# Debt Contract Enforcement and Product Innovation: Evidence from a Legal Reform in India *

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January 14, 2022

**Abstract**

Due to a legal challenge, there was staggered introduction of fast track debt recovery tribunals (DRTs) across the states of India in the 1990s. Exploiting this plausibly exogenous variation in the efficiency of debt contract enforcement and using detailed information on product lines produced by the manufacturing firms, we study the causal effect of debt contract enforcement on product growth. We find that DRTs account for over 15% of the observed increase in firms' product scope during our sample period. Firms enter into new product lines in industries outside of their current scope of operation suggesting bolder innovation moves in response to DRTs. This increase in product scope is driven by firms in the top quartile of tangible asset distribution. These firms increase their borrowings and investments in R&D, plant and machinery, and selling & distribution expenses. There is also a significant improvement in their performance as measured by sales and profitability. In contrast, low tangible asset firms lose market share and experience a decline in their performance. DRTs also increase the aggregate state-industry level TFP by 6% driven by a significant increase in the TFP of the high tangible asset firms.

**Keywords:** Debt recovery tribunals, Debt contract enforcement, Product innovation, TFP

**JEL Codes:** D24,G32,G33,K42

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*We thank Srinivasan Rangan for helpful comments and discussions in early stages of this project. We also thank the participants at 2021 Comparative Analysis of Enterprise Data Annual Conference, 12th Emerging Markets Conference 2021, Winter School 2021 jointly organized by the Delhi School of Economics and the Econometric Society, 16th Annual Conference on Economic Growth and Development 2021, SAMVAAD India, The India Finance Conference 2021, and AFA PhD Student Poster Session 2022

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# 1 Introduction

Many developing countries are characterized by weak enforcement of debt contracts due to long delays and limited expertise in processing bankruptcy cases by courts (Djankov et al., 2008; Ponticelli and Alencar, 2016). This can have unwanted consequences for financial development and in turn firm growth as it discourages lending by hampering creditors' ability to recover claims from distressed firms. Recent studies find a positive effect of debt enforcement on firms' borrowing and investment in physical capital (Lilienfeld-Toal et al., 2012; Gopalan et al., 2016; Ponticelli and Alencar, 2016). However, despite the importance of product innovation for economic growth (Klette and Kortum, 2004; Akcigit and Kerr, 2018), we have surprisingly little causal evidence on the relationship between efficiency of debt contract enforcement and product growth in the economy. In this paper, we take a step in addressing this gap by studying the causal effect of a legal reform targeting the efficiency of debt contract enforcement on firms' product growth in a large developing country, India.

Introducing new product lines entails considerable upfront investments and financial constraints may force firms to operate in sub-optimal number of product lines. Thus, the relationship between debt enforcement and firms' product growth depends on its effect on firm borrowing. On the one hand, efficient debt enforcement can expand the contractible set of loans, thus, relaxing the credit constraints faced by innovating firms (Jappelli et al., 2005; Rampini and Viswanathan, 2013; Ponticelli and Alencar, 2016). Efficient debt enforcement increases the liquidation value of collateral that creditors can recover from defaulting firms and can also mitigate moral hazard problems in credit markets. Thus, creditors would increase lending with better debt enforcement leading to increased product innovation. On the other hand, an increase in the efficiency of debt enforcement may discourage firms from investing in product innovation by increasing the cost of failure due to the threat of premature and inefficient liquidation by creditors (Aghion et al., 1992; Acharya and Subramanian, 2009). Thus, whether efficient debt enforcement leads to increased borrowing and in turn product growth is an empirical question and depends on which channel dominates.

To study the causal relationship between debt contract enforcement and product growth, we have to confront two key challenges. First, the efficiency of debt enforcement is likely to be endogenous as there could be many unobservable factors that are correlated with both the efficiency of debt enforcement and firms' decision to introduce new product lines. The setting up of Debt Recovery Tribunals (DRTs), as part of The Recovery of Debts Due to Banks and Financial Institutions (RDDBFI) Act, 1993, provides an ideal setting to study the causal link between debt enforcemnt and firms' product growth. While DRTs covering all the states were supposed to be established across the country to expedite the debt recovery process, DRTs for only a few states could be established in 1994 as the validity of the law was challenged in courts which halted the process for 2 years. After the interim ruling by the Supreme Court of India in favor of setting up of DRTs, the process of establishing DRTs resumed and all the remaining states in the country received DRTs by 1999. The break in the implementation of the DRTs due to the court case and the ensuing staggered establishment of DRTs across the states provides us with plausibly exogenous variation in efficiency of debt enforcement across states over time. Indeed, Visaria (2009),Lilienfeld-Toal et al. (2012), and Gopalan et al. (2016), who study effect of DRTs on firm borrowing, provide compelling evidence that the implementation of DRT reform was uncorrelated with state level characteristics.

A second challenge in studying the effect of debt enforcement on product growth is that detailed data on product lines manufactured by firms is rarely available. Indian firms are required by law, under the Companies Act, 1956, to report product level information on sales and quantity produced for all product lines. We use the Prowess database for our analysis, which tracks the product level information for all product lines manufactured by each firm over time. The granularity of the product data in Prowess is similar to the 6 digit Harmonized System (HS) product lines. We combine data on the number of product lines produced by each firm with the other firm level indicators to examine the effect of DRT implementation by states on the firms' product scope and other outcome variables.

We focus on product innovation as it is key to firm survival and growth, and firms must continually update their existing products and enter into new product lines to preserve and expand their customer base (Klette and Kortum, 2004; Akcigit and Kerr, 2018; Braguinsky et al., 2020).[1] Further, other measures of innovation such as patents fail to fully capture innovation activity in the product market. Even for developed economies like the US, only a small fraction of manufacturing firms (6.3%) use the patent system (Graham et al., 2018), and this share is likely to be even lower in developing countries that have weak protection of intellectual property rights. Finally, introduction of a new product is a complex process and the knowledge generated through research activities needs to be supplemented with substantial upfront investments in product development, plant and machinery, advertisement, and distribution activities. Thus, firms' product scope may be more responsive to the relaxation of financial constraints as compared to investment in research activities (Granja and Moreira, 2019). Introduction of new products by firms directly measures the outcome of innovation activity for all firms and helps us better capture the aggregate impact of debt enforcement on innovation through product creation in the economy.

Our empirical strategy exploits the staggered implementation of the DRTs to estimate the effect of DRTs on firms' product scope. We compare the within firm changes in the product scope for firms in DRT states to firms in other states, controlling for firm and industry-year specific unobservables. Through an event study design, we provide

[1] Akcigit and Kerr (2018) find that expansion of incumbent firms in product lines outside of their scope of production accounts for 54.5% of aggregate growth due to innovation in the US.

suggestive evidence against the presence of pre-trends in firms' product scope in DRT states versus other states. Further, we also find that there was no differential pre-reform trend in the product scope of firms in states that set up DRTs before the legal challenge as compared to other states that set up DRTs in later years. We find that following the implementation of DRTs, firms increase their product scope on average by 2.4%, accounting for 15% of the observed change in product scope during our study period. Our results are robust to alternative specifications, accounting for pre-existing firm and state level linear trend, time varying firm characteristics, and entry and exit of firms from the sample.

As the supply of credit is likely to be inelastic in the short run, only the firms with high tangible assets experience an expansion in credit following implementation of DRT (Lilienfeld-Toal et al., 2012). This increased access to credit can spur product growth in high tangible assets firms. We estimate the differential effect of DRT based on a firms' tangible assets and find strong support for our hypothesis. Our results suggest that firms in the top quartile of tangible asset distribution differentially increase their product scope compared to other firms in response to DRTs. These findings are robust to a variety of alternative specifications, which include accounting for other structural reforms, pre-existing state and firm level linear time trends, interaction of tangibility with other firm characteristics, and using alternative measures of tangible assets. DRTs account for 51% of the observed change in product scope for the high tangible asset firms during our study period.

Further examination of the effect of DRTs on the margins of entry and exit of product lines reveals that DRTs differentially increase the probability of entry into new product lines by 5.1% for high tangible asset firms relative to other firms, while there is no differential effect on exit from existing product lines. Further, we also distinguish between new product lines within the firms' current scope of operation and those that are in new industries. Entering into new product lines in industries outside of the firm's scope of operation would require considerable investment in R&D, product development, and physical capital. However, these product lines would also lead to higher firm growth as they would not cannibalize on sales of existing products. Our results suggest that for high tangible asset firms, DRTs increases the probability of introducing a product line in a new industry by 4.4% while there is no effect on entry into product lines in the main industry of operation. These findings suggest that these firms undertake bolder product innovation as their financial constraints are relaxed in response to setting up of DRTs.

Next, we examine the underlying mechanisms driving the relationship between DRTs and product innovation by high tangible asset firms. We find that high tangible asset firms differentially increase their leverage and long term borrowing in response to DRTs. Further, we also find that the increase in the product scope in response to DRTs is driven by firms operating in industries with higher external finance dependence and by younger firms who are likely to be more financially constrained.

Entering into new product lines requires considerable investment in plant & machinery as the existing stock of physical capital may not be easily redeployed to produce new products (Braguinsky et al., 2020). We find that firms with high tangible assets differentially increase their investments in plant and machinery in response to DRTs. Further, we find that high tangible asset firms substantially increase their marketing, advertisement, and distribution expenses in response to DRTs. This finding is consistent with Argente et al. (2021) who document that customer acquisition plays an important role in the growth of new brands. Product development also requires substantial upfront expenditures in R&D and recent empirical evidence suggests that firms rely on external borrowing to finance R&D expenses (Benfratello et al., 2008; Kerr and Nanda, 2015). Thus, we expect firms with high tangible assets to differentially increase their expenditure on R&D compared to low asset tangibility firms. Our estimates suggest that high tangible asset firms differentially increase their R&D expenditure by 35.2% relative to other firms. These findings suggest that the relaxation of financial constraints for high tangible asset firms is the main mechanism linking DRTs and product growth.

Finally, we examine the effect of DRTs on firm performance. An alternative explanation for our findings on firms' product scope in response to DRTs is that it may reflect firms' decision to diversify their product portfolio in order to lower risk of distress at the expense of lowering firm value (Acharya et al., 2011). However, we find strong evidence that firms that introduced new product lines experienced an improvement in their firm performance. Our results suggest that firms with higher tangible assets increase their sales and profitability following the implementation of DRTs. Low tangible asset firms, on the other hand, experience a significant decline in their performance.

Further, we estimate the effect of DRTs on aggregate total factor productivity (TFP) through their effect on within firm TFP as well as the allocation of capital across firms with differing marginal revenue product of capital (MRPK). We find that DRTs lead to an increase in the TFP of high tangible asset firms while they have no effect on TFP on low tangible asset firms. We also find that DRTs reallocate capital away from high MRPK firms thus exacerbating misallocation within industries. However, we find that the aggregate (state-industry level) TFP increases by 6% in response to DRTs, suggesting that the within firm increase in TFP dominates any negative effect on aggregate TFP due to the distributive effects of DRTs. Taken together, these results imply that DRTs have a positive impact on both product growth and productivity.

Our study contributes to several strands of the literature. We contribute to the literature examining the financial and real effects of legal enforcement of debt contracts. La Porta et al. (1997), Porta et al. (1998), Djankov et al. (2007), and Djankov et al. (2008) positively link quality of law enforcement to financial development and per capita income of countries. Further, our paper is related to the literature studying the effect of DRTs on firms' borrowing and investment. Visaria (2009) finds that DRTs lead to reduction in delinquency of loans. Lilienfeld-Toal et al. (2012) show that introduction of DRT has a positive effect on new long-term borrowings and physical capital for large firms, and Gopalan et al. (2016) find that DRTs affect debt maturity by increasing the long term borrowings for firms. Our paper is also related to Ponticelli and Alencar (2016), who show that the effect of bankruptcy reform is more pronounced for the firms in better court enforcement municipalities in Brazil, and that these firms experienced an increase in secured credit and investment. Our paper complements this literature by providing new evidence that introduction of new products is a key mechanism driving the relationship between efficiency of debt enforcement and firm growth. Further, we provide novel evidence that efficiency of debt enforcement has a positive impact on aggregate productivity.

