Threat of Entry: Trade Credit and the Defense of Market Power

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Abstract

Do incumbent supplier firms facing increased threat of entry by competitors adjust trade credit to respond to such threats? Threatened incumbent supplier firms may extend more trade credit, *ex-ante*, to defend their market power, or they may reduce trade credit as enforcement of such informal credit contracts is expected to become more difficult with the expected decline in market power. I test these contrasting predictions by exploiting plausibly exogenous, staggered removals of product level entry barriers for Indian manufacturing firms, and find that an average incumbent supplier firm extends 10% more trade credit with increased threat of entry, supporting the first hypothesis. My results are particularly strong for firms manufacturing differentiated products, where reduction in price mark-ups may not be an effective strategy, thereby bringing into focus the role of trade credit as a strategic tool to defend market power.

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Introduction

Inter-firm credit, also known as trade credit, finances around 90% of the world merchandise trade amounting to $14 trillion (William (2008)). In the United States, for example, 80% of manufacturing firms offer their product on trade credit.[1] Recent empirical works have focused on understanding the role of trade credit supply in corporate bankruptcies, and its effect on industry structure.[2] However, the effect of industry structure on trade credit supply – especially its role in the context of defending product market power – has received little attention in the literature.

One very important question in this context concerns whether firms change their trade credit policy, *ex-ante*, when faced with a credible threat of increased competition. The theory presents two clear and contrasting hypotheses here: on the one hand, incumbent supplier firms with deep pockets may choose to extend trade credit at longer payment terms to defend their market share. The longer credit terms increase barriers to entry for potential competitors with shallow pockets (*defending market share hypothesis*). On the other hand, if competition does increase eventually, the incumbent supplier firm loses its market power over the customers. In addition, if customers find it easy to switch suppliers, not only does the bargaining power of incumbent supplier firms go down, but their ability to enforce payment by threatening to cut off the supply of future credit or goods also goes down (*enforcement hypothesis*). This can discourage incumbent suppliers facing entry threats to extend more trade credit (Petersen and Rajan (1997)).

However, empirically it is challenging to answer which of these views find support in the data. The main challenge lies in cleanly identifying firms' choice of *ex-ante* strategic actions in

[1] See Tirole (2010). Antràs and Foley (2015) also analyze the sales of a large US-based producer of frozen and refrigerated food products, exporting its production to 140 countries. They find that accounts receivable (trade credit granted) support 39.2 percent of total sales.

[2] Jacobson and von Schedvin (2015), using Swedish data, find that trade debtor (customers) failures are associated with substantially enhanced bankruptcy risks for the trade creditors (suppliers). Barrot (2015) finds, in French trucking industry, long payment terms impose substantial *liquidity risk* on financially weaker suppliers, and force them into financial distress more often than they would if they were paid earlier.

response to a *threat of entry* as distinct from actual entry. First, theoretically, firms' trade credit policies and product market strategies are jointly determined in equilibrium, therefore, clean identification makes it essential to examine situations where firms receive an *exogenous shock* in the product market. Second, the shock has to ideally affect the *threat of entry*, as opposed to *actual entry* by a competing firm. This is important because *actual entry* by a competing firm is already an outcome of the trade credit strategies adopted by incumbent supplier firms. Moreover, the purpose of changing corporate policies such as trade credit policy after a rival has already entered could be very different from the incentives to change policy before entry. For example, whether or not trade credit can act as a pre-emptive tool to deter entry cannot be examined if the rival firm has already entered, or is already producing the competing product (in the case of tariff cuts).

I attempt to solve the identification challenge by exploiting the staggered removal of product-level entry barriers for Indian manufacturing firms as *plausibly* exogenous shocks to the threat of entry, which are unaffected by existing trade credit policies of incumbent supplier firms. I find that an average incumbent supplier firm extends 10% more trade credit with increased threat of entry, supporting the first hypothesis.

The institutional setting I examine concerns the removal of manufacturing restrictions for a list of products by the Government of India (GoI), by which the right to manufacture these products was reserved for small-scale or export oriented large firms. Following India's 1991 trade liberalization, the GoI appointed a special committee to reconsider the list of reserved items in 1995 (MSME (2007)). Based on recommendations from this committee, this reservation policy was dismantled in a *staggered* manner for about 1,024 products starting in 1997 (also known as dereservation), and resulted in the near complete removal of reservations by 2008 (Figure 1).[3] For example, 15 products were dereserved in 1997 which included ice-cream, poultry feed, hair dryers, ash tray etc.

[3] Appendix A, table A1 shows sample notification about list of items dereserved in 1997, while table A2 provides information on timing of dereservation by industry-year.

The use of this particular institutional setting confers the following advantages. Firstly, the product dereservation was of quasi-random nature. A reading of government documents, reports and media does not give clear-cut reasons as to why certain products were initially reserved or dereserved at certain times, and even policy-makers in India at this time recognize the quasi-random nature of the product list subject to dereservation in various years (Hussain (1997), Tewari and Wilde (2014) and Martin, Nataraj, and Harrison (2015)). In my own analysis, I estimate a hazard model for timing of dereservation, and do not find evidence in favor of existing trade credit policies of incumbent supplier firms predicting the event timing. Secondly, the removal of entry barriers does seem to have had real effects in terms of increased competition which took effect in a slow manner.[4] I find in a difference-in-difference setting that market-concentration index (HHI) declined significantly within few years of dereservation in the affected industries. This is consistent with the notion that it takes time for new entrants to install plant or expand capacity to manufacture dereserved products. This unique setting allows me to distinguish firms' ex-ante strategies when facing threat of entry. I specifically focus on a short window around dereservation to identify firms' pre-emptive action to increased *entry threat*.

Using this unique regulation change affecting Indian manufacturing firms, I implement a difference-in-differences (DID) approach to estimate the effect of dereservation on provision of trade credit. Specifically, I examine whether incumbent firms, *ex-ante*, extend more credit to their customers when they face increased entry threat by new competitors. I find that an average incumbent supplier firm extends around 10% more trade credit (measured as ratio of accounts receivable/sales) surrounding removal of entry barriers, as compared to their counterparts who do not face any such change in entry barriers. For an average incumbent supplier firm with trade credit payment terms of about two months, this translates to an increase in payment terms by

[4] Survey of small firms by Federation of Indian Chambers of Commerce and Industry (FICCI) indicates that small scale firms see entry of multinational corporations (MNCs) and dereservation of the items reserved for them as a threat to their market share (http://www.business-standard.com/article/specials/ssis-feel-threatened-by-mncs-dereservation-ficci-survey-197122901002_1.html).

around 8-10 days. In addition, in pre-dereservation period, I find no differences in the ratio of accounts receivable/sales (proxy for trade credit terms) between firms whose products were dereserved and a group of control firms whose products were never reserved/dereserved. These results support the *defending market share hypothesis* i.e. incumbent supplier firms choose to extend trade credit at longer terms in anticipation of increased competition. This finding is robust to inclusion of industry-year fixed effects, different sample periods, placebo samples and alternative definitions of treatment and control firms.

I then question the choice of extending trade credit instead of price discounts as a pre-emptive strategic tool. Starting from Dixit (1979), literature has emphasized the use of price as a strategic tool to deter entry. Schmalensee (1978) recognized that firms can compete on non-price aspects such as *product differentiation*.[5] Ultimately, choice of trade credit instead of offering price discounts may vary with nature of the transacted product. However, even if the supplier firm's choice of price discounts vs. non-price strategies such as trade credit could vary depending upon product market conditions, it is important to understand the determinants of this choice.

Giannetti, Burkart, and Ellingsen (2011) document evidence that incumbent suppliers of differentiated products have larger accounts receivable than suppliers of standardized goods. Motivated by this observation, I hypothesize that firms operating in industry with standardized products may use price discounts as an effective defensive strategy given that the products are close substitutes with greater sensitivity to price changes. On the other hand, for suppliers of differentiated products, customers' price elasticity of demand is lower. Hence, it might be relatively more effective for incumbent supplier firms to choose some non-price strategy like trade credit for such firms.

The above reasoning predicts that the increase in trade credit should be more concentrated among differentiated goods producers, while price discounts will be more popular among stan-

[5] Tirole (1988) reviews arguments in favour of how excess capacity, capital structure, advertising, contractual practices, learning-by-doing, and other actions can be used to deter entry.

dardized product manufacturers. I provide empirical evidence consistent with this prediction. When manufacturers of differentiated products face greater threat of entry, they increase the ratio of accounts receivables to sales by 3.4 percentage points one year after the dereservation, which is equivalent to a 15% increase of accounts receivables to sales in pre-dereservation period. However, I observe no change in supply of trade credit extended by incumbent firms manufacturing standardized products.[6] While, incumbent supplier firms manufacturing standardized products appear to offer price discounts. I find that *markup*, measured as sales *minus* cost of sales scaled by cost of sales, goes down by 3.6 percentage point for such firms. Simultaneously, I observe no change in price markups for incumbent firms manufacturing differentiated products.

Further, a large literature predicts that "deep-pocketed firms" will attempt to drive financially constrained competitors out of business (see e.g. Telser (1966), Bolton and Scharfstein (1990)). Consistent with this view, I find that large and old firms, and those with lower short-term debt, offer both longer terms of credit and price discounts with increased threat of entry. Thus, my results suggest that incumbent firms try to use their financial strength to deter entry by lengthening the terms of credit to their customers and giving discounts. These results are also consistent with Barrot (2015), who documents that financial strength enhances firms' ability to extend trade credit, which confers a comparative advantage in the product market.

Overall, my analysis contributes to a few strands of literature. First, my analysis is closely related to Barrot (2015), who uses exogenous variation in trade credit supply to identify the causal effect of trade credit supply on industry dynamics. In contrast, I examine the other side of this interaction – I estimate the causal effect of entry threat on firms' choice of extending trade credit. In this sense our papers complement each other.

Second, my study also relates to a growing literature that documents how incumbent firms respond to threat of entry. The theoretical literature in this domain discusses various strategic

[6] Empirical evidence based on the NSSBF in Giannetti, Burkart, and Ellingsen (2011) also confirms that differentiated goods are offered with longer payment terms. This is also consistent with my findings, with the main difference being my examination of changes in trade credit as a response to an exogenous shock.

tools and rationales for *pre-emptive* actions (Dixit (1980)). On the empirical side, Frésard and Valta (2015) finds that investments by domestic US firms goes down in response to lower cost of entry for foreign firms. Parise (2015) and Goolsbee and Syverson (2008), document how incumbent carriers adjust debt maturity and prices, respectively, when probability of future entry by low cost air carriers in their route network dramatically increases. Cookson (2015) finds physical capacity expansion by low leverage incumbent US casino firms when they face entry threat. In this context, my study examines the role played by strategic adjustments in trade credit.

Third, it relates to studies that examine the role of product market competition in corporate finance, especially to the few empirical papers relating trade credit to product market structures (e.g. Fisman and Raturi (2004), Hyndman and Serio (2010), or Barrot (2015)).

However, my study incrementally and substantially contributes to the literatures above along four distinct dimensions. First, I rely on plausibly exogenous variations from the removal of entry barriers at product level to cleanly identify the causal effect of product-market entry threats on firms' supply of trade credit. Second, I concentrate on firms' trade credit response to entry threats, as opposed to credit supply behavior following entry. This distinction is important because it allows me to examine the value of trade credit as a pre-emptive strategic tool, without influence from other confounding factors associated with actual changes in competition (such as changes in firm financial position). Third, because I can observe the firm's sales revenues across various products sold, I can estimate the firm's exact *exposure* to the entry threat. In addition, the product level sales data allows me to control for time-varying unobservable characteristics at a higher granularity, thereby aiding identification.[7] Finally, the institutional setting allows me to examine exogenous shocks to the threat of entry across a wide spectrum of industries,

[7] I define firm's product at five-digit National Industrial Classification (NIC) code. Therefore, I can control for time-varying unobservable characteristics at four-digit code. There are 2,710 products, defined as five-digit National Industrial Classification (NIC) codes linked to 137 four-digit NIC industries across the 24 manufacturing sectors (two-digit NIC codes). In comparison, U.S. data used by Bernard, Redding, and Schott (2011) contain approximately 1,500 products, defined as five-digit Standard Industrial Classification (SIC) codes, across 455 four-digit SIC industries.

rather than focusing on a single industry.

