBankBorrowing	(3) Short-TermBankBorrowing	(4) TotalBorrowing	(5) InterestPayment	(6) Sales	(7) Forex Earnings Goods	(8) Forex Earnings Total	(9) Current Ratio	(10) Quick Ratio
OLS										
SizeDummy2*YearDummy2	–.13*	–.16	–.09	–.09+	.10+	–.01	–.04	–.03	.17	.16
	(–2.23)	(–.99)	(–1.28)	(–1.78)	(1.80)	(–.41)	(–.51)	(–.37)	(.92)	(.91)
SizeDummy2	.16***	.11	.16**	.17***	.03	.08*	.13+	.13+	–.07	–.13
	(3.60)	(.97)	(2.86)	(4.50)	(.64)	(2.16)	(1.70)	(1.81)	(–.41)	(–.72)
YearDummy2	.02	.23***	–.03	.02	–.06**	–.01	.05+	.06*	–.02	–.02
	(.86)	(3.95)	(–.99)	(1.17)	(–3.37)	(–.95)	(1.91)	(2.07)	(–.35)	(–.31)
OLS w/IndustryDummies										
SizeDummy2*YearDummy2	–0.12*	–0.19	–0.10	–0.09	0.09	–0.01	–0.05	–0.03	0.18	0.16
	(–2.18)	(–1.18)	(–1.43)	(–1.87)	(1.74)	(–0.38)	(–0.56)	(–0.35)	(0.98)	(0.92)
SizeDummy2	0.14**	0.14	0.14*	0.15***	0.01	0.07*	0.16*	0.15*	–0.09	–0.14
	(2.97)	(1.22)	(2.56)	(4.01)	(0.28)	(2.14)	(2.19)	(2.28)	(–0.49)	(–0.79)
YearDummy2	0.02	0.22***	–0.03	0.02	–0.06**	–0.02	0.05	0.05	–0.02	–0.02
	(0.85)	(3.86)	(–1.03)	(1.16)	(–3.37)	(–1.00)	(1.83)	(1.97)	(–0.39)	(–0.31)
No. of Obvs.	8550	4255	8286	9089	9080	9414	8872	9023	9376	9376

[a] Each row is a separate regression with the regression specification given in bold above. Each column represents the dependent variable in a regression on SizeDummy2, YearDummy2 and SizeDummy2*YearDummy2. Independent variable reported is the difference-in-differences estimator SizeDummy2*YearDummy2. All regressions include time dummies and control for firm size using log (total) sales as a control.

[b] The dummy SizeDummy2 is equal to 1 for firms with investment in plant and machinery between Rs.10 million - Rs.30 million in 2000 and 0 otherwise. The dummy YearDummy2 is equal to 1 for the years 2001-2006 and 0 otherwise.

[c] The treatment group are firms with investment in plant and machinery between Rs.10 million - Rs.30 million in 2000 which were removed from the priority sector and the control group comprises of firms which had investment in plant and machinery below Rs.10 million as also firms with investment in plant and machinery greater than Rs.30 million.

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Table 8. Credit Contraction (1999-2006): Effect on firms removed from the priority sector. Firms with investment in plant and machinery below Rs 10 million as control.[abcd]

	Financial Vbls.					Real Vbls.			Ratio Vbls.	
	(1) TotalBankBorrowing	(2) Long-TermBankBorrowing	(3) Short-TermBankBorrowing	(4) TotalBorrowing	(5) InterestPayment	(6) Sales	(7) Forex Earnings Goods	(8) Forex Earnings Total	(9) Current Ratio	(10) Quick Ratio
OLS										
SizeDummy2*YearDummy2	–.22	–.26	–.10	–.24	–.07	–.10	–.27+	–.23+	2.01*	1.23+
	(–1.03)	(–.69)	(–.43)	(–1.57)	(–.67)	(–1.21)	(–1.85)	(–1.82)	(2.46)	(1.70)
SizeDummy2	.11	–.16	.04	.20	–.02	.00	.26*	.26*	–1.24*	–1.05+
	(.51)	(–.39)	(.19)	(1.51)	(–.24)	(.06)	(2.21)	(2.26)	(–2.35)	(–1.94)
YearDummy2	.10	.30	.04	.10	–.01	.01	.24*	.26*	–1.74**	–1.54+
	(.43)	(.72)	(.18)	(.64)	(–.07)	(.10)	(2.04)	(2.28)	(–2.88)	(–1.70)
OLS w/IndustryDummies										
SizeDummy2*YearDummy2	–0.24	–0.26	–0.13	–0.30	–0.17	–0.12	–0.29	–0.22	2.26*	1.20
	(–1.15)	(–0.74)	(–0.53)	(–1.98)	(–1.56)	(–1.34)	(–1.87)	(–1.68)	(2.48)	(1.54)
SizeDummy2	0.12	–0.35	0.04	0.24	0.03	0.01	0.26	0.23	–1.28*	–1.02
	(0.49)	(–0.86)	(0.18)	(1.63)	(0.32)	(0.11)	(1.85)	(1.87)	(–2.43)	(–1.77)
YearDummy2	0.12	0.09	0.06	0.16	0.04	0.02	0.21	0.21	–1.91**	–1.54
	(0.53)	(0.23)	(0.25)	(1.00)	(0.38)	(0.17)	(1.90)	(1.99)	(–3.07)	(–1.62)
No. of Obvs.	511	153	484	588	569	677	605	632	681	681