Our paper is also related to the literature studying the role of credit market disruptions on firms' innovation activities. Granja and Moreira (2019) find that credit constrained firms introduced fewer products during the Global Financial Crisis in the consumer goods sector. Nanda and Nicholas (2014) document a negative relationship between bank distress and firm level innovation during the Great Depression. While these studies exploit crisis events as exogenous shocks to credit supply, our study points to the important role of institutions related to debt contract enforcement in determining the availability of credit and in turn the introduction of new products by manufacturing firms in a developing country.

Our study is also related to the literature on capital structure and financial constraints influencing firm innovation. In the context of bank financing, the risk of innovation failure and the uncertainty of R&D investment payoffs are potential sources of asymmetric information problems, typically associated with reduced access to credit (Hu et al. 2017) and higher loan spreads (Francis et al. 2012). While some studies argue that innovation activities are primarily financed by internal cash flows and equity markets (Brown et al., 2009; Acharya and Xu, 2017), other studies find bank lending to be an important determinant of firms' investment in R&D and innovation (Benfratello et al., 2008; Chava et al., 2013; Mann, 2018). Our study contributes to this literature by highlighting the importance of debt for product growth in developing countries like India.

Finally, our paper is related to the literature on optimal creditor rights. Aghion et al. (1992) show that strong creditor protection can result in inefficient liquidation bias. In a cross country setting, Acharya and Subramanian (2009) show that the countries with stronger creditor rights are associated with lower firm level innovation as measured by patents and R&D intensity. Acharya et al. (2011) document that stronger creditor rights induces firms to lower risk through aquisitions that reduce firm value. Vig (2013) finds that stronger creditor rights reduces the secured borrowings for firms in India. In contrast, several recent studies find that strong legal protection of creditors result in an increase in the borrowing, investment, and productivity of firms (Mann, 2018; Ersahin, 2020; Favara et al., 2021). While these studies primarily focus on bankruptcy law in developed economies, we provide evidence that increase in efficiency of debt enforcement leads to increased borrowing and product growth for firms in India. A natural caveat is that our results hold for India where debt recovery rates are relatively low as compared to the developed economies, even after the introduction of the DRTs. Thus, inefficient liquidation is less likely to be a major concern in our setting.

# 2 RDDBFI Act and Introduction of DRTs

In the beginning of 1990s, Indian banks were experiencing huge payment defaults due to the liberalisation reforms of 1990s. Further, the slow judicial process made it difficult for banks to liquidate the assets of defaulting firms and recover their dues. To reduce these legal bottlenecks in the recovery of bank dues, the Government of India passed RDDBFI Act 1993 to establish new specialised debt recovery courts across the country. These specialised courts were set up for speedy recovery of debt where banks and financial institutions could file suits of claims larger than INR 1 million.

In the pre-DRT era, debt recovery cases were processed in civil courts. Indian civil courts were prone to procedural delays. According to Government of India 1988 report, more than 40% of the liquidation cases were pending for more than 8 years in civil courts. Consequently, a large proportion of bank funds were blocked in non-performing assets. Post the formation of DRTs, summonses were issued much faster, and defendants were required to respond earlier, provide written defences, and make counterclaims in the first hearing (Lilienfeld-Toal et al., 2012). The Tribunals were given the authority to issue interim orders to prevent defendants to dispose off their assets before the case was closed and in certain cases, they could also issue arrest warrants. Visaria (2009) provides evidence on the efficiency of DRTs with a random sample of debt recovery cases from an Indian bank. She finds that there was a significant reduction in the duration of cases. For example, time for the issuance of summonses reduced from 449 days in the civil courts to 56 days in DRTs, times to first hearing, presentation of evidence and beginning of arguments reduced as well. Thus, DRTs led to a significant improvement in the efficiency of loan recovery.

Table A.1 reports the dates of DRT establishment across the various states. Delhi along with four other states received DRTs in 1994. However, the process of setting up of DRTs was halted because of a legal challenge to the law. In 1996, Supreme Court of India made the interim ruling in favour of setting up of DRTs. Following the ruling, DRTs were established in all the remaining states by the end of 1999. These events led to the staggered establishment of the tribunals across the country, which provides us with plausibly exogenous variation in the efficiency of debt enforcement across the states of India over time. Moreover, the DRTs could only be established by the national government, and state governments had no authority to influence this decision. Lilienfeld-Toal et al. (2012) and Gopalan et al. (2016) show that the timing of setting up of DRT in states was not influenced by firms' borrowing behavior in those states and other macroeconomic and judicial state-level factors. For the purpose of our analysis, a key assumption is that the timing of DRT establishment is exogenous to the firms' product scope. In Section 4.1.3, we provide compelling evidence supporting the absence of any pre-trends in firms' product scope before the setting up of DRTs.

# 3 Data Sources and Summary Statistics

## 3.1 Data

*Product lines*: Our primary data source is Prowess database maintained by the Centre for Monitoring the Indian Economy (CMIE). It is a firm level panel covering more than 50,000 companies among which more than 8,000 are listed. The database primarily provides information based on the financial statements of firms.[2] A unique feature of this database is that it provides the product level information on sales and quantity produced by firms. Indian firms are required to report information on product level sales and production under The Companies Act, 1956. Thus, Prowess is particularly well suited for studying the changes in firms' product scope over time in response to policy changes like the DRT reform.[3] Another widely used dataset for India is the Annual Survey of Industries (ASI). While the ASI provides information on the firms' product mix, panel data is available from 1998 onwards and hence is not suitable for studying DRTs.

Prowess provides unique 20 digit codes to classify products according to its internal classification, which is loosely based on the National Industrial Classification (NIC) of industries as well as the Harmonized System (HS) classification. We trim the product codes to 12 digits and restrict our analysis to manufacturing firms.[4] The level of disaggregation

[2]The database has been employed in number of research studies for firm-level analysis (Bertrand and Mullainathan (2002),Gopalan et al. (2016),Lilienfeld-Toal et al. (2012))

[3]Goldberg et al. (2010a) is a recent study using Prowess dataset to study the firms' product mix in response to tariff reforms.

[4]The level of disaggregation, in terms of number of product lines, is similar across industries at this level

in Prowess classification is similar to the HS 6 digit product lines and hence is considerably more granular than the NIC classification of industries. There are approximately 2,800 distinct product codes that are linked to 117 NIC 4 digit industries in 22 manufacturing sectors (NIC 2-digit). We provide an example of CMIE's product classification in Table 1. The table lists all products, according to Prowess classification, within a single NIC 4 digit industry, namely "Manufacture of knitted and crocheted apparel". There are 16 distinct product lines within the broader industry. Thus, the level of disaggregation of product lines implies that we should see the products as highly disaggregated product lines within a broader industry rather than varieties of a particular product. Thus, our dataset is ideal for studying the firms' sales growth through expansion into new product lines.

*Firm Level Variables*: Apart from data on product lines manufactured by each firm, we use several firm level indicators from the Prowess dataset. We use information on firm level sales, raw material expenditure, compensation, total assets and its components, year of incorporation, current and capital R&D expenditure, long and short term borrowing, and selling & distribution expenditure for each firm. We combine the firm level variables with the data on each firms' product scope to arrive at our estimation sample.

*Other Data Sources*: We supplement our firm level data with industry level trade policy measures to control for India's liberalisation episode of the 1990s. We use data on industry level output and input tariffs, and on industry level FDI liberalization from Harrison et al. (2013). We also use data on industry level delicensing from Aghion et al. (2008). We provide detailed information on variable construction and data sources in the Appendix Table A.5.

(Goldberg et al., 2010b)

## 3.2 Summary statistics

In Table A.2, we report the summary statistics of all the key variables used in the analysis. Our sample consists of the firms that operate in the manufacturing sector, report product level information, and have non-negative and non-missing values for sales and total assets. We also exclude firms owned by state and federal governments from our dataset. We winsorize all the variables in our sample at 1% and 99% to minimize the effect of outliers. Our sample covers the period 1991 to 2004 with over 34,000 firm-year observations. Columns 1-3 of Table A.2 report the number of observations, mean and standard deviation for key variables for the full sample. In columns 4-6, we restrict the sample to the firms that are observed in the pre-reform years (1990-92). In Table A.3, we further breakdown the sample based on product scope. One-third observations in our sample are single product firms. A median firm in our sample produces 2 products and one-fourth of the sample operates in more than 3 product lines. We observe that multi-product firms (columns 2-4) have higher assets, sales and profitability compared to single product firms (column 1). Multi-product firms also spend more on R&D and selling & distribution expenses. Lastly, we split our sample by quartiles of the pre-reform (average of 1990-92) tangible assets distribution. We observe that fourth quartile firms (column 4) have higher sales, product scope, ROA, and operating margin compared to other firms (columns 1-3).

To examine the contribution of new product lines to the overall firm level sales growth, we decompose the change in firm level sales into changes in sales due to new product lines (extensive margin) and changes in sales due to existing product lines (intensive margin). The formula for the decomposition is as follows: $\Delta Y_{jt} = \sum_{i \in E} \Delta Y_{ijt} + \sum_{i \in I} \Delta Y_{ijt}$, where i denotes product, j denotes product, and t denotes time. $E$, extensive margin, denotes the set of products that a firm produces only in $t$ or $t-1$, $I$, intensive margin, denotes the set of products that a firm produces in both time periods $t$ and $t-1$. Table 2 reports the results. We find that the share of extensive margin in the total sales growth increased significantly after the introduction of DRT reform. While the extensive margin accounted for 6.4% of sales growth in the pre-DRT period (1991-1993), its share increased to 7.6% during 1994-1999 and to 18.1% during 2000-2004. Next, we turn to more rigorous examination of the link between DRTs and firms' product growth.

# 4 Empirical Strategy and Results

In this section, we describe the empirical strategy and report the results from estimating the effect of DRT reform on product scope and other firm level outcomes for Indian manufacturing firms. We start by estimating the causal effect of DRT on product scope of firms. Next, we analyze the heterogeneous impact of DRTs on firms' product scope based on tangible assets of firms. Following this, we examine the various mechanisms underlying this relationship by reporting the effect of DRT on firm level borrowings, physical capital, selling & distribution expenditures, and R&D expenditures. Finally, we document the effect of DRTs on firm level performance and aggregate productivity.

## 4.1 DRTs and Product Growth

### 4.1.1 Baseline specification

Our identification strategy relies on comparing changes in firms' product scope before and after DRT implementation in DRT states to firms in non-DRT states. The specification to estimate the average effect on product scope of firms due to DRT implementation is given by:

$$y_{ijst} = \alpha_0 + \beta_1 DRT_{st} + \alpha_i + \alpha_{jt} + \epsilon_{ijst} \qquad (1)$$

where $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. The outcome variable, $y_{ijst}$, denotes firm level (log of) product scope. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$. Firm fixed effects ($\alpha_i$) control for time invariant firm characteristics that may be correlated with both DRT and firms' product scope. We also include industry-year fixed effects, $\alpha_{jt}$, to control for the effect of time varying industry level factors, like demand shock and regulatory changes, that could be correlated with *DRT* and also influence the firms' product scope. Standard errors are clustered at the state level to allow for downward bias in the standard errors due to serial correlation. Thus, we exploit within firm variation in the product scope for our identification while controlling for firm and industry-year specific unobservables.

#### 4.1.2 Baseline estimates

Table 5 reports the results from estimating variants of Equation 1. In column 1, we include firm and year fixed effects and the coefficient on *DRT* is positive and statistically significant at 1% level suggesting that setting up of DRTs led to an increase in product scope of firms. In column 2, we control for pre-existing firm level trend by interacting the quartiles of initial number of products manufactured by the firm with year fixed effects. The coefficient on *DRT* is statistically significant at the 1% level and the magnitude remains unchanged. In column 3, we add industry × year fixed effects to control for industry-year specific unobservables like demand shocks and other reforms undertaken by the government that could be correlated with DRT as well as product scope of firms. The coefficient increases in magnitude and remains statistically significant. The estimates suggest that on average, DRT implementation in a state increases product scope of firms by 2.4%. Firms increased their product scope on average by 16% during our study period, 1991-2004. Thus, our estimates imply that DRTs accounted for 15% of the observed expansion in the product scope of firms.

During our study period, the Indian government passed the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interests of 2002 (SARFAESI henceforth) which also increased the creditors' access to collateral of the firm in case of default (Vig, 2013). A potential concern is that our results may be capturing the effect of SARFAESI on firms' product scope. In column 4, we restrict our sample till the year 2001 and the coefficient on *DRT* remains positive, similar in magnitude, and statistically significant at the 1% level, suggesting that our results are not influenced by the effect of SARFAESI on firms' product scope.