The remainder of the paper is organized as follows. Section 1 reviews the theory and evidence on trade credit and details the main hypotheses. Section 2 presents the dereservation reforms, which serve as the main source of identification in this paper. Section 3 presents the data and methodology. Section 4 describes the results. Section 5 provides robustness of results. Section 6 concludes.

1 Trade Credit Theories and Hypotheses

In this section I survey various trade credit theories and how they are related to product market competition. Then I use these theories to develop my hypotheses.

1.1 Trade Credit Theories

The trade credit literature has expanded in two directions: a financial motive approach and a product market competition approach.

The *financial motive* approach of trade credit explains how credit rationing affects the demand for trade credit.[8] This approach has explored the motives of the "lender" and "borrower" of trade credit compared to other financial sources. It has focused on the problem of why a lender gives trade credit to a buyer, and why a buyer chose to "borrow" trade credit instead of some other type of borrowing. This approach implicitly assumes that financial motivation leads to trade credit provision.

A comprehensive survey of theories and empirical tests on *financial motive* for trade credit is done by Petersen and Rajan (1997). They use the SME data in the United States, and find that suppliers are inclined to lend to financially constrained customers. One interpretation of this result is that as suppliers have more information about their buyers, they offer goods on

[8] Some other theories of trade credit suggest that trade credit reduces transaction costs (Ferris (1981)), allows price discrimination between customers with different credit worthiness (Brennan, Maksimovics, and Zechner (1988)), provides a warranty for quality when customers cannot observe product characteristics (Long, Malitz, and Ravid (1993)), and fosters long-term relations with the customer (Wilson and Summers (2002)).

credit. Burkart and Ellingsen (2004) suggest that suppliers have informational advantage which banks do not have. They hypothesize that it is typically less profitable for an opportunistic borrower to divert inputs than to divert cash, which increases the advantage of suppliers over banks in lending to their clients. The advantage suppliers have over external financiers may also be nested in the nature of underlying product. Fabbri and Menichini (2010) theorize that liquidation advantages of the supplier to other financing sources allows them to provide credit. This comparative advantage is more pronounced for differentiated goods because these are often tailored to the needs of few customers.

The *product market competition* approach concentrates on how competition in the product market affects trade credit provision. The literature presents contrasting evidence in this context. On the one hand, McMillan and Woodruff (1999) find that the presence and number of competitors within a 1-km area lowers trade credit provision to customers. Similarly, Johnson, McMillan, and Woodruff (2002) also find that trade credit provision is lower when there exists more than 5 rivals within 1 km. Their results suggest that competition prevents suppliers from giving credit for avoiding risk. On the other hand, subsequent studies find an opposite result. Fisman and Raturi (2004) document that the monopoly power of the supplier is negatively associated with credit provision, which counters the assertions of previous studies that monopoly power facilitates the provision of credit because monopolists are better able to enforce payment. Later, Hyndman and Serio (2010) show that the relationship between trade credit provision and supplier's market power is not linear but follows an inverted-U shape. A monopolist supplier often prefers to sell only in cash, which is zero trade credit. Once competition starts, trade credit grows with the number of competitors. Hyndman and Serio (2010) argue that this happens as Bertrand price competition in the cash market pushes up the price of cash, and thus new entrants can only offer trade credit given the product market competition. With the intensification of competition, problems of commitment on trade credit repayment and decisions on credit provision become less important. However, enforcement becomes constrained as the

number of competitors increase and outgrows a certain limit.

The above *product market competition* theories all argue how industry structure affects trade credit. Barrot (2015) documents the reverse: how trade credit provision affects industry dynamics. He finds that restriction on trade credit provision affects the entry/exit rates of trucking firms in France. He concludes that longer terms extended by financially stronger firms might thus act as a barrier to entry and prevent their constrained, -yet potentially efficient- rivals, from entering, expanding, and surviving in the industry. However, no one has explored whether incumbents firms use trade credit, *ex-ante*, when they face entry threat from competitors.

1.2 Hypotheses Development

The literature above offers two clear and contrasting hypotheses here. Fisman and Raturi (2004) and Hyndman and Serio (2010), on the one hand, suggest that incumbent supplier firms should extend more trade credit before the potential entrant starts manufacturing the product. In other words, incumbent supplier firms should lengthen the payment terms of trade credit to their customers when they face entry threat due to removal of entry barriers. Trade credit raises barriers for the potential entrant. However, if incumbents can easily adjust trade credit terms after the entry, then longer payment terms to customers may not serve as a credible strategic tool for entry deterrence. Barrot (2015) finds long payment terms (measured as ratio of accounts receivable/sales) impose a substantial *liquidity risk* on financially weaker suppliers, and force them into financial distress more often than they would if they were paid earlier. This suggests that increased trade credit *may not be easy to adjust back*. Therefore, extending trade credit is an effective signal that is costly and credible. This suggests that effective increase in competition encourages incumbent firms to increase trade credit.

On the other hand, if competition does increase eventually, the supplier firm loses its market power over the customer. Incumbent supplier firms' customers find it easy to switch suppliers and hence the bargaining power of incumbent firms goes down. Thus, incumbent firms' ability

to enforce payments by threatening to cut off supplies of future credit is reduced. This suggests that expected increase in competition *discourage* incumbent firms to extend trade credit. The two competing hypotheses are as follows:

H1A: Defending Market Share Hypothesis: With increased threat of entry, incumbent firms *increase trade credit* to their customers to prevent them from switching to the new suppliers.
H1B: Enforcing Contract Hypothesis: With increased threat of entry, incumbent firms *decrease trade credit* to their customers as enforcement of such informal credit contracts is expected to become more difficult with a decline in market power.

As trade credit is one out of several ways to deter entry, a natural question arises why do firms use trade credit rather than price discounts to defend their market share?

Seminal works in Industrial Organization literature documents the use of "limit pricing" as the incumbent firm's strategic tool for deterring entry (Dixit (1979)). Schmalensee (1978) suggest that the use of price versus non-price strategies to deter entry may vary with nature of the transacted product. Firms manufacture close substitutes in standardized products industry and face customers with high price elasticity of demand. So, here price can be a good strategic tool to deter entry. However, firms producing differentiated products face lower price elasticity of demand, which makes price strategies more costly. Therefore, incumbent firms may have to choose from other alternative non-price strategies like trade credit. Empirically, Giannetti, Burkart, and Ellingsen (2011) confirm that standardized goods are offered shorter payment terms. Collectively these arguments predict that price discounts will be more popular among standardized product manufacturers while increase in trade credit should be more attractive to differentiated goods' producers.

H2: Price vs. Trade Credit Hypothesis: With increased threat of entry, incumbent firms selling differentiated (standardized) products increase trade credit but do not change price (decrease

price but do not change trade credit).

A natural extension relates to the incumbent supplier firms' ability to finance trade credit. A large literature shows that "deep-pocketed firms" will attempt to drive financially constrained competitors out of business (see e.g. Telser (1966), Bolton and Scharfstein (1990)). Therefore, when incumbent supplier firms expect greater competition in future, *ex-ante*, financially strong incumbent firms may extend more trade credit and reduce markups.

H3: Financial Strength Hypothesis: With increased threat of entry, financially strong incumbent supplier firms *increase trade credit and/or reduce markups* to influence the entry decision of the potential entrants and prevent customers from switching to new suppliers.

2 Dereservation Reform

The Indian Government has a long history of promoting small-scale industries. Starting in 1960, the Government of India reserved a large number of manufactured goods for exclusive production by small scale firms. Hundreds of products across the manufacturing sector were only allowed to be produced by small scale firms, insulating them from competition.[9]

It was argued that small establishments producing labor-intensive goods would absorb the abundant labor supply present in an underdeveloped country. However, in official documents there is no clear criterion for the selection of goods to be reserved. In addition, there is no mention of other criterion for reserving specific goods say, based on optimal capital to labor ratios (which are difficult to ascertain in the first place). For example, in clothing, cotton and woolen socks, scarves, clothes and vests were reserved, while linen, jute or hemp products were not reserved. This suggests a high degree of substitutability between reserved and non-reserved clothing items. The types of products on the reserved list were varied, spanning many industrial

[9] The Indian government defines a small-scale firm according to the cumulative amount of investment in plant and machinery. This means that all the plants with a level of capital below a limit set by the government are considered "small" and, therefore they are allowed to produce reserved goods. Such limit has been changing over time. It started at (0.5 million INR in 1960 and has been periodically adjusted upward using inflation (García-Santana and Pijoan-Mas (2014)).

sectors such as food, chemicals, electronics and textiles. Within the small-scale sector, the output share of reserved products was approximately 30% in 1987. Overall, reserved products constituted about 12% of Indian manufacturing output. There was considerable heterogeneity across industry sectors with reserved products forming 80% of output in hosiery and garments, 57% in certain wood products, and a negligible fraction in textiles.[10]

Despite India's liberalization of a variety of industrial and trade policies in 1991, the reservation of products for small scale sector remained in force until the late 1990s. As of July 1991, there were around 800 items which constitute around 1,024 products in the reserved category.[11] As per this policy, only small scale firms could manufacture these products. Large/Medium sector firms were permitted to manufacture within the reserved product category if they agree to export a minimum of 75% of their production from fresh capacity. This regulation induced heterogeneity in the reserved sector which includes small firms and export-oriented large firms.

The Advisory Committee on Reservation recognized growing concerns about small scale sector policies that followed the 1991 trade liberalization. The small scale firms had to compete with imported goods, and large undertakings might be able to exercise monopoly power in the market for reserved goods as most other producers would be small. Moreover, growing consumer demand for high-quality goods, and ongoing technological progress, made it more difficult to produce many items in this sector. The Advisory Committee therefore appointed a special committee to reconsider the list of reserved items in 1995 (MSME (2007)). Based on recommendations from this committee, most of the 1,024 products were dereserved starting in 1997 (Figure 1).[12]

The identification of the threat of entry in this paper comes from rapid and complete dismantling of the reservation policy. Large scale dereservation started slowly in 1997 (15

[10] An expert committee, Abid Hussain Committee, constituted in 1997 to review small scale industry in India's post liberalization period states, "the choice of products for reservation was necessarily arbitrary" (Hussain (1997)).

[11] As per Notification S.O 477(E) issued by Ministry of Micro, small and medium enterprises (MSME), Govt. of India. http://www.dcmsme.gov.in/publications/circulars/477E.pdf

[12] For a more detailed description on the process of dereservation: http://dcmsme.gov.in/publications/reserveditems/itemrese.htm.

products) and picked up in 2002 (51 products). From 2003 to 2008, approximately 100 to 250 products were dereserved each year. Finally, in April 2015, the last 20 products were removed from the reservation list. Appendix A (table A1) shows sample notification about list of items dereserved in 1997.[13] For example, 15 products were dereserved in 1997 which included ice-cream, poultry feed, hair dryers, ash tray etc.

As evident from Appendix A (Table A2), the dereservation of products are staggered across time and industries. To give an overview for variation across industries, from 2003 to 2008 a total of 809 products over 24 (2-digit NIC) manufacturing industries were dereserved of which chemical products contributed the most (30%). For example, products in Basic Metals (2 digit NIC Code =24), categorized as standardized, were never dereserved during this period. However, 107(13.23% of total 809 products) products in Fabricated Metals (2 digit NIC Code =25), categorized as differentiated, were dereserved.[14] Similarly, 13(1.61% of total) wooden products (2 digit NIC Code =16), categorized as standardized, were dereserved while 11(1.36% of total) furniture products (2 digit NIC Code =31), categorized as differentiated, were dereserved.