[a] Each row is a separate regression with the regression specification given in bold above. Each column represents the dependent variable in a regression on SizeDummy2, YearDummy2 and SizeDummy2*YearDummy2. Independent variable reported is the difference-in-differences estimator SizeDummy2*YearDummy2. All regressions include time dummies and control for firm size using log (total) sales as a control.

[b] The dummy SizeDummy2 is equal to 1 for firms with investment in plant and machinery between Rs.10 million – Rs.30 million in 2000 and o otherwise. The dummy YearDummy2 is 1 for the years 2001-2006 and 0 otherwise.

[c] The sample of firms is restricted only to those firms that have an investment in plant and machinery below Rs 30 million in 2000. Therefore, the treatment group is firms with an investment in plant and machinery between Rs 10 million and Rs 30 million in 2000 which were newly removed from priority sector and the control group is firms which had investment in plant and machinery below Rs 10

Table 9. Credit Contraction (1999-2006): Effect on firms removed from priority sector. Firms with investment in plant and machinery above Rs 30 million as control.[abcd]

	Financial Vbls.					Real Vbls.			Ratio Vbls.	
	(1) TotalBankBorrowing	(2) Long-TermBankBorrowing	(3) Short-TermBankBorrowing	(4) TotalBorrowing	(5) InterestPayment	(6) Sales	(7) Forex Earnings Goods	(8) Forex Earnings Total	(9) Current Ratio	(10) Quick Ratio
OLS:AllTime Exporters										
SizeDummy2*YearDummy2	-.10+	-.12	-.07	-.06	.11+	.00	-.03	-.01	.14	.13
	(-1.76)	(-.72)	(-1.06)	(-1.27)	(1.87)	(.06)	(-.33)	(-.08)	(.73)	(.72)
SizeDummy2	.14**	.07	.14*	.14***	.03	.07+	.12	.12	-.04	-.12
	(3.00)	(.66)	(2.48)	(3.74)	(.56)	(1.76)	(1.45)	(1.44)	(-.20)	(-.62)
YearDummy2	.02	.23***	-.03	.02	-.06**	-.01	.05+	.06+	.02	.03
	(.71)	(3.84)	(-.96)	(1.07)	(-3.39)	(-.90)	(1.80)	(1.91)	(.66)	(1.18)
OLS w/IndustryDummies										
SizeDummy2*YearDummy2	-0.10	-0.14	-0.08	-0.06	0.10	0.00	-0.03	-0.01	0.15	0.13
	(-1.69)	(-0.83)	(-1.13)	(-1.29)	(1.80)	(0.02)	(-0.38)	(-0.10)	(0.78)	(0.72)
SizeDummy2	0.12*	0.10	0.13*	0.12**	0.01	0.07	0.15	0.15	-0.05	-0.14
	(2.62)	(0.94)	(2.23)	(3.06)	(0.26)	(1.99)	(1.90)	(1.93)	(-0.24)	(-0.74)
YearDummy2	0.02	0.22***	-0.03	0.02	-0.06**	-0.01	0.05	0.05	0.02	0.03
	(0.68)	(3.77)	(-1.02)	(1.02)	(-3.38)	(-0.95)	(1.70)	(1.81)	(0.58)	(1.13)
No. of Obvs.	8430	4230	8178	8942	8943	9218	8696	8839	9179	9179

[a] Each row is a separate regression with the regression specification given in bold above. Each column represents the dependent variable in a regression on SizeDummy2, YearDummy2 and SizeDummy2*YearDummy2. Independent variable reported is the difference-in-differences estimator SizeDummy2*YearDummy2. All regressions include time dummies and control for firm size using log (total) sales as a control.

[b] The dummy SizeDummy2 is equal to 1 for firms with investment in plant and machinery between Rs.10 million - Rs.30 million in 2000 and 0 otherwise. The dummy YearDummy2 is 1 for the years 2001-2006.

[c] The sample of firms is restricted only to those firms that have investment in plant and machinery above Rs.10 million in 2000. Therefore, the treatment group is firms with investment in plant and machinery between Rs 10 million and Rs 30 million in 2000 which were newly removed from priority sector and the control group is firms which had investment in plant and machinery above

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