Taken together, these results suggest that setting up of DRTs has an economically large and statistically significant positive effect on firms' product scope. These results provide the first causal evidence that an increase in efficiency of debt contract enforcement has a positive effect on firms by enabling them to expand into new product lines.

#### 4.1.3 Pre-trends

A key identification assumption for the specification in equation 1 is that firms in DRT states were not experiencing a relative increase in their product scope as compared to firms in non-DRT states prior to the implementation of DRTs. This would be the case if the government prioritized states with higher growth in products for implementation of DRTs. As discussed earlier in Section 2, implementation of the DRTs is uncorrelated with pre-DRT state level characteristics (Lilienfeld-Toal et al., 2012; Visaria, 2009; Gopalan et al., 2016). Nonetheless, we provide strong evidence against existence of differential pre-trends in firms' product scope between DRT and non-DRT states. First, we show that there was no differential trend in the product scope of firms in states that received DRTs in 1994 as compared to states that received DRTs in later years. Following Lilienfeld-Toal et al. (2012), we estimate the below specifications for a sample including years 1988-1993 to check for pre-trends in firms' product scope.

$$y_{ijst} = \alpha_0 + \beta_1 earlyDRT_s \times T_t + \alpha_i + \alpha_{jt} + \epsilon_{ijst} \tag{2}$$

$$y_{ijst} = \alpha_0 + \beta_1 DRTyears_s \times T_t + \alpha_i + \alpha_{jt} + \epsilon_{ijst} \tag{3}$$

where $earlyDRT_s$ is an indicator variable equal to 1 if the state received DRT in 1994 and 0 for states which received DRT in later years, $DRTyears_s$ is the number of years the state had DRT during the period 1994-2004, and $T_t$ is time. If firms' product scope in states that received DRT early were differentially evolving compared to other states during 1988-1993, the coefficient on the interaction terms would be statistically significant. Appendix Table A.6 reports the results from estimating Equations 2 and 3 in columns 1 and 2, respectively. The coefficients on the interaction terms are statistically insignificant and small in magnitude suggesting that prior to the reform, firms in states that received DRTs in 1994 were not differentially changing their product scope as compared to firms in other states. Second, to provide visual evidence against the presence of pre-trends, we estimate the following event study specification to capture yearly differential effect on firms in DRT versus non-DRT states.

$$y_{ijst} = \alpha_0 + + \sum_{k=-4}^{-2} \beta_k DRT(k)_{st} + \sum_{k=0}^{+4} \beta_k DRT(k)_{st} + \alpha_i + \alpha_t + \epsilon_{ijst} \tag{4}$$

where $k$ denotes years relative to the year of DRT implementation in the state and $DRT(k)$ are indicator variables equal to 1 if the year of observation is $k$ years before or after DRT implementation and 0 otherwise. Figure 1 plots the event study graph from estimating Equation 4 for (log of) number of products as the outcome variable. The coefficient on $DRT(k)$ is small in magnitude and statistically insignificant for all pre-treatment years suggesting that there is no differential effect on the product scope of firms in DRT states versus non-DRT states before the implementation of the DRTs.

#### 4.1.4 Robustness Checks

Next, we perform several robustness checks to check sensitivity of our results to alternative specifications. We report these results in Table 4. In column 1, we two way cluster the standard errors at the state and industry level and the coefficient remains positive and statistically significant at the 1% level. In column 2, our results remain robust to controlling for several time varying firm level controls, namely, tangibility, size, ROA, and age. In columns 3-7, we interact quartiles of initial firm characteristics with time trend to flexibly control for differential trends in outcome variable based on initial firm characteristics. Our results remain robust to controlling for differential trends based on initial PPE (column 3), output (column 4), TFP (column 5), ROA (column 6), and indicator for R&D (column 7). Finally, we estimate our baseline specification on a balanced panel of firms in column 8 and our results remain robust. Taken together, these results provide compelling evidence that our results are not driven by omitted variables bias and pre-existing linear trends in the product scope for firms.

## 4.2 Heterogeneity Based on Asset Tangibility

#### 4.2.1 Baseline specification

In this section, we study the heterogeneous impact of DRT reforms based on firms' tangible assets. Because the supply of credit is likely to be inelastic in the short run, only the firms with high tangible assets experience an expansion in credit following implementation of DRT (Lilienfeld-Toal et al., 2012). An increase in the efficiency of debt contract enforcement due to DRT implementation has two opposing effect on access to credit. First, the contractible set of loans expand for all firms and this effect is increasing in the firms' tangible assets. Secondly, due to inelastic supply in the short run, a general equilibrium effect drives interest rates upwards thus reducing the access to credit for all firms. For firms with high tangible assets, the former effect dominates resulting in increased access to credit while for firms with lower tangible assets the latter effect dominates resulting in lower access to credit. If firms with high tangible assets had foregone profitable investments in developing new product lines due to lack of access to external finance, increased availability of credit due to DRTs can spur product innovation by these firms. Thus, we expect the effect of DRTs on firms' product scope to be driven by firms with higher tangible assets.

We use the following specification to estimate the differential effect of DRT reform on product scope based on initial tangible assets of firms:

$$y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt} \tag{5}$$

where $HIGH\ TANG_i$ is either a continuous measure of tangible assets of a firm in the pre-reform years (average of 1990-92) or an indicator variable equal to 1 if the firm belongs to the top quartile of tangible asset distribution in the pre-refom years (average of 1990-92). We measure tangible assets as the net plant, property and equipment (fixed assets).[5] Our specifications include a rich set of fixed effects to control for unobservables that may be important determinants of firms' product scope and may induce bias in our estimates. We include firm, industry × year, and state × year fixed effects. This enables us to control for the average effect of industry-year demand shocks as well as industry level reforms undertaken by the government that may influence the product scope of firms. We also control for the average effect of time varying state level unobservables that may induce bias in our estimates. Thus, even if DRT states were targeted for other reforms by governments,

[5] We also use alternative definition of asset tangibility and find similar results. We report these results in Table 6.

our specification controls for the average effects of those interventions. Note that we are no longer estimating the average effect of DRT but only the differential effect of DRT based on initial tangible assets, as the DRT variable is collinear with state × year fixed effects. As before we cluster the standard errors at the state level.

Our coefficient of interest is $\beta_1$ and it measures the differential effect of DRT based on the firms' initial tangible assets. We hypothesize that firms with higher initial tangible assets would differentially increase their product scope compared to low tangible assets firms, ($\beta_1 > 0$).

Table 5 reports the results from estimating variants of Equation 5. In columns 1-3, we use a continuous measure of tangible assets. In column 1, we include firm and industry × year fixed effects and the coefficient on the interaction term is positive and statistically significant at the 5% level. In column 2, we include state × year fixed effects and the coefficient remains similar in magnitude and is statistically significant. A potential concern is that our estimates may be capturing the effect of SARFAESI. To address this, we include an interaction of an indicator variable that equals 1 for all years post 2002 and $HIGH\ TANG_i$ to capture the differential effect of SARFAESI reform based on initial level of tangible assets of firms.[6] The coefficient remains positive, increases in magnitude, and is statistically significant at the 5% level. Our estimates suggest that a firm at the $75^{th}$ percentile of initial tangible assets differentially increased their product scope by 3.6% compared to a firm at the $25^{th}$ percentile of initial tangible assets.

Our specifications in columns 1-4 impose a linear relationship between the interaction term, $DRT \times HIGH\ TANG_i$, and firms' product scope. Next, we estimate a specification allowing for non-linear effects by different quartiles of the firms' initial tangible assets to

[6] We also estimate equation 5 on a subsample excluding all observations after 2001 and our results are robust to this specification. Results available upon request.

check if the linear approximation is justified. The nonlinear specification is given by:

$$y_{isjt} = \alpha_0 + \sum_{k=2}^{k=4} \beta_k DRT_{st} \times HIGH\ TANG_{ik} + \alpha_i + \alpha_{sjt} + \epsilon_{isjt} \tag{6}$$

where $HIGH\ TANG_{ik}$ is an indicator variable equal to 1 if the firm belongs to the $k^{th}$ quartile of the tangible assets distribution in the pre-reform period. Appendix Table A.8 reports the result from estimating Equation 6. Our estimates suggest that the overall effect of DRT on firms' product scope is primarily driven by firms in the top quartile of the initial tangible assets. The overall effect on the first three quartiles is statistically insignificant. These results suggest that a linear specification is not a good approximation.

Next, we estimate the specifications in columns 1-4 of Table 5 by replacing the continuous measure of tangible assets with an indicator variable equal to 1 for firms in the top quartile of the initial asset tangibility distribution. These results are reported in columns 5-8. The coefficient on the interaction term is positive and significant at the 1% level, suggesting that firms in the top quartile of initial tangible assets differentially increase their product scope compared to firms in the first three quartiles. The estimates imply that these firms differentially increase their product scope by 7.1% relative to the other firms (column 8) in response to DRTs. Our estimates also suggest an absolute increase in high tangible assets firms' product scope by 7.5% (column 7) in response to setting up of DRTs. The high tangible asset firms increased their product scope on average by 14.7% between 1991-2004. Thus, DRTs can account for 51% of the observed expansion in product scope of high asset tangibility firms during our study period.

#### 4.2.2 Robustness

In this section, we report results from several robustness checks to provide evidence that our results are not driven by omitted variable bias and pre-existing linear trends in the product scope of firms. First, we address the concern that there might be pre-existing differential trends for high versus low tangible assets firms in DRT states versus other states, which could bias our estimates. To address this concern, we estimate the following variants of Equations 2 and 3:

$$\begin{aligned} y_{ijst} = \alpha_0 + \beta_1 HIGH\ TANG_i \times T_t + \beta_2 earlyDRT_s \times HIGH\ TANG_i \times T_t \\ + \alpha_i + \alpha_{jt} + \alpha_{st} + \epsilon_{ijst} \end{aligned} \tag{7}$$

$$\begin{aligned} y_{ijst} = \alpha_0 + \beta_1 HIGH\ TANG_i \times T_t + \beta_2 DRTyears_s \times HIGH\ TANG_i \times T_t \\ + \alpha_i + \alpha_{jt} + \alpha_{st} + \epsilon_{ijst} \end{aligned} \tag{8}$$

Our estimates in columns 3 and 4 of Table A.6 suggest that the coefficient on the triple interaction, $\beta_2$ is small in magnitude and statistically insignificant. Thus, we do not find any evidence that the high tangible asset firms were differentially increasing their product scope compared to low tangible asset firms in early DRT states compared to other states during 1988-1993 period before the reform.

Next, in Table 6, we conduct a number of robustness checks to ensure that our results are not sensitive to alternative specifications. A potential threat to identification in our specification stems from concurrent policy reforms undertaken by the Indian government during the same period as the DRT reform. India implemented several structural reforms during the 1990s in the aftermath of the balance of payment crisis. Prominent among these were the dismantling of the licensing regime, tariff reforms, and liberalization of FDI norms. Although we control for the average effects of these policy reforms through industry-year fixed effects, our estimates may still be biased if these reforms had a significantly different effect on the high versus low tangible asset firms in DRT states compared to other states. This would be the case if DRT states were differently exposed to these reforms than non-DRT states. To address this concern, in specification 1-3 of Table 6, we augment equation 5 to include interactions of *HIGH TANG*$_i$ with delicensing dummy, FDI dummy, and output tariffs, respectively. Our results are robust to the addition of these controls and the coefficient remains positive and statistically significant. In specification 4, we include state × industry × year fixed effects to control for any time varying unobservables at the state-industry level and our results remain robust. In specification 5, we two way cluster standard errors at the state and industry level and the coefficient remains positive and statistically significant. In specification 6, we include time varying firm level controls, namely, tangibility, size, ROA and age and the coefficient remains positive and statistically significant.

Another concern is that our results could be driven by pre-existing firm trends. To address this concern, we introduce the interaction of initial firm characteristics with state level linear time trend in equation 5. In specifications 7-11, we report results from specifications including interactions of initial tangible assets, sales, TFP, ROA, and R&D dummy, respectively, with linear time trends. The coefficient on the interaction term remains positive, similar in magnitude, and statistically significant across these specifications. These results suggest that our estimates are not driven by unobserved firm level trends.

Next, we address the concern that initial tangible assets of the firm could be correlated with other firm characteristics and our results are capturing the effects of these unobserved variables. We estimate specifications 12-15 by including interaction of top quartile of sales, cash & bank balance, ROA, and age with DRT in equation 5. The estimated coefficients are statistically significant and the magnitudes are similar to our baseline specification.