Similar staggered variation in dereservation is also observed across industries over time. As discussed before, products in Basic Metals industry were never reserved/dereserved while products in Fabricated Metals industry were dereserved in a staggered manner i.e. 0%(2003), 22%(2004), 0%(2005), 42%(2006), 31%(2007) and 5%(2008). Similar staggered variation is observed in other industries over time and Appendix A (Table A3) gives more information about timing of dereservation across industries over time.

Was dereservation really random? One could be concerned about the potential non-randomness of the dereservation policy. Anecdotal evidence and discussions suggests that reservation of products and their dereservation appear to be random in nature and varied across different industries. As in the case of reservation, the process of dereservation is also not well-understood.

[13] All the notifications about dereservation are available at http://www.dcmsme.gov.in/publications/notiissforresderes.html

[14] I follow Giannetti, Burkart, and Ellingsen (2011) to classify industries manufacturing standardized and differentiated goods (Please see Appendix A, table A4 for classification).

A reading of government documents, reports and media does not give clear-cut reasons as to why certain products were initially reserved or dereserved at certain times. Martin, Nataraj, and Harrison (2015) and Tewari and Wilde (2014) document that a conclusive and definitive account of the dereservation process is not available. Explanations range from competition from imports, technology requirements, need to comply with regulations, no benefit to small producers or availability of unreserved substitute products. A product's path to dereservation tends to be lengthy and circuitous. A product is identified as a dereservation candidate by a ministry or industry players (including manufacturers of reserved products themselves who find the investment ceiling constraining). Once identified, a series of meetings between "stakeholders" (such as trade associations or small firm groups and officials) takes place. After review from a chain of bureaucrats, the dereservation of a product is signed into law by the central government minister. Qualitative support for the "random" nature of reservation and dereservation is reflected in the extent of reservation/dereservation both across and within product categories.

As an example, among various oils, many oils that were never reserved, and several (like sesame oil, mustard oil and rapeseed oil) were reserved. However, they were dereserved at different point in times such as hair oil was dereserved in 2003, sesame oil in 2008, and mustard oil in 2015. Similarly, among leather products, leather shoes were dereserved in 2001 while leather slippers were dereserved in 2003. The staggered fashion of dereservation of products that are close substitutes suggests that dereservation is quasi-random. It is difficult to think of some systematic and endogenous rationalization in this cross-section and time-wise pattern of reservations.

3 Data and Methodology

3.1 Firm Characteristics

I compile a firm-level panel data set that spans from 1990 to 2013 from Prowess$_{dx}$ database, collected by the Centre for Monitoring the Indian Economy (CMIE).[15] The database contains information primarily from the income statements and balance sheets of about 34,197 publicly listed and private companies, of which 10,724 are in the manufacturing sector. This database is a firm-level panel that also records detailed annual information on firms' product mix.[16] Furthermore, for each product manufactured by the firm, the data set provides the value of sales, quantity, and units. The Prowess$_{dx}$ is therefore particularly well suited for understanding how firms adjust their financial policies when their product lines are under threat of competition. The definition of a product is based on the CMIE's internal product classification. I complement the data on firm product mix with measures on product reservation policy at the 5-digit NIC (similar to SIC of US) product level. Appendix A provides more details on product data. I follow the sample firms from beginning of the year 1990 to end of 2013. All financial variables are inflation adjusted using Wholesale Price Index (WPI) at 2004-2005 prices. I also correct for change in financial reporting year. To make sure that my estimates are not influenced by industry-level trade liberalization policy, which was completed by 1997, in robustness checks I start sample from the beginning of year 1997. Thus my estimates are robust to sample selection period.[17] Since the reservation policy was meant for only manufacturing firms in India, I keep only non-services, and non-government firms in my sample.

[15] Prowess$_{dx}$(http://prowessdx.cmie.com), is special data extraction interface for academicians, similar to Prowess. The data set has been used by number of prior studies on Indian firms, including Bertrand, Mehta, and Mullainathan (2002), Gopalan, Nanda, and Seru (2007), Lilienfeld-Toal, Mookherjee, and Visaria (2012) and Gopalan, Mukherjee, and Singh (2015).

[16] Indian firms are required by the 1956 Companies Act to disclose product-level information on capacities, production, and sales in their annual reports. The CMIE compiles these detailed quantitative data.

[17] Major changes in policies vis-à-vis foreign investment occurred in the early 1990s, and then stalled during the period of dereservation reform. Nataraj (2011) shows that tariffs were largely harmonized across industries by the late 1990s, so even though there were some reductions during the 2000s the variation in tariff rates across product types had fallen dramatically by the start of the 1997.

3.2 Measure of Trade Credit Supply

Following Petersen and Rajan (1997), I proxy payment terms by the amount of accounts receivables on firms' balance sheets as recorded at the end of their year of operations *scaled by* total cumulative sales in the year (Accounts Receivables/Sales). A higher ratio implies significant amount of cash is tied up. In other words, an increase in accounts receivable to sales ratio from one year to the next indicates that investment in accounts receivable is growing more rapidly than sales.

This widely used measure of trade credit provision is a rough proxy for actual payment terms. A seasonal business experiences a large part of its annual sales in a particular part of the year and hence this ratio can be seasonal. However, it is unlikely that this seasonality in the sample changes dramatically following the dereservation reform. In addition, inclusion of industry-year fixed effects at more granular level helps absorb seasonality within industries across time. Similarly, this ratio may mechanically overestimate average payment terms in periods of growth and underestimate during downturns. This makes it important to have a right control group. The staggered nature of reform helps me use the pre-reform period observations of treatment firms as an appropriate control group and thus aids identification of the effect of entry threat on payment terms.

In addition to Accounts Receivables/Sales, I estimate my results using Log (1+ Accounts Receivables) to further confirm the findings. To make sure that results are not effected by outliers, I winsorise all the ratios at 1% and drop observations with ratio of accounts receivables to sales greater than 1.

3.3 Summary Statistics

As reported in Table 1, median Accounts Receivables/Sales ratio is about 0.16 with mean of 0.19, equivalent to average payment period of about 70 days (=0.19*365 days). The median firm in my sample has a markup (defined as sales revenue *minus* cost of sales *scaled* by cost of

sales) of about 7%. The average firm size, measured as *Log (Total Assets),* in my sample is 6.3, which translates into a book value of total assets amounting to INR 2.3 billion at 2004-2005 prices. Firms in India have little cash on their balance sheet as seen by the mean value of cash holdings of 6%. Firms in my sample are profitable, as seen from the mean value of profitability (EBIT/Assets) of 12%. On average, sales growth is about 14%.

In my sample, firm produces a median of two products, with mean of 2.7 products. In terms of variation in product types, I find that an average firm within the standardized product group produces 2.65 products, while in the differentiated category, it produces 2.8 products. The inter-quartile range for sales revenue from the primary product varies from 70% to 99%. Within the differentiated product category, average firm's main product contributes 82.2% of total sales, while in standardized category, the main product's contribution is 81%.

3.4 Methodology

To identify the incumbent supplier firms that are affected by threat of entry, I define treatment as the elimination of small-scale reservation on the incumbent firm's primary product in the NIC-5 digit category. Firm's primary product is the product that has the maximum sales revenue in the immediately preceding year of dereservation. I start with a difference-in-differences (DID) equation of the following form for firm i in year t:

$$y_{it} = \alpha_0 + \sum_{k=-2}^{-10} \beta_k Pre-Dereservation(k)_{it} + \sum_{k=0}^{10} \beta_k Dereservation(k)_{it} + \alpha_i + \alpha_t + Inc_i * \alpha_t + \varepsilon_{it} \tag{1}$$

The dependent variable y_{it} is defined as the *accounts receivables scaled by sales* of firm i at time t. *Pre-Dereservation(k)*$_{it}$ (*Dereservation(k)*$_{it}$) is a dummy variable that takes a value one if it is k years before (after) the incumbent firm's primary reserved product has been dereserved. An incumbent firm is defined as a firm that has ever made a reserved product

before it was dereserved.[18] I include all firms – even those that do not help to identify β_k because they are not affected by the reservation policy – because these firms help to identify the secular year trends in firms' financial policies.[19] Also, *Pre-Dereservation (-10)* equals one if it is ten or more years before dereservation of product and *Dereservation (+10)* equals one if it is ten or more years after dereservation. Therefore, the coefficients on *Pre-Dereservation(-k)* (*Dereservation(k)*) compare the level of the dependent variable 'k' years before (after) the dereservation to the year immediately before its dereservation. The inclusion of firm fixed effects, α_i, ensures that each indicator is estimated using only within firm variation in the dependent variable, and time dummies, α_t controls for time trends. I recognize that incumbent supplier firms previously manufacturing reserved products may have secular time trends that differ from non-incumbents. To control for this, I include, $Inc_i{*}\alpha_t$, an interaction between the year and incumbent dummies.[20] The identification at firm-level helps me to absorb various time-varying industry-level heterogeneity. Standard errors are corrected for heteroscedasticity and auto-correlation, and clustered at NIC5-digit product level.

The removal of entry barriers should satisfy one requirement to be "exogenous" i.e. the occurrence of these events should be unrelated to individual firms' strategic decision of extending trade credit. As discussed before, reservation of products and their dereservation appear to be random in nature and varied across different industries.

In addition, I employ Cox survival model to investigate whether, if any, observable differences in average firm characteristics across industries predict the timing of dereservation. Effectively, this controls for industry specific unobservables. The sample for this regression spans 1990-2009 and includes the industries that were never reserved. In addition, I include average characteristics of firms in each of the industries prior to dereservation. Specifically, I estimate

[18] Results are robust to alternative definitions of incumbent firms. Table 7, column (7) reports results where incumbent is defined as a firm that made a reserved product three years before it was dereserved as its primary product.

[19] Results are qualitatively similar after exclusion of such firms from the control group.

[20] Results are qualitatively similar if I do not include these interaction dummies.

industry-wide averages (at NIC 5 digit level) of these firm characteristics over the period 1990-1996 i.e. six years before the first dereservation announcement. In alternative specifications, I include the average value of Accounts Receivables/Sales, Firm Size, Cash Holdings, Profitability and Sales Growth. Table 2 reports the results from this analysis. I find that the coefficient on all the firm characteristics are insignificant in all the specifications, after including industry-fixed effects to control for industry-specific unobservables.

These results confirm that there is no systematic difference in the average characteristics between the firms in early and late dereserved industries. In further analysis below, I conduct various robustness checks and placebo tests to verify the validity of results. Although, it is difficult to think of some systematic and endogenous rationalization in this cross-section and time-wise pattern of reservation, I cannot entirely rule out this possibility.

Next, for dereservation to be a plausible variation for threat of entry, it should be related to market competition. Also, dereservation should not affect the industry concentration immediately. I measure market competition/concentration by Herfindahl–Hirschman Index (HHI). I estimate regression model similar to equation (1) with Log (HHI) as the y-variable, measured at 5-digit product level. Here, the control group includes pre-event observations of reserved products that got dereserved later and never reserved/dereserved products. Thus, a difference-in-difference estimate suggests how market concentration index, HHI, is affected in reserved product category compared to the control group.

Figure 2 plots the regression estimates and provides suggestive evidence on non-existence of pre-trends in HHI. Though not a perfect test, this shows that changes in competition did not really affect the dereservation decisions and therefore seem exogenous. In addition, I find that market concentration goes down significantly by 10%, about 5-6 years after the dereservation. This suggests that competition within dereserved industries increased significantly subsequent to the removal of entry barriers. This is consistent with the fact that, new entrants take time to setup plant and/or expand capacity to manufacture dereserved products. These new

entrants may start manufacturing within few years of dereservation, but will start affecting market concentration only after 5-6 years as they begin to capture significant market share. This non-immediate effect of dereservation on market concentration helps me identify *threat of entry* from *actual entry*. This suggests that dereservation had real effects on product market competition and threat of entry thereby affecting firm's policies. In effect, dereservation seems like a good instrument for threat of entry.