Another concern is that our results may be driven by entry and exit of firms from our sample. To check if entry and exit of firms is driving our results, we estimate the baseline specification on a balanced sample of firms that are observed in all years between 1991-2004. The coefficient in specification 16 remains statistically significant at the 5% level albeit with a lower magnitude. Finally, we provide further evidence that our results are not sensitive to alternative definition of asset tangibility. We create a second measure of tangibility, defined as the proportion of tangible assets in total assets, which is based on Rajan and Zingales (1995) and Vig (2013). In specification 17, we run our baseline regression with the second measure of tangibility and we find that our results remain stable. Taken together, these robustness checks provide compelling evidence that our main results are not driven by pre-existing firm and state level linear trends or omitted variable bias.

## 4.3 DRTs and Product Scope: Entry and Exit

The overall effect on the product scope of firms in response to DRTs may be masking considerable changes in the firms' product mix. To study the adjustments in firms' product mix in response to DRTs, we breakdown the changes in the firms' product scope into its underlying components, i.e., entry in new product lines and exit from existing product lines. For each firm, we define entry in a new product line in year t, *Entry*, as an indicator variable equal to 1 if the product line is produce in year t but was not being produced by the firm in year t-1. Similarly, exit from a product line in year t, *Exit*, is defined as an indicator variable equal to 1 if the firm no longer produces the product line in year t but was producing the product line in year t-1. Finally, we define *Entryrate* as the number of new product lines introduced by the firm in year t divided by its product scope in year t-1.

We estimate variants of Equation 5 with *Entry*, *Exit*, and *Entryrate* as the outcome variable. Table 7 reports the results. Columns 1 and 2 show that high tangible asset firms differentially increase their entry into new product lines compared to other firms. DRTs increase the probability of entering into a new product line by 4.4% for high tangible asset firms (column 1). The coefficient on *DRT* is small in magnitude and statistically insignificant suggesting that DRTs do not affect the entry of low tangible asset firms into new product lines. In columns 3 and 4, the coefficient on the interaction term is positive but statistically insignificant suggesting that there was no differential effect on exit of product lines for high versus low asset tangible firms. The overall effect on high tangible asset firms is positive and statistically significant suggesting that DRTs also increase the probability of high tangible asset firms exiting product lines by 3.3%. There is no significant effect of DRTs on exit for low tangible asset firms. Finally, columns 5 and 6 show that entry rates differentially increased for firms with high tangible assets as compared to other firms. Again, we find that entry rates of low tangible asset firms are not affected by setting up of DRTs.

Next, we examine whether firms introduce new product lines in their main industry of operation that accounts for the majority of their sales or in new industries. Expanding into product lines in industries outside of the main industry of operation would entail relatively higher investments in research, product development, new physical capital, and marketing as existing technical and business expertise and physical capital of the firm may not be easily redeployed to the production of these new products. However, these product lines would lead to relatively better firm performance as their sales would not cannibalize the sales of the firm's existing product lines. In columns 7-10, our results suggest that for high tangible asset firms, DRTs increase the probability of entering new product lines that are outside of their main industry of operation by 4.4% (column 7) while there is no significant effect on entry in product lines in the main industry of operation (column 9).

Taken together, these results suggest that high tangible asset firms enter into new product lines but also exit from some existing product lines. Entry into new product lines dominates exit from existing product lines resulting in an overall increase in the firms' product scope. Further, these product lines are in new industries outside of the firms' main industry of operation suggesting that DRTs induce firms to undertake bolder innovation moves and expand their revenue sources into new industries.

### 4.4 DRTs and Product Scope: The Role of Financial Constraints

In this section, we provide evidence that the effect of DRTs on product innovation is primarily driven by firms' increased access to external finance. We start by analyzing the effect of DRTs on firms' borrowing behavior. Theoretically, the effect of DRTs on firm borrowing is ambiguous. First, DRTs can expand the contractible set of loans and increase access to credit by making debt recovery more efficient. However, due to inelastic supply of credit, only the high tangible asset firms experience an expansion in access to credit (Lilienfeld-Toal et al., 2012). Secondly, DRTs can also discourage firms from borrowing as they increase the threat of liquidation by creditors (Vig, 2013). The overall effect of DRTs on firm borrowing is thus an empirical matter.

In Table 8, we estimate variants of Equation 5 with long term debt scaled by total assets (columns 1-2), leverage defined as total debt by total assets (columns 3 and 4), and (log of) total debt (columns 5 and 6) as the outcome variables. The results in columns 1 and 2 show that DRTs differentially increase the long term debt for high asset tangible firms. The access to long term debt reduces for firms with low tangible assets. In columns 3 and 4, we find similar results for leverage with high tangible assets significantly increasing their leverage in response to DRTs. Finally, to confirm that our results in columns 1-4 are not driven by changes in firm assets, columns 5 and 6 suggest that there was an absolute increase in the level of total debt for high tangible asset firms. The increase in borrowings is consistent with the findings of Lilienfeld-Toal et al. (2012), who show that new long terms loans increase for large firms after the introduction of DRTs.

To provide further evidence that the increase in product scope in response to DRTs was driven by relaxation of financial constraints, we exploit cross-sectional heterogeneity in industry and firm characteristics. First, we test whether our results are driven by firms operating in industries with greater dependence on external finance (Rajan and Zingales, 1998). Next, we test for heterogeneity based on age of firms as younger firms may be more financially constrained relative to older firms. Petersen and Rajan (1994) suggest that young firms are comparatively more credit-constrained due to the absence of credit history and bank ties. To measure an industries' dependence on debt to finance growth, we follow Rajan and Zingales (1998) and compute their measure using Compustat data[7] for the years 1984-1993. We map these measures calculated for each NAICS industry to the corresponding NIC2004 4 digit industry for analysis. We define young firms as an indicator variable equal to 1 if the firms age is lower than the industry median.

In Table 9, we estimate equation 5 on sub-samples defined on the basis of RZ index and age of firms. In columns 1 and 2, we explore the heterogeneity based on RZ index. The coefficient on the interaction term in the sub-sample of firms in industries having RZ index below the median value is small and statistically insignificant (column 1). In contrast, the coefficient on the interaction term in the sub-sample of firms in industries with RZ index above the median value is positive and statistically significant, and the magnitude suggests that firms in industries with high external finance dependence increase their product scope by 10.7% (column 2). Thus, our results show that the effect of DRT on product scope is driven by high tangible asset firms in industries with higher dependence on external finance relative to the median industry. In columns 3 and 4, we estimate the heterogeneous effect based on the age of firms by splitting the sample into two based on whether the firm's age is above or below the median age of firms. The coefficients on the interaction term suggest that high tangible asset firms that are also younger differentially increase their product scope by 13.2% in response to DRTs (column 3), while the increase for high tangible asset firms that are older is only 3.7% (column 4). This suggests that young firms, which are relatively financially constrained, differentially increase their product scope compared to older firms. Taken together, these results support our hypothesis

[7] In the prowess database, the variables needed to construct the RZ index are populated only after 1994. To compute the RZ index based on Indian firms, we employ 1995-2004 prowess sample and we find that our results hold with this measure as well. Results available upon request.

that the increase in product innovation in response to DRTs was driven by credit supply channel and that DRTs, by making the debt recovery process efficient, relax the financial constraints for firms with high tangible assets.

## 4.5 DRTs and Product Scope: Investments

In this section, we examine the effect of DRTs on various expenditures that firms need to incur to develop and market their new products. Introducing a new product to the market is a complex process requiring substantial upfront investments in R&D, product development, plant and machinery, working capital, and product advertisement and distribution (Horsky and Simon, 1983; Braguinsky et al., 2020; Argente et al., 2021).

We start by analyzing the effect of DRTs on investment in physical capital. To enter new product lines, firms may need substantial investments in plant and machinery as the existing physical capital stock may not be easily redeployed for manufacturing the new products (Braguinsky et al., 2020). We estimate variants of equation 5 with investments in plant, property, and equipment (PPE) (columns 1 and 2), plant & machinery (columns 3 and 4), and land & buildings (columns 5 and 6), as the outcome variables. The specifications in odd numbered columns omit state-year fixed effects so we can estimate the effect of DRT on both low and high tangible asset firms. Table 10 presents the results. In Panel A, we study the effect of DRTs on the levels of investments. The coefficient on the interaction term,$DRT_{st} \times HIGH\ TANG_i$, is positive and statistically significant in all columns suggesting that following the introduction of DRTs, firms with high tnagible assets differentially increased investments in PPE, plant & machinery, and land & building. In terms of economic magnitudes, the estimated coefficients imply that firms with high tangible assets differentially increase PPE by 44.8%, plant & machinery by 41.1%, and land & building by 42% as compared to low tangible asset firms. On average, these firms increase their investments in PPE by 34.4%, plant & machinery by 32.8% and land

& building by 29.7%. In Panel B, we scale all the investment variables with stock of property, plant & equipment. The estimated coefficients on the interaction term in columns 1-8 remain positive and statistically significant and show a significant increase in scaled investment variables for the firms with high tangible assets. While high tangible asset firms increase their investment in physical capital, firms with low tangible assets experience a significant decline in their stock of physical capital (columns 1,3, and 5). These results point to the distributive effect of DRTs which could have implications for aggregate productivity. If high asset tangibility firms, on average, have low marginal revenue product of capital (MRPK) compared to other firms, reallocation of physical capital towards these firms may reduce aggregate productivity and exacerbate resource misallocation. We discuss these issues in Section 4.7 and examine the effect of DRTs on aggregate productivity.

Next, we examine selling & distribution expenditures as a mechanism driving increase in product scope in response to DRTs. To enter new product lines and grow their market share, firms need to invest in customer acquisition through marketing and advertisement expenditure (Argente et al., 2021). Further, firms would also need to incur expenditure on distribution of the new products. Thus, we expect an increase in selling & distribution expenditures for the firms that introduce new product lines in response to DRTs. In Panel A of Table 11, we estimate Equation 5 with (log of) selling and distribution expenditures as the outcome variables. Columns 1-2 show that selling & distribution differentially increase by 43.7% for the firms with high tangible assets. In columns 3-6, we breakdown the selling & distribution expenses and separately estimate the effect on advertising & marketing expenses and distribution expenses. We find that both advertising & marketing expenses and distribution expenses increase significantly for the firms with high tangible assets.In Panel B, we further estimate the coefficients by scaling them with total expenses and the results suggest significant increase in all the scaled variables for the high tangible asset firms. In contrast, the low tangible asset firms decrease their expenditure on selling and distribution.

Lastly, we analyse the effect of DRTs on R & D expenditures by firms. Development of new products requires substantial upfront investments in research and development (Klette and Kortum, 2004; Akcigit and Kerr, 2018). We estimate variants of Equation 5 with R&D expenditures as the outcome variable. Table 12 reports the results. In Panel A, we report results for the levels of R&D expenditure. An appealing feature of the Prowess dataset is that we not only observe the overall expenditure on R&D, but also observe the firms' expenditure on current and capital R&D separately. This enables us to also examine the effect of DRTs on the durability of R&D investments. The estimated coefficients in columns 1-6 suggest a significant increase in Total R&D, Current R&D and Capital R&D. In terms of economic magnitudes, the estimated coefficients imply a differential increase of 40.6%, 39.7% and 19.7% in Total R&D, Current R&D, and Capital R&D, respectively, for firms with high tangible assets compared to those with low tangible assets. In Panel B, we scale all the variables with total expenses. The coefficients on the scaled variables are positive, albeit imprecisely estimated. This suggests that DRTs encourage investments in both short and long term R&D investments for firms with high tangible assets.

Taken together, these results confirm the importance of investments in innovation activities like R&D, physical capital, and selling and distribution as key ingredients for introduction of new product lines by firms. By expanding the credit available to high asset tangible firms, DRTs enable firms to incur these large upfront investments and expand their product scope by entering new product lines.

## 4.6 DRTs and Firm Performance

In this section, we document the effect of DRT on firm sales, exports, and profitability. By relaxing financial constraints for high tangible asset firms, DRTs can lead to improvement in the performance of these firms for two reasons. First, these firms would be able to undertake investments to enter new product lines and update products in existing product lines. Secondly, firms would also be able to undertake investments aimed at technological adoption and improving physical efficiency (Ersahin, 2020). Thus, we expect high tangible asset firms to experience an increase in sales,exports, and profitability due to DRTs. In contrast, the profitability of low tangible asset firms, who do not get access to credit, may decline as they lose market share to high tangible asset firms. To study the effect of DRTs on firm performance, we estimate variants of Equation 5 with outcome variables capturing firm level performance.

We start by analyzing the effect of DRTs on firm output as measured by (log of) sales. Table 13 reports the results. The results in columns 1 and 2 suggest that firms with high initial tangible assets differentially increase their sales relative to other firms. The estimates suggest that DRT leads to a differential increase in sales by 19.9% for firms in the top quartile of tangible assets (column 2). On average, these firms increase their sales by 13.5% (column 1). In contrast, the low tangible asset firms lose market share and experience a decline in their sales by 5.8% (column 1). Next, in order to identify the source of increase in sales for high tangible asset firms, we estimate the effect of DRTs on sales by new product lines in columns 3 and 4, and sales from existing product lines in columns 5 and 6. Our results suggest that firms with high tangible assets differentially increase their sales from new product lines by 22.2% (column 4) and existing product lines by 18.8% compared to low asset tangible firms. Also, DRTs lead to an overall increase in sales from new product lines by 18.7% (column 3) and from existing product lines by 13.9% (column 5) for the high tangible asset firms. Thus, the growth in sales from new product line is significantly higher than the growth in sales from existing product lines for high tangible asset firms confirming the salience of new products as a major source of firm growth in response to setting up of DRTs. Next, columns 7 and 8 show that the average sales per product line increases differentially by 18% for high tangible firms compared to other firms (column 8).

These firms experience an increase in sales per product line of 10.3% in response to DRTs. In contrast, low tangible asset firms suffer a decline in sales per product line by 7.2% in response to DRTs.

Next, we study the effect of DRTs on other measures of firm performance like exports, and profitability. Table 14 reports the results. As there are substantial additional costs associated with exporting relative to selling goods for the domestic market, relaxation of financial constraints should disproportionately benefit exporters who are more reliant on external financing (Manova, 2013). Further, increase in exports can also lead to increase in firm performance due to gains in physical efficiency due to learning by exporting (Atkin et al., 2017). In columns 1 and 2, our estimates suggest that high tangible asset firms differentially increase their exports compared to other firms. These firms increase their exports by 34.8% while low asset tangible firms suffer a decline in exports by 16.5% (column 1). In columns 3 and 4, we examine whether DRTs have any effect on the profitability of firms, as measured by earnings before interest and taxes (EBIT) divided by total sales. The estimates suggest that implementation of DRTs differentially increase the profitability of high tangible asset firms by 4.8% compared to the low tangible asset firms (column 4). High tangible asset firms on average increased their profitability by 3.2% while low asset tangible firms suffered decline in profitability by 1.5% (column 3).

Taken together, these results provide strong evidence that DRTs substantially improved the performance of high tangible asset firms which experienced an increase in their exports and profitability. In contrast, low tangible asset firms see a decline in their exports and profitability. These results confirm the importance of external finance for firm performance. However, due to inelastic supply of credit in the short run, only firms with high tangible assets benefit from an increase in the efficiency of debt recovery.

## 4.7 Implications for Aggregate Productivity: Distributive Effects

In this section, we examine the effect of DRTs on productivity. DRTs can affect aggregate productivity both by inducing within firm changes in TFP and by affecting the allocation of physical capital across firms with differing marginal revenue product of capital within an industry. We start by analyzing the impact of DRTs on within firm changes in TFP. DRTs can lead to increase in TFP of firms as increased access to credit would enable firms to hire skilled workers and invest in technologically superior physical capital (Ersahin, 2020).

We estimate firm level TFP using the methodology proposed by Ackerberg et al. (2015). We estimate equation 5 with log of TFP as the outcome variable and report the results in columns 1 and 2 of Table 15. As hypothesized, we find that DRTs lead to a differential increase in TFP for high tangible asset firms relative to other firms (columns 1 and 2). The overall increase in TFP for these firms is 2.8% (column 1). The coefficient on *DRT* is small in magnitude, negative, and statistically insignificant suggesting that DRTs had no effect on TFP of low tangible asset firms.

DRTs could also affect aggregate productivity by altering the allocation of capital across firms. As documented in Section 4.4, DRTs lead to reallocation of capital from low to high tangible asset firms. If low tangible asset firms have high (low) MRPK relative to high tangible asset firms, DRTs could have a negative (positive) effect on aggregate productivity. To check for this channel, we estimate the following specification:

$$y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ MRPK_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt} \tag{9}$$

where $HIGH\ MRPK_i$ an indicator variable equal to 1 if the firms' initial MRPK is above the median value of pre-reform (average of 1990-92) MRPK in its industry. We calculate MRPK as revenue divided by the capital stock.[8] We estimate equation 9 with log of capital

[8]For a Cobb-Douglas production function given by, $Y_{ijst} = A_{ijst} L_{ijst}^{\alpha_j} K_{ijst}^{\beta_j} M_{ijst}^{\gamma_j}$, MRPK equals $\frac{\alpha_j \times Y_{ijst}}{K_{ijst}}$. As-

stock and log of MRPK as outcome variables and report the results in Table 15. The results in columns 3 and 4 suggest that DRTs reallocate capital away from high MRPK firms. In columns 5 and 6, we find that DRTs lead to an increase in MRPK for these firms. Thus, DRTs lead to an increase in the misallocation of physical capital within industries.

These results point to two opposing effects of DRT on aggregate productivity. While DRTs lead to increase in within firm productivity, they also have a negative effect on aggregate productivity due to increased misallocation of capital. The overall effect on aggregate productivity is thus an empirical question. We estimate the effect of DRT on state industry level (log of) TFP. We aggregate TFP by taking a sales share weighted sum of firm level TFP for each state-industry. We report these results in Table 16. The results suggest that DRTs increase aggregate TFP by 6%. Taken together, these results suggest that the positive within firm changes in productivity dominate any reduction in productivity due to misallocation of capital leading to a significant increase in aggregate productivity.

# 5 Conclusion

Legal institutions, by protecting property rights and enforcing contracts, play an important role in the financial development and growth of an economy (King and Levine, 1993; La Porta et al., 1997; Levine, 1998). However, there is less clarity on the mechanisms underlying this relationship. Do firms grow by accumulating physical capital with the same technological knowhow? Or do they grow by undertaking innovation activity that enable them to enter new product lines and improve efficiency?

In this paper, we examine the causal relationship between debt contract enforcement and the introduction of new products by manufacturing firms in India. We find that setting up of fast track debt recovery tribunals that increased the efficiency of debt enforcement

suming that all the firms in an industry share the same $\alpha_j$, we can compare MRPK across firms within an industry by calculating the average revenue per unit of capital stock, $\frac{Y_{ijst}}{K_{ijst}}$.

led to a significant increase in product scope of manufacturing firms in India. This increase in product scope was driven by high tangible asset firms which experienced an increase in access to credit and significantly increased their investments in R&D, plant and machinery, selling & distribution expenses. These firms also saw a significant improvement in firm performance as measured by sales, profitability, and TFP. In contrast, low tangible assets firms lost market share and experienced a decline in firm performance.

Our findings also suggest that DRTs significantly increased the aggregate TFP. This was primarily driven by within firm increase in TFP for high tangible asset firms. We further document that DRTs exacerbate misallocation by reallocating physical capital away from high MRPK firms. This finding suggests that alleviating the frictions that hamper banks' ability to expand the supply of credit in the short term may play an important role in the effectiveness of interventions targeting efficiency of debt contract enforcement.

We also find that DRTs significantly increased the probability of entering new product lines outside of the current scope of operation. These findings align well with the estimates in Akcigit and Kerr (2018) who find that the bulk of the economic growth (54.5%) through innovation activities occurs due to incumbent firms expanding into new product lines outside of their current scope of operation. Our results provide strong evidence that better legal enforcement of debt contracts has a significant positive impact on this important margin for firm growth.

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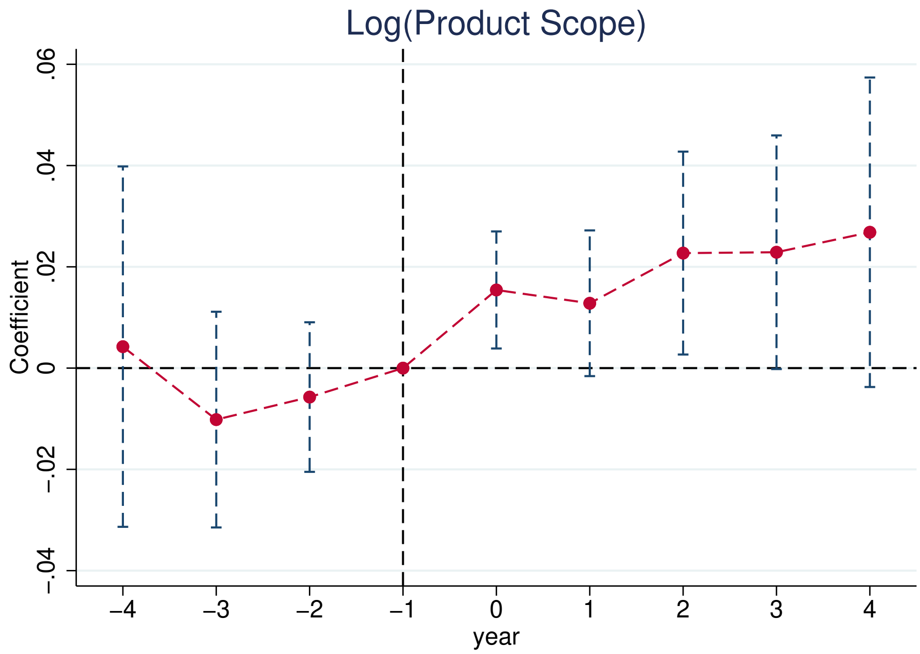
Figure 1: Event study graph for the effect of DRT on the log(product scope)




Each point in the graph depicts the estimated coefficient of the regression $y_{ijst} = \alpha_0 + \sum_{k=-4}^{-2} \beta_k DRT(k)_{st} + \sum_{k=0}^{+4} \beta_k DRT(k)_{st} + \alpha_i + \alpha_t + \epsilon_{ijst}$

Table 1: Example of Prowess Product Classification

| Product Code | Product Description |
|---|---|
| 362404040000 | Men's overcoats, etc. knitted or crocheted |
| 362404080000 | Women's overcoats, etc. knitted or crocheted |
| 362404120000 | Men's suits, trousers, etc. knitted or crocheted |
| 362404160000 | Women's suits, dresses, etc. knitted or crocheted |
| 362404200000 | Men's shirts, etc., knitted or crocheted |
| 362404240000 | Women's blouses, etc., knitted or crocheted |
| 362404280000 | Men's underpants, pyjamas, etc., knitted or crocheted |
| 362404320000 | Women's slips, petticoats, etc., knitted or crocheted |
| 362404360000 | T-shirts & other vests, knitted or crocheted |
| 362404400000 | Jerseys, pullovers, etc. knitted or crocheted |
| 362404440000 | Babies garments & clothing, knitted or crocheted |
| 362404480000 | Track suits, ski suits, swimwear, knitted or crocheted |
| 362404520000 | Other garments, knitted or crocheted |
| 362404560000 | Panty hose, tights, stockings, etc. knitted or crochet |
| 362404600000 | Gloves, mittens, etc. knitted or crocheted |
| 362404990000 | Other clothing accessories, knitted or crocheted |

Table shows all 12 digit product codes in the Prowess product classification under the broad category of "Apparels - knitted / crocheted". These products correspond to one NIC2008 4 digit industry named "Manufacture of knitted and crocheted apparel".

Table 2: Decomposition of Sales Growth

| Year | Gross Sales Growth | Extensive Margin | Intensive Margin |
|---|---|---|---|
| | (1) | (2) | (3) |
| 1991-1993 | 27.48 | 1.76 | 25.72 |
| 1994-1999 | 106.65 | 8.06 | 98.59 |
| 2000-2004 | 61.33 | 11.10 | 50.23 |

This table decomposes the sales growth of firms into intensive and extensive margin. Extensive margin is defined as the sales growth from new product lines. Intensive margin is defined as the sales growth from existing product lines.