4 Results

4.1 Main Results

I start my analysis in this section by plotting regression coefficients from my baseline specification, equation (1) for dereserved products only.[21] Figure 3 shows the difference-in-differences estimate of trade credit granted (*accounts receivables over sales*) in event time, and the 1% confidence interval around this difference. I present the evidence till 5 years after the dereservation event as I'm interested in *threat of entry* instead of *actual entry.* As observed in Figure 2 and discussions above, I find a significant change in market concentration only after 5-6 years. This short window of 5 years around the event, therefore, captures the average causal effect of the pre-emptive action.

The patterns in the figure are striking. First, there are no discernible pre-trends in my data – the difference between the treatment and control groups is statistically insignificant in the five years prior to the dereservation. Second, with dereservation, there is a clear jump in trade credit granted (measured as accounts receivables over sales) one year after the dereservation (statistically significant). Also, the effect stabilizes after two years of dereservation. In further analysis, for brevity, in tables I report results for coefficients on *Dereservation (k=-3)* and *Dereservation (k=-2)* and *Dereservation (k=0)* to *Dereservation (k=+2).*

[21] Note that here the control group includes pre-event observations of firms producing reserved products that were dereserved later. It does not include never treated firms; so I do not include incumbent-year fixed effects.

Table 3 presents the results of my baseline difference-in-differences specification (1). As discussed before, I include never treated firms in the control sample. Similar to Figure 3, in this specification as well, I find that the coefficients on *Dereservation (k=-3)* and *Dereservation (k=-2)* are statistically insignificant. This further confirms dereservation process is exogenous to firm's strategic decision to change trade credit. I find that the coefficients on *Dereservation (k=0)* through *Dereservation (k=+2)* are positive and significant in column (1). This shows that after the dereservation of products, investment in accounts receivable is growing more rapidly than sales. The positive and significant coefficient of *Dereservation (k=+1)* implies that from one year before to one year after the removal of entry barrier, ratio of accounts receivable to sales of treated firms increase by 8.9 % (0.017 divided by pre-dereservation mean of 0.19) relative to the ratio of control firms.

Next, one might be concerned about trade credit terms varying across industries over time and dereservation may be correlated with time-varying industry unobservables i.e. demand/supply conditions. To this effect, I control for unobserved heterogeneity at industry-level. In columns (2)-(4), I add industry specific year fixed effects at 2-digit, 3-digit, and 4-digit level.[22] The effect of dereservation remains positive and statistically significant. After including industry-year fixed effects at 4-digit level, which is possible because dereservations are measured at the 5-digit level, I find that from one year before to one year after the removal of entry barrier, the ratio of accounts receivable to sales of treated firms increase by 1.8 percentage points relative to the ratio of control firms. This effect is economically large; the jump in trade credit represents a relative increase of about 10% from the pre-event level.

These results are consistent with hypothesis *H1A* i.e. the strategic use of extending trade credit is to defend market share. With expected competition, incumbent firms extend more trade credit before the potential entrant starts manufacturing the product (Fisman and Raturi (2004) and Hyndman and Serio (2010)). This pre-emptive action to increase accounts receiv-

[22] Here, I carefully interact the industry-year fixed effects for both treatment (incumbent) and never-treated control group.

ables may serve as entry barrier for potential entrant. Hence, the potential entrant requires not only technological and organizational expertise, but also the capacity to extend credit to the customer base.

4.2 Placebo Dereservation

In order to alleviate further concerns about my results being driven by industry conditions, I employ a placebo test. This test would expect my results to remain even if I replaced my *Dereservation* dummy as one for firms manufacturing similar products which were never reserved/dereserved. Since these products were likely to face similar demand/supply shocks (but did not get reserved/deserved), any effects of similar magnitude as earlier would raise concerns about dereservation as a valid instrument for entry threat.

In this sub-section I provide results from a randomized assignment of dereservation years to similar products, keeping the distribution of the event years unchanged. For each product dereserved (defined at 5-digit level) in the sample, I create a pseudo dereservation sample, where instead of the product that actually was dereserved I assign it to one randomly selected similar product (i.e. at the same 4-digit level). In each of the pseudo dereservation samples I run my baseline regression as in Table 3, column (1) and save the relevant coefficients. I repeat this procedure 5,000 times to obtain a (non-parametric) distribution of coefficients obtained from the placebo dereservation samples.

In Figure 4, I plot these distributions of the coefficients. The black line embedded in the graphs represents the regression coefficient obtained using the actual data. For example, figure shows that the coefficient for *Dereservation (k=+1)* in my placebo sample lie in the tails of the placebo distribution (p-value$<$0.001). Thus, unobserved industry shocks affecting trade credit supply are not driving my results and bolsters my identifying assumption.

4.3 Exposure to Dereservation

In this sub-section, I measure the exposure of firms to dereservation as proxied by sales contribution of affected product to firm's total sales. In general, firms produce more than one product to stay competitive in a market. In fact, Goldberg, Khandelwal, Pavcnik, and Topalova (2010) finds that Indian multiproduct firms are quite similar to their counterparts in US manufacturing firms studied by Bernard, Redding, and Schott (2011). Like, Goldberg, Khandelwal, Pavcnik, and Topalova (2010), I find that the typical firm in my sample produces two products and the average sales revenue from the primary product varies from 70% to 95%.

In further test of hypothesis *H1*, I measure exposure of incumbent firm to threat of entry with proportion of its sales revenue from dereserved product in pre-dereservation period and report the results in Table 4. I find that incumbent firms with greater exposure to threat of entry extend more trade credit. In addition, accounts receivables over sales increases by 3 percentage points one year after the dereservation of the firm's primary product.

Overall, these results are consistent with hypothesis *H1A* i.e. with expected competition incumbent firms with greater exposure extend more trade credit before the potential entrant starts manufacturing the product.

4.4 Price vs. Trade Credit

It's important to understand how choice of strategic action may be influenced by the nature of transacted products. I test hypothesis *H2* i.e. how incumbent firm's response to threat of entry varies with nature of product transacted and report results in table 5.

To compare the response across firms manufacturing standardized v/s differentiated products, I estimate equation by replacing each *Dereservation(k)* (and *Pre-Dereservation(-k)*) dummy with interaction terms *Dereservation (k)* $\times$ *Standardized* and *Dereservation (k)* $\times$ *Differentiated*, where *Standardized* (*Differentiated*) is a dummy variable that identifies firms manufacturing standardized (differentiated) product as its primary product in the year before its dereserva-

tion. I follow Giannetti, Burkart, and Ellingsen (2011) to classify industries manufacturing standardized and differentiated goods (see Appendix A (Table A4) for classification). In this specification, I also include a full set of interaction terms between *Standardized / Differentiated* and time fixed effects. This allows two groups of firms to have a differential time trend. Also, I control for industry specific time fixed effects at 3-digit/ 4-digit level. Note that in this test my sample is confined to treated firms that exist one year before the dereservation.

Panel A of Table 5 reports results with *accounts receivables over sales* as dependent variable. The evidence in columns (1) and (2) show that firms manufacturing differentiated products as their primary product in pre-dereservation period strategically lengthen payment terms to its customers, proxied by accounts receivables over sales, while there is no corresponding increase for firms manufacturing standardized products. In column (3), I document that the coefficients on the two interaction terms are significantly different from one another one year following dereservation. Additionally, I find that for incumbent firms manufacturing differentiated products in the pre-dereservation period, accounts receivables over sales increases by 15% (0.034 versus sub-sample mean of 0.22), as compared to the sample mean one year after dereservation. Moreover, I see no significant change in the accounts receivables over sales for firms manufacturing standardized products as their primary product in the pre-dereservation period.

Further, I run a similar specification like above with *markup* (measured as sales revenue *minus* cost of sales *scaled* by cost of sales), as dependent variable and report results in Panel B of Table 5. These results are striking. The evidence in columns (1) and (2) show that firms manufacturing standardized products as their primary product in pre-dereservation period strategically give price discounts, proxied by markup, while there is no corresponding decrease for firms manufacturing differentiated products. In column (3), I find that the coefficients on the two interaction terms are significantly different from one another two years following dereservation. However, for incumbent firms manufacturing standardized products in the pre-dereservation period, *markup* decreases by almost 50% (0.036 versus sub-sample mean of 0.067),

as compared to the sample mean one year after dereservation. I see no significant change in the markup for firms manufacturing differentiated products as their primary product in pre-dereservation period.

Overall, my findings suggest that suppliers of differentiated goods extend longer payment terms while those manufacturing standardized goods strategically provide price discounts instead of longer terms.

4.5 Financial Strength

In this sub-section, I test hypothesis *H3* i.e. how incumbent's response to threat of entry varies with their financial strength. I follow Hadlock and Pierce (2010) and use firm size, age and short-term debt due within a year as proxies for financial strength and report the results in Table 6.

I re-estimate equation (1) with interaction terms *Dereservation (k)* $\times$ *Small* and *Dereservation (k)* $\times$ *Large,* where *Small (Large)* is a dummy variable that identifies firms with below-median assets in the year prior to dereservation of its primary product and report results in Panel A of Table 6. I do this for both *accounts receivables over sales* and *Markup* as dependent variables. The evidence suggests that large firms increase *accounts receivables over sales* and reduce *Markup* while no effect observed for small firms.

Next, I re-estimate equation (1) with interaction terms *Dereservation (k)* $\times$ *Young* and *Dereservation (k)* $\times$ *Old,* where *Young (Old)* is a dummy variable that identifies firms with below-median age in the year prior to dereservation of its primary product and report results in Panel B of Table 7. Here, I find that older firms tends to extend more trade credit, while younger firms reduce markup.

Similarly, I re-estimate equation (1) with interaction terms *Dereservation (k)* $\times$ *Low STD* and *Dereservation (k)* $\times$ *High STD,* where *Low (High) STD* is a dummy variable that identifies firms with below-median Short-term debt (STD) due within a year, in the year prior to

dereservation of its primary product and report results in Panel C of Table 6. I find that firms with lower liquidation risk i.e. with low STD use a more aggressive strategy to deter entry. In other words, they tend to lengthen the terms of credit to their customers, which expose them to liquidation risk, and reduce markup, which negatively affects their performance.

Overall, these findings are consistent with the large literature that explains "deep-pocketed firms" attempting to drive financially constrained competitors out of business (see e.g. Telser (1966), Bolton and Scharfstein (1990)).

5 Robustness

In this section I consider various refinements of, and address potential concerns with, my baseline specification (Table 3, column (1)).[23] I report the findings in Table 7.

(i) *Including Firm-level Control Variables*

In column (1), I repeat my tests after including control variables from prior literature (Petersen and Rajan (1997) and Barrot (2015)). To make sure inclusion of the control variables does not bias estimates, I lag the control variables by a year. I include one year lagged value of firm size, cash holdings, profitability and sales growth as controls. I find that inclusion of the control variables has a negligible effect on the size of the coefficients of interest. For example, the coefficient on *Dereservation (k=+1)* changes from 0.017 in column (1) of Table 3 to 0.016 in column (1) of Table 7.

(ii) *Sub-period Analysis*

As discussed earlier in the data section, major changes in policies vis-à-vis foreign investment occurred in the early 1990s, and then stalled during the period of dereservation reform. Nataraj (2011) shows that tariffs were largely harmonized across industries by the late 1990s, so even though there were some reductions during the 2000s, the variation in tariff rates across product

[23] In Appendix B (Table B1 and Table B2), I report the results of these robustness checks after controlling for industry-year fixed effects at 2-digit and 4-digit level.

types had fallen dramatically by the start of 1997. I estimate column (1) of Table 3 for the sample beginning from 1997 and report result in column (2) of Table 7. The effect of removal of entry barrier on trade credit remains statistically and economically significant.

(iii) *Excluding Firms Manufacturing Chemical Products*

In column (3), I exclude firms manufacturing chemical products, an industry with many reserved/dereserved products, and find that results remain significant.

(iv) *Only Treatment Firms*

Additionally, I drop all firms without reserved/dereserved products from the control sample (column (4)). The results are robust and quantitatively similar to the baseline results.