Table 3: Effect of DRT on Product Scope

| | *Log(Product scope)* | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| DRT | 0.022** | 0.022*** | 0.024*** | 0.021*** |
| | (0.008) | (0.007) | (0.007) | (0.007) |
| Observations | 33859 | 33859 | 33746 | 24514 |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | No | No | No |
| Initial product scope quartiles × Year FE | No | Yes | Yes | Yes |
| Industry×Year FE | No | No | Yes | Yes |
| State level time trend | Yes | Yes | Yes | Yes |

This table presents the estimates of the variants of regression $y_{ijst} = \alpha_0 + \beta_1 DRT_{st} + \alpha_i + \alpha_{jt} + \epsilon_{ijst}$, where, $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. The dependent variable is (log of) product scope. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$ and $\alpha_{jt}$ denote the firm and industry-year fixed effects. $t_s$ denote the state-linear trend. The coefficient of interest is $\beta_1$. Columns 1-3 use the full sample from 1991-2004 while column 4 restricts the sample to 1991-2001. Standard errors, reported in parentheses, are clustered at state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 4: Robustness Checks: Effect of DRT on Product Scope

| | Coefficients | Observations |
|---|---|---|
| (1) Two-way clustered SE (State and Industry) | 0.024*** | 33746 |
| | (0.007) | |
| (2) Time varying firm controls | 0.025*** | 33684 |
| | (0.006) | |
| (3) Initial tangible assets quartiles × time trend | 0.020*** | 16895 |
| | (0.006) | |
| (4) Initial sales quartiles × time trend | 0.021*** | 16912 |
| | (0.006) | |
| (5) Initial TFP quartiles × time trend | 0.025*** | 13669 |
| | (0.006) | |
| (6) Initial profitability quartiles × time trend | 0.022*** | 16912 |
| | (0.006) | |
| (7) Initial R&D dummy × time trend | 0.021*** | 16912 |
| | (0.006) | |
| (8) All controls (specifications 1-7) | 0.027*** | 13663 |
| | (0.007) | |
| (9) Balanced panel | 0.025** | 7140 |
| | (0.012) | |

Each row reports the coefficient on *DRT* from estimating variants of the following specification, $y_{ijst} = \alpha_0 + \beta_1 DRT_{st} + \alpha_i + \alpha_{jt} + \epsilon_{ijst}$. The dependent variable is (log of) product scope. Specification 1 includes two way clustered standard errors at the state and industry level. Specification 2 includes the firm level asset tangibility, sales, ROA, and age as control variables. Specification 3-7 include interaction of quartiles of pre-reform (average of 1990-92) tangible assets, sales, TFP, ROA, and R&D dummy with a linear time trend. Specification 8 includes all the controls present in specification 1-7 in one regression. Specification 9 is estimated with a balanced panel. All the regressions are from 1991 to 2004. Standard errors, reported in parentheses, are clustered at state level except in specification 1. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 5: DRT and Product Scope: Heterogeneity based on Tangible Assets

| | *Log(Product scope)* | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| DRT | -0.050 | | -0.058 | | 0.009 | | 0.004 | |
| | (0.032) | | (0.037) | | (0.009) | | (0.009) | |
| DRT × Tangib | 0.016** | 0.016** | 0.017** | 0.018** | | | | |
| | (0.006) | (0.006) | (0.007) | (0.007) | | | | |
| DRT × HIGH TANG | | | | | 0.052*** | 0.053*** | 0.071*** | 0.071*** |
| | | | | | (0.015) | (0.015) | (0.018) | (0.018) |
| Observations | 10903 | 10869 | 10903 | 10869 | 10903 | 10869 | 10903 | 10869 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial product scope quartiles × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State level time trend | Yes | No | Yes | No | Yes | No | Yes | No |
| State × Year FE | No | Yes | No | Yes | No | Yes | No | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| SARFAESI × Tangib | No | No | Yes | Yes | No | No | No | No |
| SARFAESI × HIGH TANG | No | No | No | No | No | No | Yes | Yes |

This table reports the results from estimating variants of the regressions, $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times \text{Tangib}_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$ in columns 1-4, and $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times \text{HIGH TANG}_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$ in columns 5-8. $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. The dependent variable is (log of) product scope. Tangib is a continuous measure of pre-reform (average of 1990-92) tangible assets of a firm while HIGH TANG is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution and 0 otherwise. The measure of tangible assets is Net Property, Plant and Equipment (PPE), deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects. All the regressions are from 1991 to 2004. Standard errors, reported in parentheses, are clustered at state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 6: Robustness Checks: Heterogeneity based on Tangible Assets

| | Coefficients | Observations |
|---|---|---|
| (1) Delicense dummy × HIGH TANG | 0.049*** | 10227 |
| | (0.016) | |
| (2) FDI dummy × HIGH TANG | 0.039** | 10227 |
| | (0.018) | |
| (3) Output tariff × HIGH TANG; Input tariff× HIGH TANG | 0.025* | 10227 |
| | (0.014) | |
| (4) State × Industry × Year FE | 0.056** | 8095 |
| | (0.019) | |
| (5) Two-way clustered SE (State and Industry) | 0.052*** | 10869 |
| | (0.013) | |
| (6) Time varying firm controls | 0.045*** | 10865 |
| | (0.015) | |
| (7) Initial tangible assets quartiles × time trend | 0.051** | 10869 |
| | (0.018) | |
| (8) Initial sales quartiles × time trend | 0.038** | 10869 |
| | (0.018) | |
| (9) Initial TFP quartiles × time trend | 0.050*** | 10607 |
| | (0.014) | |
| (10) Initial ROA quartiles × time trend | 0.053*** | 10869 |
| | (0.014) | |
| (11) Initial R & D dummy × time trend | 0.050*** | 10869 |
| | (0.016) | |
| (12) Sales Quartile4 × DRT | 0.061** | 10869 |
| | (0.023) | |
| (13) Cash Quartile4 × DRT | 0.080*** | 10869 |
| | (0.017) | |
| (14) ROA Quartile4 × DRT | 0.052*** | 10869 |
| | (0.015) | |
| (15) Age Quartile4 × DRT | 0.055*** | 10869 |
| | (0.016) | |
| (16) All controls (specifications 1-15) | 0.090*** | 7242 |
| | (0.020) | |
| (17) Balanced panel | 0.028** | 6356 |
| | (0.012) | |
| (18) Alternative measure of Tangibility | 0.054* | 10869 |
| | (0.026) | |

Each row reports the coefficient on $DRT_{st} \times HIGH\ TANG_i$ from estimating variants of the following specification, $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$. The dependent variable is (log of) product scope. Specification 1-3 include the interaction of HIGH TANG with Delicense dummy in specification 1, FDI dummy in specification 2 and output tariff and input tariff in specification 3. Specification 4 includes State-industry-year fixed effects. Specification 5 includes two-way clustered standard errors at the state and industry level. Specification 6 includes the asset tangibility, sales, ROA, and age as control variables. Specification 7-11 include interaction of quartiles of pre-reform (average of 1990-92) tangible assets, sales, TFP, ROA, and R&D dummy with linear time trend. Specifications 12-15 include the interaction of DRT with $4^{th}$ quartile of pre-reform (average of 1990-92) sales, cash and bank balance, profitability, and age, respectively. Specification 16 includes all the controls present in specifications 1-15 in one regression. Specification 17 is estimated with a balanced panel of firms. Specification 18 uses an alternative tangibility measure defined as tangible assets by total assets. All the regressions are from 1991 to 2004. All the variables are defined in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 7: Entry and Exit of Products

| | *Entry* | | *Exit* | | *Entry rate* | | *Entry in New Industry* | | *Entry in Same Industry* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| DRT | 0.007 | | 0.013 | | -0.009 | | 0.018** | | -0.011 | |
| | (0.009) | | (0.01) | | (0.009) | | (0.008) | | (0.009) | |
| DRT × HIGH TANG | 0.044*** | 0.051*** | 0.019 | 0.022 | 0.019** | 0.024** | 0.026** | 0.030*** | 0.013** | 0.015** |
| | (0.013) | (0.013) | (0.015) | (0.015) | (0.008) | (0.009) | (0.011) | (0.011) | (0.005) | (0.005) |
| Observations | 10643 | 10608 | 10238 | 10203 | 10643 | 10608 | 10903 | 10869 | 10903 | 10869 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| State level time trend | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4-digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution. The measure of tangible assets is Net PPE, deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 8: DRTs and Firm Borrowing

| | $\frac{\textit{Long-term debt}}{\textit{Total Assets}}$ | | $\frac{\textit{Total Debt}}{\textit{Total Assets}}$ | | *Log(Total Debt)* | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DRT | -0.013** | | -0.015** | | -0.067*** | |
| | (0.005) | | (0.006) | | (0.021) | |
| DRT × HIGH TANG | 0.023** | 0.021* | 0.034*** | 0.032** | 0.171** | 0.165** |
| | (0.011) | (0.011) | (0.012) | (0.012) | (0.073) | (0.074) |
| Observations | 10005 | 9967 | 10076 | 10038 | 10076 | 10038 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Time varying firm controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial debt quartiles × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes | No | Yes |
| State level time trend | Yes | No | Yes | No | Yes | No |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression, $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4-digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution . The measure of tangible assets is Net PPE, deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects, respectively. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 9: DRTs and Product Scope: The role of Financial constraints

| | *RZ index* | | *Firm age* | |
|---|---|---|---|---|
| | *Below median* | *Above median* | *Below median* | *Above median* |
| | (1) | (2) | (3) | (4) |
| DRT × HIGH TANG | 0.023 | 0.107*** | 0.132*** | 0.037* |
| | (0.033) | (0.017) | (0.034) | (0.020) |
| Observations | 5952 | 4298 | 5218 | 5287 |
| Firm FE | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes |
| State×Year FE | Yes | Yes | Yes | Yes |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression, $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. $HIGH\ TANG_i$ an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution . The measure of tangible assets is Net PPE deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects, respectively. In columns 1-2, we classify firms into sub samples based on RZ index. Column 1 includes the firms that belongs to the industries with below median value of RZ index and column 2 includes the firms that belongs to the industries with above median value of RZ index. Similarly, in columns 3-4, we split the sample into firms with below median age and firms with above median age. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 10: DRT and Investments in Plant, Property, and Equipment

| | *Total investment* | | *Plant & machinery investment* | | *Land & building investment* | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *A. Unscaled variables* | | | | | | |
| DRT | -0.115** | | -0.101* | | -0.121*** | |
| | (0.046) | | (0.050) | | (0.038) | |
| DRT × HIGH TANG | 0.460*** | 0.448*** | 0.429*** | 0.411*** | 0.419*** | 0.420*** |
| | (0.102) | (0.093) | (0.078) | (0.076) | (0.144) | (0.139) |
| Observations | 10903 | 10869 | 10903 | 10869 | 10903 | 10869 |
| *B. Scaled variables* | | | | | | |
| DRT | -0.036*** | | -0.026*** | | -0.005* | |
| | (0.005) | | (0.006) | | (0.002) | |
| DRT × HIGH TANG | 0.108*** | 0.105*** | 0.079*** | 0.077*** | 0.016*** | 0.016*** |
| | (0.017) | (0.016) | (0.016) | (0.016) | (0.002) | (0.002) |
| Observations | 10899 | 10865 | 10899 | 10865 | 10899 | 10865 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes | No | Yes |
| State level time trend | Yes | No | Yes | No | Yes | No |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. In panel A, the outcome variables are (log of) total investment (columns 1-2), plant and machinery investment (columns 3-4), and land and building investment (columns 5-6). In panel B, all the dependent variables are scaled with capital stock (Net PPE). $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution . The measure of tangible assets is Net PPE deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects, respectively. DV denotes the outcome variable. All the regressions are from 1991 to 2004.The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 11: DRTs and Selling and Distribution expenditure

| | *Selling & dist. expenses* | | *Advertising & marketing expenses* | | *Distribution expenses* | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *A. Unscaled variables* | | | | | | |
| DRT | -0.093*** | | -0.135*** | | -0.035 | |
| | (0.029) | | (0.033) | | (0.042) | |
| DRT × HIGH TANG | 0.439*** | 0.437*** | 0.410*** | 0.404*** | 0.496*** | 0.493*** |
| | (0.056) | (0.054) | (0.069) | (0.069) | (0.067) | (0.066) |
| Observations | 10903 | 10869 | 10903 | 10869 | 10903 | 10869 |
| *B. Scaled variables* | | | | | | |
| DRT | -0.003*** | | -0.002*** | | -0.000 | |
| | (0.0007) | | (0.0006) | | (0.0006) | |
| DRT × HIGH TANG | 0.007*** | 0.007*** | 0.004*** | 0.004*** | 0.002*** | 0.002*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.0007) | (0.0007) |
| Observations | 10903 | 10869 | 10903 | 10869 | 10903 | 10869 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes | No | Yes |
| State level time trend | Yes | No | Yes | No | Yes | No |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. In panel A, the outcome variables are (log of) selling & distribution expenses (columns 1-2), advertising & marketing expenses (columns 3-4), and distribution expenses (columns 5-6). In panel B, all the dependent variables are scaled with total expenses. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution. The measure of tangible assets is Net PPE, deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects, respectively. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 12: Research and Development Expenditure