(v) *State-year Fixed Effects*

Various state-specific economic conditions and other political factors may be correlated with special committee's decisions than product-level characteristics. I include state-specific year fixed to control for such unobservables (column (5)). The results show similar pattern with these modifications.

(vi) *Excluding Export Firms*

As discussed before, dereservation increases the probability of entry by domestic firms and thereby affecting competition in domestic market. Firms generating most of their sales revenue from exports should be least affected by dereservation. Column (6) reports result for the sample of firms that generate all sales revenue domestically, in the year of dereservation. Within two years, ratio of accounts receivable to sales of treated firms increases by almost 10% (0.018 divided by pre-dereservation mean of 0.19) relative to the ratio of control firms.

(vii) *Alternative Definition of Incumbent Firms*

In column (7), I report the results after changing the definition of incumbent firms. I redefine the

incumbent as a firm that manufactured a reserved product three years before it was dereserved as its primary product. The results are robust and quantitatively similar to the baseline results.

(viii) *Alternative Definition of Trade Credit*

Finally, in column (8), I change the dependent variable. I regress equation (1) with Log (1+Accounts Receivables), and I find similar results.[24]

Overall, I find that my basic result is robust i.e. with increased threat of entry, incumbent firms increase payment terms.

6 Conclusion

This study examines whether manufacturing supplier firms respond to increased threat of entry by competitors (as distinct from actual entry), by using trade credit as a credible preemptive strategy to deter potential entrants. To test this hypothesis and its implications, I exploit, *plausibly* exogenous, staggered removal of product level entry barriers over time for Indian manufacturing firms. This reform triggered an increase in competition which reduced market concentration by 10% in affected industries in the subsequent 5-6 years. In a difference-in-differences setting, I find that an average incumbent firm extends 8-10% more trade credit when threat of entry increases. The increase in trade credit shows no prior trend and is concentrated among financially stronger and older firms. This is consistent with the view that threatened incumbent firms with deep pockets extend more trade credit, *ex-ante*, to defend their market share. In addition, I document firms manufacturing differentiated products, whose customers' demand is expected to be less sensitive to price discounts, increase trade credit. These findings are robust to industry level macroeconomic unobservable shocks, placebo samples and alternative definitions of treatment and control groups. This paper thus complements recent papers on trade credit and industry structure thereby extending the literature on trade credit for its role as a strategic tool to deter future entry.

[24] To control for size effect, I include one year lagged value of firm's total assets.

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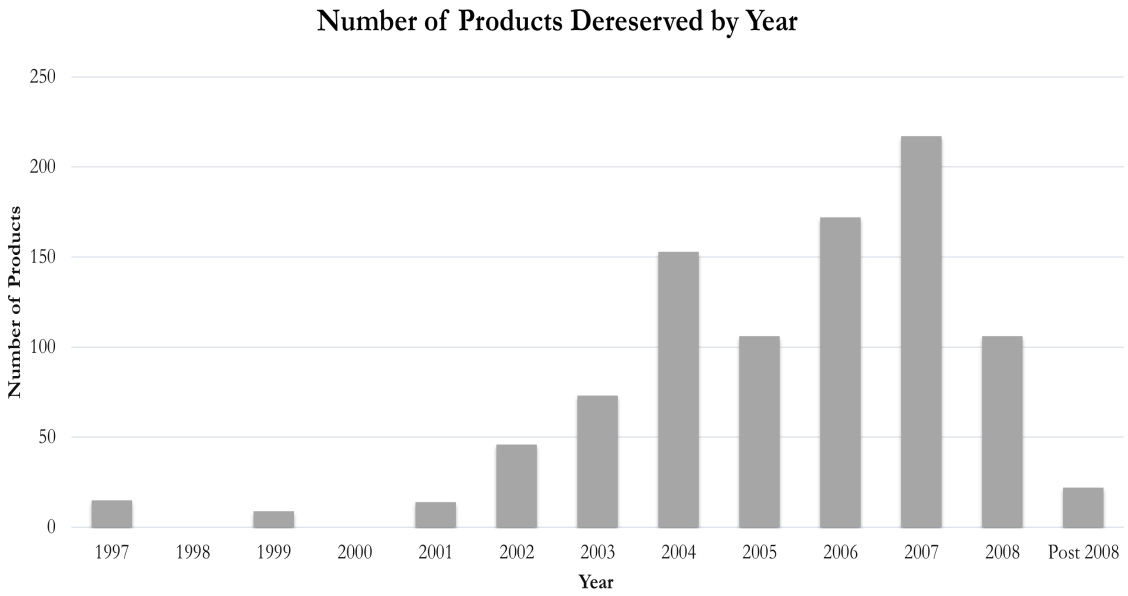
Figure 1: Timing of Dereservation Reform

The figure below plots the number of products dereserved by Government of India over the years in different industries. Figure 1A plots the time-series from 1997 onwards. Figure 1B plots the number of products dereserved in each industry over the same period.

1A: Year-Wise



1B: Industry-Wise

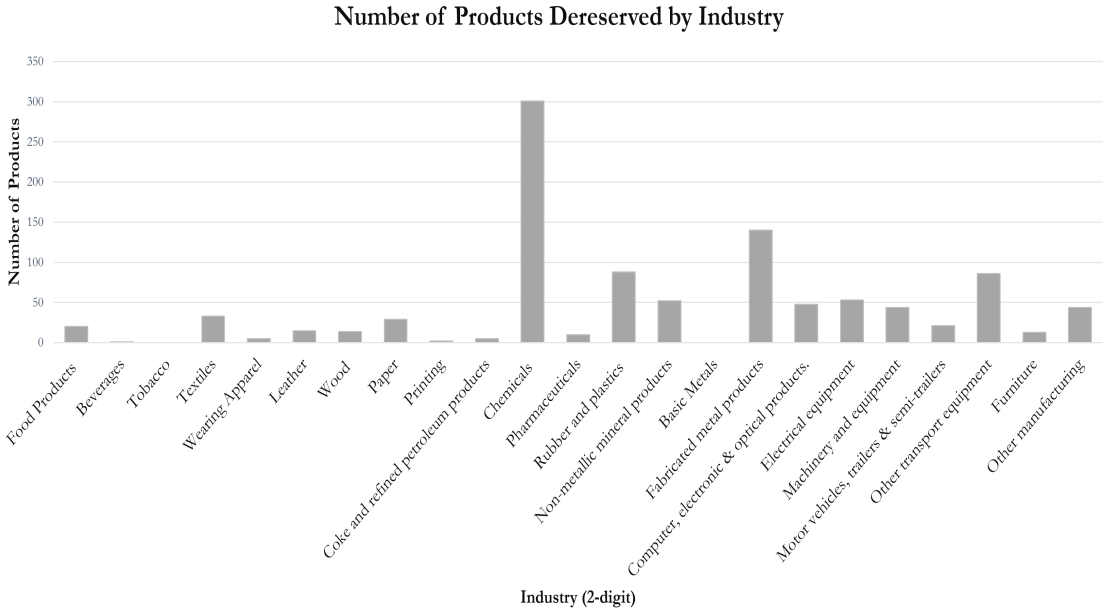


Figure 2: Effect of Dereservation on Industry Competition

The figure shows how dereservation is related to industry competition i.e. how market concentration index(HHI) gets affected in reserved product category compared to a control group. The control group includes (a) pre-event observations of firms producing reserved products that were dereserved later and (b) firms whose products were never reserved/dereserved. I estimate a regression model similar to equation (1) with Log(HHI) (measured at 5-digit NIC product-level) as dependent variable. The model also includes 5-digit product-level fixed effects and year fixed effects. Here, I plot the estimated coefficients for Pre-Dereservation (k=-5 to k=-2) to Dereservation (k=0 to k=10) along with 1% confidence intervals around this difference.

Difference-in-Differences

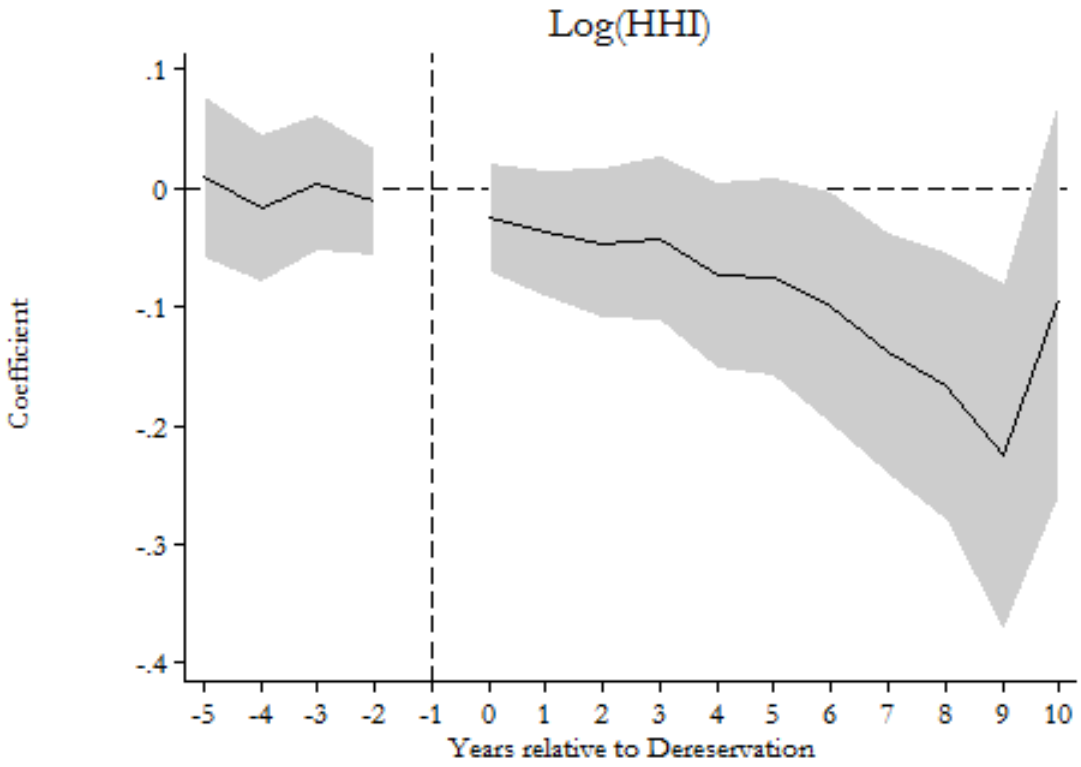


Figure 3: Effect of Dereservation on Trade Credit

The figure below plots the changes in mean trade credit granted (measured as accounts receivables scaled by sales) following dereservation. The figure shows how incumbent firms respond to dereservation within the reserved product category. I estimate equation (1) for dereserved products and plot the estimated coefficients for Pre-Dereservation (k=-5 to k=-2) to Dereservation (k=0 to k=+5) along with 1% confidence intervals around this difference.

Difference-in-Differences

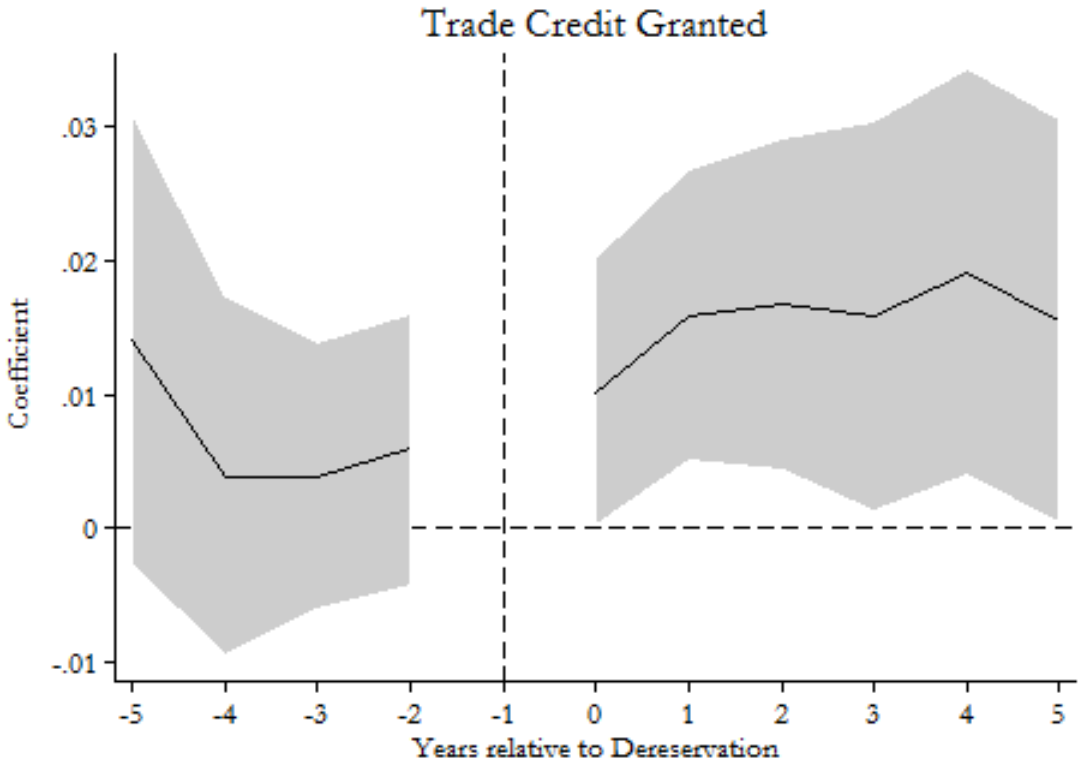


Figure 4: Non-Parametric Distribution of Placebo Dereservation Estimates

The figure below provides the result of a randomized removal of entry barriers of similar products, keeping the distribution of the event years unchanged. For each product dereserved (defined at 5-digit level) in the sample, I create a pseudo dereservation sample, where instead of the product that actually dereserved I assign it to one randomly selected similar product(i.e. at the same 4-digit level). In each of the pseudo dereservation samples I run my baseline regression as in Table 3, column (1) and save the relevant coefficients. Here, I plot the distribution of the coefficients. The black line embedded in the graph represents the regression coefficient obtained using the actual dereservation of products in the first year after the dereservation.

Placebo

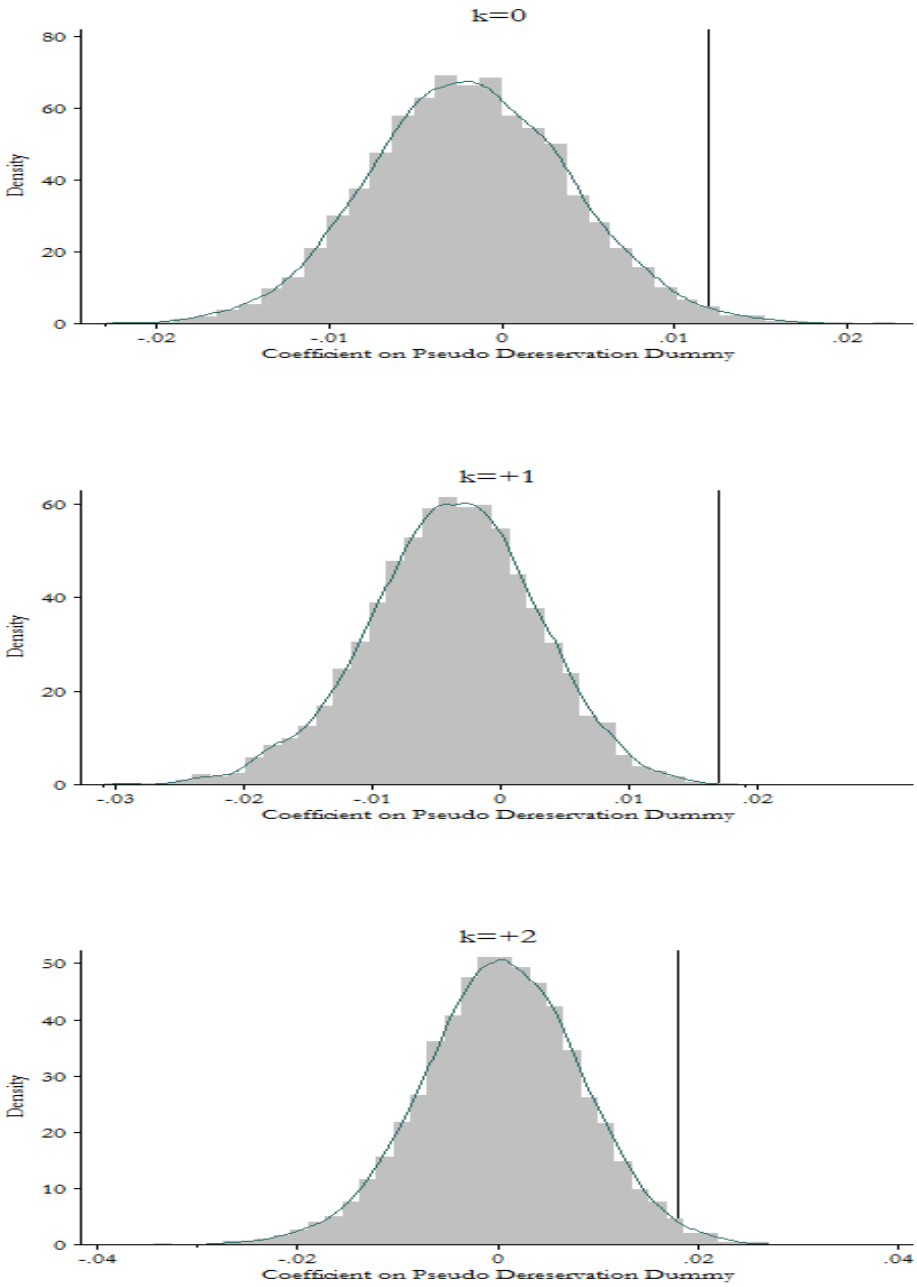


Table 1: Summary Statistics

This table reports descriptive statistics for my sample firms. I compile a firm-level panel data set based on the Prowess database, collected by the Centre for Monitoring the Indian Economy (CMIE). The database contains information primarily from the income statements and balance sheets of about 34,197 publicly listed/private companies, almost 10,724 of them in the manufacturing sector. Indian firms are required by the 1956 Companies Act to disclose product-level information on capacities, production, and sales in their annual reports. The CMIE compiles these detailed quantitative data and therefore enables me to track a firm's products over time. Furthermore, for each product manufactured by the firm, the data set provides the value of sales, quantity, and units. The Prowess is therefore particularly well suited for understanding how firms adjust their financial policies when their product lines are under threat of competition. The reservation policy was meant for only manufacturing firms in India, I keep only non-services, and non-government firms in my sample. All the financial variables are inflation adjusted using WPI and at 2004-2005 prices. The data also corrects for change in financial reporting year by adjusting values for number of months. To make sure that results are not effected by outliers, I winsorise all the ratios at 1% and drop observations with ratio of accounts receivables to sales greater than 1. Data period spans from beginning of the year 1990 to end of 2013.

Variables	Definition	Obs	Mean	Stdev.	Median
Trade Credit Granted	$\frac{\text{Accounts Receivables}}{\text{Sales}}$	32,603	0.19	0.15	0.16
Markup	$\frac{\text{Sales } \textit{minus} \text{ Cost of Sales}}{\text{Cost of Sales}}$	32,603	0.07	0.14	0.07
Firm Size	Log of Total Assets	32,603	6.30	1.60	6.22
Cash Holdings	$\frac{\text{Cash}}{\text{Total Assets}}$	32,603	0.06	0.09	0.03
Profitability	$\frac{\text{EBIT}}{\text{Total Assets}}$	32,603	0.12	0.10	0.12
Sales Growth	$\frac{\text{Sales}-\text{Lagged Sales}}{\text{Lagged Sales}}$	32,603	0.14	0.65	0.06

Table 2: Effect of Firm characteristics on Timing of Dereservation

This table reports results from Cox survival regressions that investigate the timing of dereservation of different products. The table looks at industry-level average firm characteristics. Firm characteristics are calculated as industry averages (at NIC5-digit) from 1990-1996 i.e. six years before the announcement of first product dereservation. All the specifications include industry fixed effects at 4-digit. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively. All the variables are winsorized at 1%.

	Time to Dereservation					
	(1)	(2)	(3)	(4)	(5)	(6)
Trade Credit Granted(Industry Avg.)	-1.240					3.683
	(1.978)					(3.826)
Firm Size (Industry Avg.)		.251				.387
		(.312)				(.286)
Profitability(Industry Avg.)			4.588			4.267
			(4.875)			(3.685)
Cash Holdings(Industry Avg.)				.988		1.181
				(2.296)		(3.319)
Sales Growth(Industry Avg.)					1.330	2.071
					(1.142)	(1.307)
Industry Fixed Effects	4-digit	4-digit	4-digit	4-digit	4-digit	4-digit
Obs.	1065	1065	1065	1065	1065	1065
Log Pseudo likelihood	-241.64	-241.309	-241.303	-241.692	-240.477	-238.875
χ^2 statistic	16884.3	12924.58	1887.563	56474.67	1892.95	16223.03

Table 3: Base Line Results

This table presents the estimates from difference-in-differences regressions for *accounts receivables over sales*, proxy for payment terms, around the removal of entry barriers (dereservation of products). The estimates are based on the following regression equation:

$$y_{it} = \alpha_0 + \sum_{k=-2}^{-10} \beta_k Pre - Dereservation(k)_{it} + \sum_{k=0}^{10} \beta_k Dereservation(k)_{it} + \alpha_i + \alpha_t + Inc_i * \alpha_t + \varepsilon_{it} \quad (1)$$

I define treatment as the elimination of small-scale reservation law on the incumbent firm's primary product in NIC-5 digit category. Firm's primary product is based on maximum sales revenue in the year preceding dereservation. *Pre-Dereservation(k)*$_{it}$ (*Dereservation(k)*$_{it}$) is a dummy variable that takes a value one if it is k years before (after) the incumbent firm's primary reserved product has been dereserved, where incumbent firm is defined as a firm that ever made a reserved product before it was dereserved as its primary product. *Dereservation(k)*$_{it}$ dummy identifies the group of firms under threat of entry. The model is fully saturated with the year immediately before the dereservation as the excluded category. Therefore, the coefficients on Pre-Dereservation(k)$_{it}$ (Dereservation(k)$_{it}$) compare the level of the dependent variable k years before (after) the dereservation to the year immediately before it's de-reservation.The inclusion of firm fixed effects, α_i, ensure that each indicator is estimated using only within firm variation in the dependent variable, and time dummies, α_t, control for country-level trends. I also include, Inc_i * α_t, an interaction between the year and incumbent dummies. Column (2), (3) and (4) I replace year dummies with industry specific dummies for each year at 2-digit, 3-digit and 4-digit level, respectively. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively. All the variables are winsorized at 1%.

	Trade Credit Granted (Accounts Receivables over Sales)			
	(1)	(2)	(3)	(4)
Dereservation(k=-3)	.004	-.0009	-.005	-.004
	(.005)	(.006)	(.007)	(.008)
Dereservation(k=-2)	.007	.008	.008	.006
	(.005)	(.007)	(.008)	(.010)
Dereservation(k=0)	.012**	.012*	.009	.012
	(.005)	(.006)	(.007)	(.008)
Dereservation(k=+1)	.017***	.016**	.012	.018*
	(.006)	(.007)	(.008)	(.010)
Dereservation(k=+2)	.018***	.024***	.017**	.020**
	(.006)	(.007)	(.007)	(.009)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	No	No	No
Industry-Year Fixed Effects	No	2-digit	3-digit	4-digit
Obs.	32,603	32,603	32,603	32,603
R^2	.664	.679	.695	.713

Table 4: Exposure to Dereservation

This table provides the results on the base-line specification i.e. column(1) to column (4) of Table 3. I estimate the exposure of firm to entry threat by using the proportion of total sales revenue from de-reserved product in pre-dereservation period. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively.