| | *Total R&D* | | *Current R&D* | | *Capital R&D* | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *A. Unscaled variables* | | | | | | |
| DRT | -0.119*** | | -0.133*** | | -0.007 | |
| | (0.026) | | (0.022) | | (0.025) | |
| DRT × HIGH TANG | 0.350*** | 0.352*** | 0.341*** | 0.345*** | 0.159** | 0.160** |
| | (0.072) | (0.073) | (0.066) | (0.068) | (0.075) | (0.076) |
| Observations | 10903 | 10869 | 10903 | 10869 | 10903 | 10869 |
| *B. Scaled variables* | | | | | | |
| DRT | -0.0001 | | -0.0001 | | -0.000 | |
| | (0.0001) | | (0.0001) | | (0.000) | |
| DRT × HIGH TANG | 0.0004 | 0.0004 | 0.0003 | 0.0003 | 0.0001 | 0.0001 |
| | (0.0003) | (0.0003) | (0.0002) | (0.0002) | (0.0001) | (0.0001) |
| Observations | 10903 | 10869 | 10903 | 10869 | 10903 | 10869 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes | No | Yes |
| State level time trend | Yes | No | Yes | No | Yes | No |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. In panel A, the outcome variables are (log of) Total R&D (columns 1-2), Current R&D (columns 3-4), and Capital R&D (columns 5-6). In panel B, all the dependent variables are scaled with total expenses. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution. The measure of tangible assets is Net PPE, deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects, respectively. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 13: DRTs and Sales

| | *Sales* | | *Entrant sales* | | *Incumbent sales* | | *Sales share of new products* | | *Sales per Product* | |
|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| DRT | -0.058** | | -0.013 | | -0.053** | | -0.003 | | -0.072*** | |
| | (0.026) | | (0.039) | | (0.021) | | (0.002) | | (0.025) | |
| DRT × HIGH TANG | 0.194*** | 0.199*** | 0.200*** | 0.222*** | 0.193*** | 0.188*** | 0.012*** | 0.013*** | 0.176*** | 0.180*** |
| | (0.055) | (0.057) | (0.052) | (0.053) | (0.042) | (0.043) | (0.004) | (0.004) | (0.041) | (0.042) |
| Observations | 10903 | 10869 | 10903 | 10869 | 10643 | 10608 | 10890 | 10856 | 10903 | 10869 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes |
| State level time trend | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4-digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution . The measure of tangible assets is Net PPE, deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects, respectively. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 14: Profitability

| | $ROA = \frac{EBIT}{Assets}$ | | $Operating\ margin = \frac{EBITDA}{Sales}$ | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| DRT | -0.006* | | -0.018*** | |
| | (0.004) | | (0.006) | |
| DRT × HIGH TANG | 0.023*** | 0.024*** | 0.037*** | 0.037*** |
| | (0.007) | (0.007) | (0.008) | (0.008) |
| Observations | 10903 | 10869 | 10903 | 10869 |
| Firm FE | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes |
| State level time trend | Yes | No | Yes | No |
| SARFAESI×HIGH TANG | Yes | Yes | Yes | Yes |

This table reports results from estimating variants of the regression $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$, where, $i$ denotes firm, $j$ denotes the 4-digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution . The measure of tangible assets is Net PPE, deflated by capital deflator. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$, and $\alpha_{jt}$ denote the firm, state-year, and industry-year fixed effects, respectively. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 15: DRTs and Misallocation

| | *Within Firm* | | *Between Firm* | | | |
|---|---|---|---|---|---|---|
| | *Log(TFP)* | | *Log(Capital Stock)* | | *log(MRPK)* | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| DRT | 0.004 | | -0.008 | | 0.006 | |
| | (0.003) | | (0.025) | | (0.030) | |
| DRT × HIGH TANG | 0.019** | 0.020** | | | | |
| | (0.007) | (0.008) | | | | |
| DRT × HIGH MRPK | | | -0.077** | -0.081** | 0.058 | 0.061 |
| | | | (0.037) | (0.034) | (0.043) | (0.042) |
| Observations | 10263 | 10228 | 10899 | 10865 | 10899 | 10865 |
| Firm FE | Yes | Yes | Yes | Yes | Yes | Yes |
| Initial DV quartiles × Year FE | Yes | Yes | Yes | Yes | No | No |
| HIGH MRPK×Year FE | No | No | Yes | Yes | Yes | Yes |
| Industry×Year FE | Yes | Yes | Yes | Yes | Yes | Yes |
| State×Year FE | No | Yes | No | Yes | No | Yes |
| State level time linear trend | Yes | No | Yes | No | Yes | No |

This table reports results from estimating the variants of the regression $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ TANG_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$ in columns 1 and 2, and $y_{isjt} = \alpha_0 + \beta_1 DRT_{st} \times HIGH\ MRPK_i + \alpha_i + \alpha_{st} + \alpha_{jt} + \epsilon_{isjt}$ in columns 3-6, where, $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution. The measure of tangible assets is Net PPE deflated by capital deflator. $HIGH\ MRPK_i$ an indicator variable equal to 1 if the firm belongs to the above median of pre-reform (average of 1990-92) MRPK distribution in its industry . The measure of MRPK is Total sales divided by capital stock. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, $\alpha_{st}$ and $\alpha_{jt}$ denote the firm, state-year and industry-year fixed effects, respectively. DV denotes the outcome variable. All the regressions are from 1991 to 2004. The definitions of all variables are reported in the Appendix table A.5. Standard errors, reported in parentheses, are clustered at state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table 16: DRTs and Aggregate TFP

| | *Log(TFP)* | |
|---|---|---|
| | (1) | (2) |
| DRT | 0.060*** | 0.066*** |
| | (0.019) | (0.023) |
| Observations | 4647 | 4543 |
| Initial DV quartiles× Year FE | Yes | Yes |
| Industry×Year FE | Yes | Yes |
| State level time trend | Yes | Yes |

This table reports the results from estimating the variants of regression $y_{jst} = \alpha_0 + \beta_1 DRT_{st} + \alpha_{jt} + \epsilon_{jst}$, where, $j$ denotes the 4-digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. The outcome variable is Log(TFP) weighted with sales in column 1 and Log(TFP) weighted with value added in column 2. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_{ji}$ denotes the industry year fixed effects. DV denotes the outcome variable. All the regressions are from 1991 to 2004. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

# Appendix A

Table A.1: Dates of DRT Establishment

| City of DRT | Date of establishment | Jurisdiction |
|---|---|---|
| Kolkata | April 27, 1994 | West Bengal, Andaman and Nicobar Islands |
| Delhi | July 5, 1994 | Delhi |
| Jaipur | August 30, 1994 | Rajasthan, Himachal Pradesh, Haryana, Punjab, Chandigarh |
| Bangalore | November 30, 1994 | Karnataka, Andhra Pradesh |
| Ahmedabad | December 21, 1994 | Gujarat, Dadra & Nagar Haveli, Daman & Diu |
| Chennai[a] | November 4, 1996 | Tamil Nadu, Kerala, Ponidicherry |
| Guwahati[b] | January 7, 1997 | Assam, Meghalaya, Manipur, Mizoram, Tripura, Arunachal Pradesh, Nagaland |
| Patna | January 24, 1997 | Bihar, Orissa |
| Jabalpur | April 7, 1998 | Madhya Pradesh, Uttar pradesh |
| Mumbai | July 16, 1999 | Maharashtra, Goa |

[a] The Chennai's DRT jurisdiction was expanded to include Lakshadweep on December 5, 1997
[b] The Guwahati's DRT jurisdiction was expanded to include Sikkim on December 5, 1997

Table A.2: Summary Statistics

| | Full sample | | | Firms observed in the pre-reform years (1990-92) | | |
|---|---|---|---|---|---|---|
| | N | Mean | SD | N | Mean | SD |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| *Log(Assets)* | 34396 | 6.05 | 1.49 | 11163 | 6.95 | 1.47 |
| *Total Assets (in million INR)* | 34396 | 1,415 | 3,251 | 11163 | 3,271 | 7,253 |
| *Log(Sales)* | 34396 | 5.84 | 1.75 | 11163 | 6.85 | 1.54 |
| *Product scope* | 34396 | 2.19 | 1.88 | 11163 | 2.90 | 2.52 |
| *ROA* | 34392 | 0.07 | 0.12 | 11163 | 0.09 | 0.11 |
| *Operating margin* | 34392 | 0.09 | 0.24 | 11163 | 0.11 | 0.15 |
| *TFP* | 27922 | 1.50 | 0.34 | 10601 | 1.52 | 0.32 |
| *Leverage* | 33574 | 0.46 | 0.39 | 11004 | 0.45 | 0.35 |
| *Log(Total Debt)* | 33574 | 4.99 | 1.70 | 11004 | 5.86 | 1.64 |
| *Log(Total investment)* | 34396 | 2.16 | 2.07 | 11163 | 3.19 | 2.23 |
| *Log(Plant & machinery investment)* | 34396 | 1.89 | 1.99 | 11163 | 2.89 | 2.21 |
| *Log(Land & building investment)* | 34396 | 1.03 | 1.47 | 11163 | 1.65 | 1.78 |
| *Log(Total R & D)* | 34396 | 0.40 | 0.96 | 11163 | 0.82 | 1.33 |
| *Log(Current R & D)* | 34396 | 0.35 | 0.87 | 11163 | 0.73 | 1.23 |
| *Log(Capital R & D)* | 34396 | 0.14 | 0.56 | 11163 | 0.31 | 0.82 |
| *Log(Selling & dist. expenses)* | 34396 | 2.48 | 1.79 | 11163 | 3.48 | 1.90 |
| *Log(Advertising & marketing expenses)* | 34396 | 1.88 | 1.69 | 11163 | 2.75 | 1.90 |
| *Log(Distribution expenses)* | 34396 | 1.65 | 1.67 | 11163 | 2.47 | 1.97 |

This table reports the summary statistics of all the variables used in the analysis. The sample period is from 1991 to 2004. All the variables are defined in the appendix table A.5.

Table A.3: Summary Statistics by Product Count

| | Product Count | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [1] | | | [2] | | | [3] | | | [≥4] | | |
| | N | Mean | SD | N | Mean | SD | N | Mean | SD | N | Mean | SD |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| *Log(Assets)* | 16480 | 5.60 | 1.34 | 8666 | 6.10 | 1.38 | 4315 | 6.45 | 1.40 | 4935 | 7.09 | 1.59 |
| *Total Assets (in million INR)* | 16480 | 784.81 | 2,066.51 | 8666 | 1,230.41 | 2,653.00 | 4315 | 1,694.76 | 3,152.91 | 4935 | 3,599.45 | 5,667.15 |
| *Log(Sales)* | 16480 | 5.25 | 1.69 | 8666 | 5.97 | 1.57 | 4315 | 6.41 | 1.51 | 4935 | 7.07 | 1.58 |
| *ROA* | 16476 | 0.06 | 0.12 | 8666 | 0.07 | 0.11 | 4315 | 0.08 | 0.11 | 4935 | 0.09 | 0.10 |
| *Operating margin* | 16476 | 0.08 | 0.28 | 8666 | 0.09 | 0.22 | 4315 | 0.10 | 0.18 | 4935 | 0.11 | 0.14 |
| *TFP* | 12312 | 1.49 | 0.36 | 7291 | 1.50 | 0.32 | 3773 | 1.50 | 0.31 | 4546 | 1.53 | 0.33 |
| *Leverage* | 15981 | 0.48 | 0.42 | 8486 | 0.47 | 0.38 | 4245 | 0.44 | 0.33 | 4862 | 0.42 | 0.31 |
| *Log(Total Debt)* | 15981 | 4.55 | 1.59 | 8486 | 5.05 | 1.62 | 4245 | 5.35 | 1.61 | 4862 | 5.98 | 1.76 |
| *Log(Total investment)* | 16480 | 1.70 | 1.81 | 8666 | 2.20 | 2.03 | 4315 | 2.60 | 2.13 | 4935 | 3.22 | 2.36 |
| *Log(Plant & machinery investment)* | 16480 | 1.44 | 1.72 | 8666 | 1.93 | 1.95 | 4315 | 2.31 | 2.08 | 4935 | 2.93 | 2.32 |
| *Log(Land & building investment)* | 16480 | 0.76 | 1.23 | 8666 | 1.04 | 1.45 | 4315 | 1.27 | 1.58 | 4935 | 1.73 | 1.84 |
| *Log(Total R&D)* | 16480 | 0.21 | 0.66 | 8666 | 0.37 | 0.93 | 4315 | 0.60 | 1.15 | 4935 | 0.87 | 1.40 |
| *Log(Current R&D)* | 16480 | 0.18 | 0.57 | 8666 | 0.32 | 0.83 | 4315 | 0.55 | 1.07 | 4935 | 0.78 | 1.30 |
| *Log(Capital R&D)* | 16480 | 0.07 | 0.39 | 8666 | 0.15 | 0.58 | 4315 | 0.21 | 0.66 | 4935 | 0.31 | 0.82 |
| *Log(Selling & dist. expenses)* | 16480 | 1.99 | 1.56 | 8666 | 2.52 | 1.74 | 4315 | 2.91 | 1.75 | 4935 | 3.65 | 1.93 |
| *Log(Advertising & marketing expenses)* | 16480 | 1.45 | 1.44 | 8666 | 1.91 | 1.65 | 4315 | 2.28 | 1.76 | 4935 | 2.91 | 1.93 |
| *Log(Distribution expenses)* | 16480 | 1.25 | 1.41 | 8666 | 1.68 | 1.64 | 4315 | 1.93 | 1.67 | 4935 | 2.66 | 2.01 |

Table A.4: Summary Statistics by Tangibility

| | Tangibility | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Quartile 1 | | | Quartile 2 | | | Quartile 3 | | | Quartile 4 | | |
| | N | Mean | SD | N | Mean | SD | N | Mean | SD | N | Mean | SD |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| *Log(Assets)* | 2481 | 5.50 | 0.96 | 2672 | 6.28 | 0.80 | 2883 | 7.11 | 0.91 | 3127 | 8.52 | 1.07 |
| *Total Assets (in million INR)* | 2481 | 421.64 | 701.89 | 2672 | 745.42 | 759.41 | 2883 | 1,842.72 | 2,121.58 | 3127 | 9,005.79 | 11,667.87 |
| *Log(Sales)* | 2481 | 5.45 | 1.17 | 2672 | 6.21 | 1.00 | 2883 | 7.04 | 1.06 | 3127 | 8.33 | 1.15 |
| *Product scope* | 2481 | 2.15 | 1.61 | 2672 | 2.24 | 1.46 | 2883 | 2.88 | 1.99 | 3127 | 4.08 | 3.59 |
| *ROA* | 2481 | 0.08 | 0.12 | 2672 | 0.08 | 0.11 | 2883 | 0.09 | 0.10 | 3127 | 0.10 | 0.10 |
| *Operating margin* | 2481 | 0.09 | 0.18 | 2672 | 0.10 | 0.16 | 2883 | 0.11 | 0.15 | 3127 | 0.15 | 0.13 |
| *TFP* | 2337 | 1.47 | 0.31 | 2532 | 1.48 | 0.29 | 2760 | 1.49 | 0.30 | 2972 | 1.61 | 0.37 |
| *Leverage* | 2428 | 0.46 | 0.36 | 2646 | 0.50 | 0.41 | 2841 | 0.45 | 0.32 | 3089 | 0.41 | 0.31 |
| *Log(Total Debt)* | 2428 | 4.45 | 1.24 | 2646 | 5.29 | 1.14 | 2841 | 6.04 | 1.17 | 3089 | 7.29 | 1.46 |
| *Log(Total investment)* | 2481 | 1.92 | 1.61 | 2672 | 2.61 | 1.77 | 2883 | 3.29 | 1.99 | 3127 | 4.61 | 2.41 |
| *Log(Plant & machinery investment)* | 2481 | 1.65 | 1.57 | 2672 | 2.33 | 1.74 | 2883 | 2.96 | 1.98 | 3127 | 4.28 | 2.40 |
| *Log(Land & building investment)* | 2481 | 0.75 | 1.09 | 2672 | 1.15 | 1.34 | 2883 | 1.66 | 1.63 | 3127 | 2.80 | 2.06 |
| *Log(Total R&D)* | 2481 | 0.23 | 0.57 | 2672 | 0.37 | 0.75 | 2883 | 0.83 | 1.18 | 3127 | 1.68 | 1.76 |
| *Log(Current R&D)* | 2481 | 0.19 | 0.49 | 2672 | 0.30 | 0.62 | 2883 | 0.73 | 1.08 | 3127 | 1.53 | 1.65 |
| *Log(Capital R&D)* | 2481 | 0.07 | 0.31 | 2672 | 0.13 | 0.48 | 2883 | 0.27 | 0.71 | 3127 | 0.69 | 1.21 |
| *Log(Selling & dist. expenses)* | 2481 | 1.89 | 1.21 | 2672 | 2.74 | 1.30 | 2883 | 3.67 | 1.48 | 3127 | 5.19 | 1.68 |
| *Log(Advertising & marketing expenses)* | 2481 | 1.32 | 1.13 | 2672 | 2.02 | 1.34 | 2883 | 2.90 | 1.61 | 3127 | 4.36 | 1.80 |
| *Log(Distribution expenses)* | 2481 | 1.15 | 1.13 | 2672 | 1.78 | 1.40 | 2883 | 2.57 | 1.66 | 3127 | 4.00 | 2.12 |

Table A.5: Variable Description

| Variable name | Description |
|---|---|
| *Product scope* | Number of products produced by a firm in an year |
| *Tangible assets* | Net plant, property and equipment deflated by capital deflator. (in million INR) |
| *DRT* | Indicator variable equal to 1 if the state has received DRT by year $t$ |
| *Entry* | Dummy variable which equals 1 if a firm introduces a product line in a given year and 0 otherwise |
| *Exit* | Dummy variable which equals 1 if a firm drops a product line in a given year and 0 otherwise |
| *Sales* | Total sales deflated using output deflator (in million INR) |
| *TFP* | Total factor productivity estimated using Ackerberg et al. (2015) methodology. |
| *Leverage* | Total debt divided by total assets, deflated using capital deflator. (in million INR) |
| *Total Debt* | Total borrowings (Prowess variable), deflated using capital deflator. (in million INR) |
| *Total investment* | Max(0, Current stock of PPE minus lagged stock of PPE), deflated using capital deflator. (in million INR) |
| *Plant & machinery investment* | Max(0, Current stock of plant, machinery and equipment minus lagged stock of plant, machinery and equipment), deflated using capital deflator. (in million INR) |
| *Land & building investment* | Max(0, Current stock of land & building minus lagged stock of land & building), deflated using capital deflator. (in million INR) |
| *Capital stock* | Stock of PPE, deflated using capital deflator. (in million INR) |
| *R&D* | Total research and development expenditure (sum of Capital R&D and current R&D), deflated using WPI. (in million INR) |
| *Capital R&D* | R&D expenditure on capital account, deflated using WPI. (in million INR) |
| *Current R&D* | R&D expenditure on current account, deflated using WPI. (in million INR) |
| *Selling & dist. expenses* | Sum of Advertising & marketing expenses and distribution expenses, deflated by WPI. (in million INR) |
| *Advertising & marketing expenses* | Expenditure on marketing and advertisements, deflated by WPI. (in million INR) |
| *Distribution expenses* | Expenditure incurred on product delivery, deflated by WPI. (in units of Rs. 1 million) |
| *EBIT* | Profit before interest expense and taxes, deflated using WPI. (in units of Rs. 1 million) |
| *EBITDA* | Profit before interest expense, taxes, depreciation, and amortisation deflated using WPI. (in units of Rs. 1 million) |

Table A.6: Pre-trends

| | Log(Product scope) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Early DRT × Trend | 0.005<br>(0.006) | | | |
| DRT years × Trend | | 0.0002<br>(0.001) | | |
| Early DRT × HIGH TANG × Trend | | | 0.008<br>(0.014) | |
| DRT years × HIGH TANG × Trend | | | | 0.002<br>(0.002) |
| Observations | 5103 | 5103 | 5091 | 5091 |
| Firm FE | Yes | Yes | Yes | Yes |
| Initial product scope quartiles × Year FE | Yes | Yes | Yes | Yes |
| State × Year FE | No | No | Yes | Yes |
| Industry × Year FE | Yes | Yes | Yes | Yes |

The table reports results from estimating the equation 2 in column 1, equation 3 in column 2, equation 7 in column 3, and equation 8 in column 4. Early DRT is an indicator variable which equals 1 if state received DRT in 1994 and zero otherwise. DRT years is the number of years the state had a DRT between 1994 and 2004. Trend is the linear time trend variable. $HIGH\ TANG_i$ is an indicator variable equal to 1 if the firm belongs to the top quartile of pre-reform (average of 1990-92) tangible assets distribution . The measure of tangible assets is Net PPE, deflated by capital deflator. All the regressions are from 1988 to 1993. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table A.7: Effect of DRT on Product Scope: Firms observed in pre-reform years (1990-92)

| | *Log(Product scope)* | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| DRT | 0.022** | 0.021** | 0.022*** | 0.021*** |
| | (0.009) | (0.008) | (0.007) | (0.006) |
| Observations | 11163 | 11163 | 10903 | 8999 |
| Firm FE | Yes | Yes | Yes | Yes |
| Year FE | Yes | No | No | No |
| Initial product scope quartiles × Year FE | No | Yes | Yes | Yes |
| Industry×Year FE | No | No | Yes | Yes |
| State level time trend | Yes | Yes | Yes | Yes |

Sample includes the firms which were observed in the pre-reform years (1990-92). This table presents the estimates of the variants of regression $y_{ijst} = \alpha_0 + \beta_1 DRT_{st} + \alpha_i + \alpha_t + \epsilon_{ijst}$, where, $i$ denotes firm, $j$ denotes the 4 digit NIC2004 industry, $s$ denotes state where the firm is registered, and $t$ denotes the year of observation. The dependent variable is (log of) product scope. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$ and $\alpha_t$ denote the firm and year fixed effects. All the regressions are from 1991 to 2004 while column 4 restricts the sample to 1991-2001. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.

Table A.8: DRT Reform and Product Scope: Effects by Tangibility Quartiles

| | *Log(Product scope)* |
|---|---|
| | (1) |
| DRT | -0.006 |
| | (0.031) |
| DRT × HIGH $TANG_2$ | 0.023 |
| | (0.035) |
| DRT × HIGH $TANG_3$ | 0.009 |
| | (0.043) |
| DRT × HIGH $TANG_4$ | 0.082** |
| | (0.036) |
| DRT effect on HIGH $TANG_2$ | 0.016 |
| | (0.013) |
| DRT effect on HIGH $TANG_3$ | 0.003 |
| | (0.018) |
| DRT effect on HIGH $TANG_4$ | 0.075*** |
| | (0.012) |
| Observations | 10930 |
| Firm FE | Yes |
| Industry × Year FE | Yes |
| Initial product scope quatiles × Year FE | Yes |
| State level time trend | Yes |
| SARFAESI × PPE Quartiles | Yes |

This table presents the estimates of the regression $y_{isjt} = \alpha_0 + \sum_{k=2}^{k=4} \beta_k DRT_{st} \times HIGH\ TANG_{ik} + \alpha_i + \alpha_{jt} + \epsilon_{isjt}$. The dependent variable is (log of) product scope. The measure of tangible assets is Net PPE deflated by capital deflator. $HIGH\ TANG_{ik}$ is an indicator variable equal to 1 if the firm belongs to the $k^{th}$ quartile of the pre-reform (average of 1990-92) tangible assets distribution. $DRT_{st}$ is an indicator variable equal to 1 if the state has received DRT by year $t$ and 0 otherwise. $\alpha_i$, and $\alpha_{jt}$ denote the firm, and industry-year fixed effects, respectively. All the regressions are from 1991 to 2004. Standard errors, reported in parentheses, are clustered at the state level. *, **, and *** denote significance at 10%, 5%, and 1%, respectively.