	Trade Credit Granted			
	(1)	(2)	(3)	(4)
Exposure to Dereservation(k=-3)	.006	-.0002	-.006	-.003
	(.006)	(.007)	(.009)	(.010)
Exposure to Dereservation(k=-2)	.009	.012	.011	.010
	(.007)	(.009)	(.010)	(.012)
Exposure to Dereservation(k=0)	.013**	.015*	.012	.018*
	(.006)	(.008)	(.008)	(.011)
Exposure to Dereservation(k=+1)	.019***	.021**	.018*	.030**
	(.007)	(.009)	(.010)	(.012)
Exposure to Dereservation(k=+2)	.019***	.027***	.022**	.030***
	(.007)	(.010)	(.010)	(.011)
Firm Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	No	No	No
Industry-Year Fixed Effects	No	2-digit	3-digit	4-digit
Obs.	32,603	32,603	32,603	32,603
R^2	.664	.679	.695	.713

Table 5: Price vs. Trade Credit

This table reports the results of regressions estimating the differential response of incumbents firms to threat of entry based on nature of product manufactured by affected firms. I estimate equation (1) after replacing each *Dereservation(k)* (and *Pre-Dereservation(-k)*) dummy with interaction terms *Dereservation (k)* × *Standardized* and *Dereservation (k)* × *Differentiated*, where *Standardized* (*Differentiated*) is a dummy variable that identifies firms manufacturing *standardized*(*differentiated*) product as its primary product in the year before its dereservation. I follow Giannetti, Burkart, and Ellingsen (2011) to classify industries manufacturing standardized and differentiated goods (see Appendix A (Table A4) for classification). In this specification, I also include a full set of interaction terms between *Standardized*/*Differentiated* and time fixed effects. Also, I control for industry specific time fixed effects at NIC3 (col (1)–col(3))and NIC4 level(col(4)–col(6)). In the column titled *Diff*, I test whether the coefficients estimated for firms manufacturing *Standardized* products and those manufacturing *Differentiated* are significantly different. Note that in this test my sample is confined to treated firms that exist one year before the dereservation. Panel A reports the results with Trade Credit Granted (*Accounts Receivables over Sales*) as dependent variable, while panel B reports the results with *Markup* as dependent variable. Standard errors are corrected for heteroscedasticity and autocorrelation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively.

Panel A: Trade Credit Granted

	Trade Credit Granted					
	Standardised Products	Differentiated Products	Diff (2)-(1)	Standardised Products	Differentiated Products	Diff (2)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)
Dereservation(k=0)	-.009	.011	.021	-.007	.027*	.034*
	(.012)	(.009)	(.015)	(.013)	(.014)	(.020)
Dereservation(k=+1)	-.012	.022**	.034**	.002	.034**	.032
	(.013)	(.010)	(.017)	(.015)	(.014)	(.021)
Dereservation(k=+2)	-.005	.023*	.028	.007	.042*	.035
	(.013)	(.013)	(.018)	(.015)	(.019)	(.024)
Firm Fixed Effects	Yes			Yes		
Industry-Year FEs	3-digit			4-digit		
Obs.	9,940			9,940		
R^2	.69			.71		

Panel B: Markup

	Markup					
	Standardised Products	Differentiated Products	Diff (1)-(2)	Standardised Products	Differentiated Products	Diff (1)-(2)
	(1)	(2)	(3)	(4)	(5)	(6)
Dereservation(k=0)	-.004	.014	-.018	.003	.018	-.015
	(.011)	(.011)	(.016)	(.013)	(.014)	(.020)
Dereservation(k=+1)	-.012	-.002	-.011	-.027**	-.002	-.025*
	(.012)	(.012)	(.017)	(.013)	(.015)	(.020)
Dereservation(k=+2)	-.030**	.004	-.034**	-.036***	-.0002	-.035
	(.012)	(.012)	(.017)	(.014)	(.018)	(.023)
Firm Fixed Effects	Yes			Yes		
Industry-Year FEs	3-digit			4-digit		
Obs.	9,940			9,940		
R^2	.59			.62		

Table 6: Financial Strength

This table reports the results of regressions estimating the differential response of incumbents firms to threat of entry based on their financial strength. I use firm size, firm age and short-term debt(STD) due within a year as proxies of financial strength and report results in Panel A, B and C, respectively. For firm size/age/STD I estimate equation (1) after replacing each *Dereservation(k)* (and *Pre-Dereservation(-k)*) dummy with interaction terms *Dereservation (k)* × *Small/Young/Low STD* and *Dereservation (k)* × *Large/Old/High STD*, where *Small/Old/Low STD* is a dummy variable that identifies firms with below-median assets/age/STD in the year prior to dereservation of its primary product. In this specification, I also include a full set of interaction terms between different groups of financial strength and time fixed effects. This allows two groups of firms to have a differential time trend. Also, I control for industry specific time fixed effect at NIC4 level. In the column titled *Diff*, I test whether the coefficients estimated for different groups are significantly different. Note that in this test my sample is confined to treated firms that exist one year before the dereservation. Column (1)-(3) reports the results with *Accounts Receivables over Sales* as dependent variable, while column (4)-(6) reports the results with *Markup* as dependent variable. Standard errors are corrected for heteroscedasticity and autocorrelation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively.

Panel A: Firm Size

	Trade Credit Granted			*Markup*		
	Small Firms	Large Firms	Diff (2)-(1)	Small Firms	Large Firms	Diff (2)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)
Dereservation(k=0)	-.005	.014	.019	.018	-.009	-.019
	(.014)	(.011)	(.013)	(.011)	(.009)	(.012)
Dereservation(k=+1)	.004	.032***	.028*	-.007	-.018*	-.011
	(.016)	(.011)	(.015)	(.014)	(.010)	(.014)
Dereservation(k=+2)	.007	.031***	.024	-.009	-.027*	-.018
	(.018)	(.012)	(.018)	(.015)	(.015)	(.017)
Firm Fixed Effects		Yes			Yes	
Industry-Year Fixed Effects		4-digit			4-digit	
Obs.		9,940			9,940	
R^2		.71			.62	

Panel B: Firm Age

	Trade Credit Granted			*Markup*		
	Young Firms	Old Firms	Diff (2)-(1)	Young Firms	Old Firms	Diff (2)-(1)
	(1)	(2)	(3)	(4)	(5)	(6)
Dereservation(k=0)	-.002	.011	.013	.008	.007	-.001
	(.013)	(.011)	(.012)	(.011)	(.010)	(.012)
Dereservation(k=+1)	.012	.026***	.014	-.016	-.016	0.00
	(.015)	(.011)	(.016)	(.012)	(.012)	(.015)
Dereservation(k=+2)	.006	.033***	.027	-.032**	-.012	.020
	(.015)	(.013)	(.016)	(.016)	(.015)	(.018)
Firm Fixed Effects		Yes			Yes	
Industry-Year Fixed Effects		4-digit			4-digit	
Obs.		9,940			9,940	
R^2		.71			.62	

Panel C: Short-term Debt(STD)

	Trade Credit Granted			*Markup*		
	Low STD	High STD	Diff (1)-(2)	Low STD	High STD	Diff (1)-(2)
	(1)	(2)	(3)	(4)	(5)	(6)
Dereservation(k=0)	.011	.006	.005	.001	.006	-.005
	(.010)	(.014)	(.012)	(.011)	(.010)	(.012)
Dereservation(k=+1)	.028**	.023	.005	-.025*	-.006	-.019
	(.013)	(.015)	(.016)	(.013)	(.011)	(.014)
Dereservation(k=+2)	.032**	.021	.011	-.026*	-.019	-.007
	(.015)	(.013)	(.016)	(.016)	(.015)	(.018)
Firm Fixed Effects		Yes			Yes	
Industry-Year Fixed Effects		4-digit			4-digit	
Obs.		9,435			9,435	
R^2		.71			.62	

Table 7: Robustness Checks

This table provides robustness of the results for the base-line specification i.e. column (1) of Table 3. In column (1), I add *one year lagged* value of firm size, cash holdings, profitability and sales growth as controls. Major changes in policies vis-a-vis foreign investment occurred in the early 1990s, and then stalled during the period of dereservation reform(i.e. after 1997). Column (2) reports the results for the sample beginning from year 1997. In column (3), I exclude firms manufacturing chemical products. In column(4), I exclude never treated firms from the control group. Column (5), I include state-year fixed effects. In column (6), I drop firms with positive value of exports. In column (7), I redefine the incumbent as a firm that made a reserved product three years before it was de-reserved as its primary product. Finally, in column (8), I run the base line specification with Log(1+Accounts Receivables) as dependent variable. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively.

	Trade Credit Granted							
	With controls	After 1997	Exclude chemical products	Only Treated	State-year FEs	Zero exports	Treatment definition	Log specification
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dereservation(k=-3)	.005	-.0005	.003	.004	.002	-.015	.002	.036
	(.005)	(.006)	(.006)	(.005)	(.005)	(.013)	(.006)	(.030)
Dereservation(k=-2)	.006	.003	.006	.006	.003	-.0005	.005	.035
	(.005)	(.006)	(.006)	(.005)	(.005)	(.011)	(.006)	(.030)
Dereservation(k=0)	.012**	.008*	.009*	.010**	.013***	.018	.010*	.084**
	(.005)	(.005)	(.005)	(.005)	(.005)	(.014)	(.005)	(.033)
Dereservation(k=+1)	.016***	.014***	.016***	.016***	.016***	.014	.017***	.083***
	(.005)	(.005)	(.006)	(.006)	(.006)	(.014)	(.006)	(.032)
Dereservation(k=+2)	.018***	.015**	.018***	.017***	.018***	.018*	.017**	.126***
	(.006)	(.006)	(.006)	(.006)	(.006)	(.01)	(.007)	(.033)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	32,603	27,208	28,124	14,131	32,583	12,376	32,603	32,603
R^2	.672	.689	.668	.642	.68	.743	.663	.921

Appendix A

The reporting of products by Indian firms is not governed by any particular product classification. Although CMIE has developed an internal product classification that is based on the Harmonized System (HS) and National Industry Classification (NIC) schedules. There are about 3514 codes based on the NIC and the HS schedule. The agency has explicitly linked the product names reported by the firms to this classification. The names of products reported by the firm could differ in aggregation, or even in spelling (e.g., "Steel Rod" versus "Steel Rods"). Most of these issues were taken care by CMIE. But still there were some discrepancies like "Millstone, grindstone" versus "Millstone, grindstone, etc." which I cleaned up manually. CMIE has standardized approximately 51,320 product names to 3,714 possible CMIE product codes.

My final sample includes 2710 product codes out of the universe of 3714 product codes. The unused codes are products in the agriculture and services sectors, which, of course, are not produced by manufacturing firms. These 2710 product codes are mapped to 591 five-digit NIC product codes in 137 four-digit NIC industries across the 24 manufacturing sectors (two-digit NIC codes). As a comparison, the US data used by Bernard, Redding and Schott (2011) contain approximately 1,500 products, defined as five-digit Standard Industrial Classification (SIC) codes, across 455 four-digit SIC industries. Thus, my definition of a product is slightly more detailed than that of Bernard, Redding and Schott (2011).

I created a concordance between the NIC product codes and the list of reserved and de-reserved products. I matched products reserved to each firm based on 5-digit industry. In most cases, the match between NIC codes and SSI codes/prodcut codes was exact that I was able to create the match based solely on the product descriptions. In other cases, I used the lengthy descriptions associated with the industry codes to help resolve many questionable concordances. I assumed that a product was matched to an NIC code if it was at least a partial match. Table A1 shows sample notification about list of items dereserved in 1997 while table A2 provides information on the number of products dereserved in a 2-digit NIC industry for the period 2003-2008. Next, table A3 shows the mapping of product codes in dereserved list with NIC codes. All the notifications about dereservation are available at http://www.dcmsme.gov.in/publications/notiissforresderes.html. In table A4, I classify the NIC2 digit industries in standardised versus differentiated products using Giannetti, Burkart, and Ellingsen (2011) classification.

Examples of products within the Food Product sector (NIC 10) of this hierarchical mapping are listed in Table A5. The table reports two industries within the sector: Manufacture of Bakery Products, which contains 3 products (at NIC 5 digit level), and Manufacturing of Sugar, which contains 9 products. The product classification provides a concordance to the more familiar NIC industry codes used to classify economic activity in India. Each of the 2710 product codes can therefore be mapped to a five-, four-, three-, two-, or one-digit NIC code. Several features of the product data give me additional confidence in its quality despite the self-reported and non-standardized nature of the dataset. First, firms are required to report not just the names of the products, but also product-level details about installed capacity, production, sales quantity and value. The product-level data are available for 85 percent of the firms; this accounts for more than 90 percent of output and exports of the manufacturing firms in Prowess. More importantly, the product-level information and overall output are in separate modules of the Prowess database which enables me to cross check the consistency of the data. The data span the period from 1991 to 2013.

Table A1: Sample of Dereservation Notification

Here I provide sample notification about list of items dereserved in 1997. All the notifications about dereservation of products are available at http://www.dcmsme.gov.in/publications/notiissforresderes.html

रजिस्ट्री सं० डी० एल०-33004/97 REGD. NO. D. L.-33004/97

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY

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PART II—Section 3—Sub-section (ii)

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PUBLISHED BY AUTHORITY

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No. 227] NEW DELHI, THURSDAY, APRIL 3, 1997/CHAITRA 13, 1919

MINISTRY OF INDUSTRY
(Department of Industrial Policy and Promotion)

NOTIFICATION

New Delhi, the 3rd April, 1997

S. O. 298 (E).—In exercise of the powers conferred by sub-section (2A) of section 29B of the Industries (Development and Regulation) Act, 1951 (65 of 1951) and after considering the recommendations made by the Advisory Committee constituted under sub-section (2B) of the said section, the Central Government hereby direct that the following amendments shall be made in the notification of the Government of India in the Ministry of Industry, Department of Industrial Development No. S.O.477(E), dated the 25th July, 1991, namely :—

In the said notification, in Schedule-III under the heading—LIST OF ITEMS RESERVED FOR EXCLUSIVE MANUFACTURE IN SMALL SCLAE SECTOR, the following items and the entries relating thereto shall be omitted, namely :—

Sl. No. (As per gazette Notification)	Product Code	Name of the product	
1	2	3	
"1	201801	Ice Cream	
4	202901	Vinegar	
5	204200	Rice Milling	
6	204300	Dal Milling	
8	20530101	Biscuits	
15	21620101	Poultry feed except in pellet form	
16C	224302	Synthetic syrups	
54	280906	Corrugated paper & boards	
571	363708	Hair driers—all types	
629	374717	Hub caps—auto	
635	374737	Ornamental fittings—auto	
644	37478101	Spot lamps assembly—auto	} Excluding combination lamp assembly
645	37478201	Stop lamps assembly—auto	
646	3747870	Tail lamp assembly—auto	
647	3747804	Ash trays—Car fittings"	

Table A2: Timing of Dereservation Reform by Industry-Year

The table below provides the information on the number of products dereserved in a 2-digit NIC industry for the period 2003-2008.

		Number of Products Dereserved					
2-digit	**Industry/ Year**	2003	2004	2005	2006	2007	2008
10	Food Products	0	2	0	2	0	6
11	Beverages	0	0	0	0	0	0
12	Tobacco	0	0	0	0	0	0
13	Textiles	0	0	33	0	0	0
14	Wearing Apparel	2	0	0	0	1	0
15	Leather Products	7	0	0	0	0	0
16	Wood Products	0	5	0	0	8	0
17	Paper Products	3	8	0	0	0	17
18	Printing	0	0	0	0	0	1
19	Coke and refined petroleum products	0	0	2	1	0	1
20	Chemicals	57	93	0	50	2	41
21	Pharmaceuticals	0	0	0	7	1	1
22	Rubber and plastics	0	1	20	0	26	11
23	Non-metallic mineral products	0	3	0	3	39	2
24	Basic Metals	0	0	0	0	0	0
25	Fabricated metal products	0	24	0	45	33	5
26	Computer, electronic & optical products.	0	2	0	1	6	2
27	Electrical equipment	0	3	28	2	7	11
28	Machinery and equipment	0	5	3	10	13	2
29	Motor vehicles, trailers & semi-trailers	0	4	0	9	4	0
30	Other transport equipment	0	0	4	35	42	0
31	Furniture	0	1	0	6	2	2
32	Other manufacturing	1	2	1	1	33	4

Table A3: Sample of Product Matches

Following table provides the sample of matches of product codes in dereserved list with NIC codes and dereservation dates.

Item No.	Product Code	Product Name	NIC Activity Name	NIC5 Digit	Dereservation Date
1	201801	Ice Cream	Manufacture of ice-cream and kulfi etc.	10505	3 Apr, 1997
3	202501	Pickles & Chutneys	Manufacture of pickles, chutneys, murabbas etc.	10306	10 Apr, 2015
5	204200	Rice Milling	Rice milling	10612	3 Apr, 1997
6	204300	Dal Milling	Dal milling	10613	3 Apr, 1997
7	205101	Bread	Bread making	10711	10 Apr, 2015
242	312405	Chlorinated paraffin wax	Paraffin wax	19202	10 Oct, 2008

Table A4: Product Classification

The table classify the NIC2 digit industries in standardised versus differentiated products using Giannetti, Burkart, and Ellingsen (2011) classification.

2-digit	Industry	Differentiated Goods	Standardized Goods
10	Food Products	0	1
11	Beverages	0	1
12	Tobacco	0	1
13	Textiles	0	1
14	Wearing Apparel	0	1
15	Leather Products	0	1
16	Wood Products	0	1
17	Paper Products	0	1
18	Printing	1	0
19	Coke and refined petroleum products	0	1
20	Chemicals	0	1
21	Pharmaceutical	0	1
22	Rubber and plastics	1	0
23	Non-metallic mineral products	1	0
24	Basic Metals	0	1
25	Fabricated metal products	1	0
26	Computer, electronic & optical products	1	0
27	Electrical equipment	1	0
28	Machinery and equipment	1	0
29	Motor vehicles, trailers & semi-trailers	1	0
30	Other transport equipment	1	0
31	Furniture	1	0
32	Other manufacturing	1	0

Table A5: Examples of Industries, Sectors and Products

NIC 1071 contains 3 products and NIC 1072 contains 9 products.

Group	Class	Sub-class	Description
	1071		**Manufacture of bakery products**
			This class excludes:
			- manufacture of farinaceous products (pastas), see 1074
			- manufacture of potato snacks, see 1030
			- heating up of bakery items for immediate consumption, see division 56
		10711	Manufacture of bread
		10712	Manufacture of biscuits, cakes, pastries, rusks etc.
		10719	Manufacture of other bakery products n.e.c.
	1072		**Manufacture of sugar**
			This class excludes:
			- manufacture of glucose, glucose syrup, maltose, see 1062
		10721	Manufacture or refining of sugar (sucrose) from sugercane
		10722	Manufacture of `gur' from sugarcane
		10723	Manufacture of `gur' from other than sugarcane
		10724	Manufacture of `khandsari' sugar from sugarcane
		10725	Manufacture of `khandsari' suger from other than sugarcane
		10726	Manufacture of `boora' and candy from sugarcane
		10727	Manufacture of `boora' and candy from other than sugarcane
		10728	Manufacture of molasses
		10729	Manufacture of sugar from other sources (juice of palm, suger beet etc.)

Appendix B

Table B1: Robustness Checks with 2-digit Industry-year Fixed Effects

This table provides robustness of the results for the specification i.e. column (2) of Table 3. In column (1), I add *one year lagged* value of firm size, cash holdings, profitability and sales growth as controls. Major changes in policies vis-a-vis foreign investment occurred in the early 1990s, and then stalled during the period of dereservation reform(i.e. after 1997). Column(2) reports the results for the sample beginning from year 1997. In column (3), I exclude firms manufacturing chemical products. In column(4), I exclude never treated firms from the control group. Column(5), I include state-year fixed effects. In column (6), I drop firms with positive value of exports. In column (7), I redefine the incumbent as a firm that made a reserved product three years before it was de-reserved as its primary product. Finally, in column(8), I run the base line specification with Log(1+Accounts Receivables) as dependent variable. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively.

	Trade Credit Granted							
	With controls	After 1997	Exclude chemical products	Only Treated	State-year FEs	Zero exports	Treatment definition	Log specification
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dereservation(k=-3)	.0004	-.005	-.003	-.002	-.003	-.026	-.007	.029
	(.006)	(.007)	(.007)	(.006)	(.006)	(.016)	(.007)	(.040)
Dereservation(k=-2)	.007	.004	.007	.008	.006	.005	.004	.059
	(.007)	(.008)	(.008)	(.007)	(.008)	(.017)	(.009)	(.037)
Dereservation(k=0)	.011*	.008	.010	.010	.012*	.006	.013*	.105**
	(.006)	(.006)	(.007)	(.007)	(.007)	(.018)	(.007)	(.043)
Dereservation(k=+1)	.015**	.013*	.016*	.016**	.015**	.007	.019***	.077*
	(.007)	(.007)	(.008)	(.008)	(.007)	(.020)	(.007)	(.042)
Dereservation(k=+2)	.022***	.020***	.026***	.021***	.023***	.033*	.022***	.110***
	(.007)	(.007)	(.009)	(.008)	(.008)	(.017)	(.008)	(.040)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects, 2-digit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	32603	27208	28124	14131	32583	12376	32603	32603
R^2	.686	.702	.684	.658	.694	.77	.679	.924

Table B2: Robustness Checks with 4-digit Industry-year Fixed Effects

This table provides robustness of the results for the specification i.e. column (4) of Table 3. In column (1), I add *one year lagged* value of firm size, cash holdings, profitability and sales growth as controls. Major changes in policies vis-a-vis foreign investment occurred in the early 1990s, and then stalled during the period of dereservation reform(i.e. after 1997). Column(2) reports the results for the sample beginning from year 1997. In column (3), I exclude firms manufacturing chemical products. In column(4), I exclude never treated firms from the control group. Column(5), I include state-year fixed effects. In column (6), I drop firms with positive value of exports. In column (7), I redefine the incumbent as a firm that made a reserved product three years before it was de-reserved as its primary product. Finally, in column(8), I run the base line specification with Log(1+Accounts Receivables) as dependent variable. Standard errors are corrected for heteroscedasticity and auto correlation, and clustered at NIC5-digit product level and reported in parentheses. *,**, and *** indicate significance at 10%, 5% and 1% respectively.

	Trade Credit Granted							
	With controls	After 1997	Exclude chemical products	Only Treated	State-year FEs	Zero exports	Treatment definition	Log specification
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dereservation(k=-3)	-.004	-.003	-.008	-.005	-.004	-.027	-.008	-.014
	(.008)	(.009)	(.009)	(.008)	(.009)	(.021)	(.010)	(.047)
Dereservation(k=-2)	.005	.004	.007	.007	.005	.016	.003	.008
	(.010)	(.009)	(.012)	(.010)	(.011)	(.020)	(.012)	(.044)
Dereservation(k=0)	.011	.009	.012	.011	.012	.003	.014	.055
	(.008)	(.008)	(.010)	(.009)	(.009)	(.022)	(.010)	(.045)
Dereservation(k=+1)	.017*	.016*	.016	.019*	.018*	.010	.026***	.037
	(.010)	(.009)	(.012)	(.011)	(.010)	(.031)	(.010)	(.049)
Dereservation(k=+2)	.018**	.016*	.020*	.020**	.022**	.040*	.024**	.074*
	(.009)	(.009)	(.011)	(.010)	(.009)	(.024)	(.010)	(.045)
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects, 4-digit	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	32603	27208	28124	14131	32583	12376	32603	32603
R^2	.72	.73	.718	.698	.728	.82	.712	.932